



A MITEL
PRODUCT
GUIDE

Unify OpenScape Contact Center Enterprise

Manager Administration

Administration Guide

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Contents

1 About this guide.	11
1.1 Who should use this guide	11
1.2 Formatting conventions	11
1.3 Documentation feedback	12
2 Planning an implementation	13
2.1 OpenScape Contact Center processing	14
2.1.1 Initial processing	14
2.1.2 Workflow processing	14
2.1.3 Queue processing	15
2.2 Design database configuration overview	15
2.2.1 Basic design database configuration	15
2.2.2 Communication platform connectivity and voice resources	16
2.2.3 Configuring the corporate server connections	17
2.2.4 Configure networking resources	17
2.2.5 Configuring users and user-based resources	18
2.2.6 Configuring wallboard and Broadcaster resources	18
2.2.7 Configuring the routing resources	19
2.2.8 Completing the setup	19
2.2.9 Configuring report definitions	20
2.2.10 Configuring Call Director	20
2.2.11 Validating the design database	20
2.3 Performing the initial Manager configuration	21
3 Getting started.	23
3.1 About the Manager application	23
3.2 Logging on to the Manager application	23
3.2.1 About the Master Administrator	25
3.2.2 Running two Manager instances on a client machine	26
3.2.3 Saving a logon profile	27
3.3 About the user interface	27
3.3.1 Administration Center	28
3.3.2 Broadcast Center	28
3.3.3 Design Center	28
3.3.4 Report Center	28
3.3.5 Telephony Center	29
4 Working with users, templates and profiles	31
4.1 Configuring a user	31
4.1.1 Configuring the general user properties	33
4.1.2 Configuring the user permissions	36
4.1.3 Configuring the contact handling settings for a user	38
4.1.4 Configuring the media-specific settings for a user	40
4.1.5 Configuring the Web collaboration settings for a user	41
4.1.6 Configuring the thresholds for a user	42
4.1.7 Configuring the resources a user can monitor	45
4.1.8 Configuring the reports for a user	46
4.1.9 Configuring the security settings for a user	47

Contents

4.2	About user templates	49
4.2.1	User template associations	50
4.2.2	Configuring a user template	50
4.2.2.1	Creating a user template	51
4.2.2.2	Creating a user template based on an existing user	52
4.2.2.3	Updating a user template	52
4.2.3	Creating a user based on a user template	53
4.2.4	Creating multiple users based on a user template	55
4.2.5	Creating multiple users by importing a text file	56
4.2.5.1	User list requirements	57
4.3	About user profiles	58
4.3.1	Default user profiles	58
4.3.1.1	Manager user profiles	58
4.3.2	Configuring a user profile	60
4.3.3	Access levels	62
5	Configuring other administration resources	63
5.1	Configuring a department	63
5.2	Configuring a location	64
5.2.1	Configuring an Unavailable reason	66
5.2.2	Configuring a Work reason	66
5.2.3	Configuring a Post-processing reason	67
5.2.4	Configuring a Wrap-up reason	68
5.3	About the servers	69
5.3.1	Configuring the server properties	70
5.3.2	Configuring a Watchdog Server	71
5.3.3	Configuring the OpenMedia Server	72
5.3.4	Configuring a Real-Time Server on an auxiliary server machine	74
5.3.5	Configuring a notification	74
5.4	Configuring a data source	77
5.5	Configuring a directory	78
6	Using the Broadcaster and wallboards	81
6.1	About wallboards	81
6.1.1	Creating a wallboard type	82
6.1.2	Creating a wallboard definition	83
6.1.3	Configuring a wallboard view	85
6.1.3.1	Configuring the general information for a wallboard view	85
6.1.3.2	Configuring the content of a wallboard view	87
6.1.3.3	Configuring a wallboard view item	89
6.1.3.4	Configuring a threshold for a wallboard view item	90
6.1.3.5	Configuring the distribution for a wallboard view	91
6.1.4	Configuring a wallboard distribution	92
7	Reporting	93
7.1	About real-time reports	94
7.2	About historical reports	97
7.3	About cumulative reports	99
7.4	About activity reports	100
7.5	Monitoring permissions and reporting	101
7.6	Reporting level	102
7.7	Configuring a report	102
7.7.1	Configuring the general report properties	103

7.7.1.1	Specifying the range for a cumulative report	105
7.7.1.2	Specifying the range for a historical report.	105
7.7.2	Selecting the content for a report	108
7.7.2.1	Selecting the resources for a real-time report	109
7.7.2.2	Selecting the resources for a cumulative report	110
7.7.2.3	Selecting the resources for a historical report.	112
7.7.3	Specifying the columns in a report	116
7.7.4	Setting thresholds and alarms in a report	117
7.7.5	Specifying a bar chart in a report	120
7.7.6	Scheduling a historical report	121
7.7.6.1	Scheduling a report to run immediately	122
7.7.6.2	Scheduling a report to run once at a specific date and time	122
7.7.6.3	Scheduling a report to run on a regular basis	123
7.7.7	Specifying the output options for a report	124
7.7.7.1	Specifying the output options for a real-time or cumulative report	124
7.7.7.2	Specifying the output options for a historical report	126
7.8	An exercise in creating a simple real-time report	128
7.8.1	Creating a new report definition	128
7.8.2	Specifying the layout of the report	129
7.8.3	Choosing the queues to report on	131
7.8.4	Setting a threshold and an alarm	131
7.8.5	Activating and viewing the report	133
7.9	An exercise in adapting a predefined historical report	134
7.9.1	Creating a copy of the predefined report	135
7.9.2	Specifying the range for the report	136
7.9.3	Scheduling the report	136
7.9.4	Specifying the layout of the report	136
7.9.5	Specifying the output options for the report	139
7.9.6	Choosing the queues to report on	140
7.9.7	Running the report	140
7.10	Generating a User Activity Report	141
7.11	Generating a Source Activity Report	142
7.12	Configuring the user reporting options	144
7.12.1	Configuring the general user reporting options	144
7.12.2	Configuring the silent monitoring settings	145
7.12.3	Configuring the directory options	147
7.12.3.1	Configuring the directory connection settings	148
7.12.3.2	Configuring the directory query settings	148
7.12.3.3	Configuring the directory results settings	149
7.12.4	Configuring the colors in reports	150
7.13	Configuring the system reporting options	150
7.13.1	Configuring the global queue report intervals	151
7.13.2	Configuring the first day of the week	152
7.13.3	Configuring the queue real-time report options	153
7.13.4	Configuring the workforce management output location	154
7.13.5	Configuring the e-mail reports option	156
8	Routing	157
8.1	About group-based routing.	157
8.1.1	Group setup considerations	157
8.1.2	Configuring a group	158
8.2	About skills-based routing	160

Contents

8.2.1	About skills	161
8.2.2	Configuring a skill	161
8.2.3	About virtual groups	162
8.2.3.1	Virtual group example	163
8.2.4	Configuring a virtual group	164
8.3	About multiple contact handling	165
8.3.1	Configuring a contact handling rule	167
8.4	Configuring the routing options	168
8.4.1	Configuring the manual reserve time	168
8.4.2	Configuring the maximum offer time	169
8.4.3	Changing to skills-based routing	171
8.4.4	About skill scoring	172
8.4.4.1	Skill scoring schemes	173
8.4.5	Configuring the skill scoring	174
8.4.6	About skill levels	177
8.4.7	Displaying skill levels	178
8.4.8	Displaying skill preferences	179
8.4.9	Changing to multiple contact handling	180
8.4.10	Configuring a call or callback as the primary contact	180
9	Working with workflows	183
9.1	About workflow diagrams	183
9.2	About routing strategy workflows	184
9.2.1	Basic routing strategy workflow example	185
9.3	Routing strategy workflow considerations	186
9.3.1	Source/destination information	187
9.3.2	Information collected from a call	189
9.3.3	Scheduling information	190
9.3.4	Statistics	192
9.3.5	Contact data	193
9.3.6	Database functions	196
9.3.6.1	Formatting database functions	198
9.3.7	Custom functions	204
9.3.7.1	Programming custom functions	205
9.4	Configuring a routing strategy workflow	209
9.4.1	Overriding the default Call Director settings	211
9.4.2	Overriding the default error queue settings	212
9.5	About queue processing workflows	212
9.6	Queue processing workflow considerations	213
9.6.1	Looping in a queue processing workflow	213
9.6.2	Exiting a queue processing workflow	215
9.7	Configuring a queue processing workflow	217
9.8	Linking workflows	218
9.8.1	Simplifying workflows	219
9.8.2	Eliminating redundant functionality	221
9.9	Activating a workflow	221
9.10	An exercise in creating a workflow	222
9.10.1	Creating the routing strategy workflow	222
9.10.2	Accessing the Design Editor	223
9.10.3	Adding a Schedule component	223
9.10.4	Adding a Transfer component	225
9.10.5	Adding a Source/Destination Decision component	226

9.10.6	Connecting the components	227
9.10.7	Adding the Enqueue components	229
9.11	Other component type functions	230
10	Working with queues and aggregates	231
10.1	About queues	231
10.2	Queue setup considerations	231
10.2.1	Initial contact processing	232
10.2.2	Scheduling	232
10.2.3	Skills versus virtual groups	233
10.2.4	Staffing, contact volume, and queue time	234
10.2.4.1	Selecting a more backup-oriented queue setup	235
10.2.4.2	Selecting a less specialized queue setup	236
10.2.5	Step intervals	237
10.2.5.1	Calculating step intervals for group-based routing	238
10.2.5.2	Calculating step intervals for skills-based routing	239
10.3	Configuring a queue	240
10.3.1	Configuring the general queue information	241
10.3.1.1	About the supplemental information feature	243
10.3.2	Configuring the queue steps	244
10.3.3	Configuring the queue steps for skills-based routing	247
10.3.4	Configuring the queue overrides	249
10.3.5	Configuring the queue overrides for skills-based routing	251
10.3.6	Configuring the voice queue networking settings	253
10.3.7	Selecting the queue Wrap-up reasons	254
10.3.8	Selecting the queue aggregates	254
10.3.9	Selecting the queue reports	255
10.3.10	Selecting the Web collaboration queue messages	256
10.3.11	Selecting the Web collaboration queue URLs	256
10.4	About aggregates	257
10.5	Configuring an aggregate	257
11	Working with voice resources	259
11.1	Supported communication platforms	259
11.2	Basic interaction with the communication platform	260
11.2.1	Interaction with OpenScape Voice resources	260
11.2.2	Interaction with OpenScape 4000 or HiPath 4000 resources	261
11.2.3	Interaction with OpenScape Business resources	263
11.3	Communication platform resources	264
11.4	About Config Sync	265
11.4.1	Config Sync treatment of user IDs	266
11.4.1.1	Completing a user definition created by Config Sync	266
11.4.2	Config Sync treatment of other resources	267
11.5	Configuring the voice options	267
11.5.1	Configuring the default voice routing strategy, queue, and time-out extension	268
11.5.2	Configuring the voice error queue settings	269
11.5.3	Configuring the communication platform settings	271
11.5.3.1	Configuring an OpenScape Voice communication platform	272
11.5.3.2	Configuring an OpenScape 4000 or HiPath 4000 communication platform	274
11.5.3.3	Configuring an OpenScape Business communication platform	276
11.5.4	Configuring the Config Sync settings	277
11.5.5	Configuring the VoiceXML settings	278

Contents

12 Working with Call Director	281
12.1 Communication platform and voice processor interaction	281
12.2 Call Director workflow components	282
12.3 Configuring the Call Director resources	283
12.3.1 Configuring a voice processor	283
12.3.2 Configuring a voice processor region	285
12.3.3 Configuring a .wav file	285
12.3.3.1 Call Director .wav file requirements	287
12.4 Configuring the Call Director options	288
12.4.1 Configuring the Call Director general options	289
12.4.1.1 Extension allocation ratio examples	291
12.4.2 Configuring the Call Director destination table	292
12.4.3 Configuring the Call Director default navigation	293
12.4.4 Configuring the Call Director responses	295
13 Working with the callback feature	297
13.1 Callback processing	298
13.2 Configuring the callback resources	299
13.2.1 Configuring a Retry reason	299
13.2.2 Configuring a Delete reason	300
13.2.3 Configuring an excluded number	300
13.3 Configuring the callback options	301
13.3.1 Configuring the general callback settings	301
13.3.2 Configuring the callback routing schedule	304
13.3.3 Configuring the Web callback settings	305
13.3.4 Configuring the outbound options	306
13.4 Generating a Scheduled Callback List	307
13.5 Importing callbacks from an outbound list	308
13.5.1 Outbound list error handling	308
13.5.2 Creating an outbound list	309
13.5.2.1 Outbound list requirements	310
13.5.2.2 Outbound list callback record format	310
13.5.2.3 Callback record examples	313
13.5.2.4 Special character treatment	314
13.5.3 Enabling the outbound feature	314
14 Working with the e-mail feature	315
14.1 E-mail workflow considerations	315
14.1.1 Working with categories	316
14.1.2 Other e-mail workflow components	318
14.2 Configuring the e-mail resources	318
14.2.1 Configuring an e-mail category	319
14.2.2 Configuring a Discard reason	320
14.2.3 About e-mail templates	321
14.2.4 Configuring an e-mail template	322
14.2.5 Configuring an e-mail destination	324
14.2.6 Configuring a monitored source for e-mail	325
14.3 Configuring the e-mail options	326
14.3.1 Configuring the default e-mail routing strategy, queue, and addresses	326
14.3.2 Configuring the e-mail error queue settings	328
14.3.3 Configuring the e-mail routing schedule	328
14.3.4 Configuring the e-mail message settings	330
14.3.5 Displaying the e-mail confidence levels	331

14.4 Conducting an e-mail history search	333
15 Working with the Web collaboration feature	335
15.1 Customer-side and user-side functionality	335
15.2 Web collaboration component interaction	336
15.3 Web collaboration sources and destinations	337
15.4 Web collaboration workflow considerations	338
15.4.1 Web collaboration routing strategy workflows	338
15.4.2 Web collaboration queue processing workflows	341
15.5 Configuring the Web collaboration resources	342
15.5.1 Configuring a Web collaboration language	342
15.5.2 Configuring a Web collaboration standard message	346
15.5.3 Configuring a Web collaboration URL	347
15.5.4 Configuring a monitored source for Web collaboration	348
15.5.5 Configuring a monitored destination for Web collaboration	350
15.6 Configuring the Web collaboration options	351
15.6.1 Configuring the default Web collaboration routing strategy, queue, and time-out URL	351
15.6.2 Configuring the Web collaboration error queue settings	353
15.6.3 Configuring the default Web collaboration language	353
15.6.4 Configuring the Web server settings for Web collaboration	354
16 Working with networking	357
16.1 Contact processing	358
16.2 Networking at the queue level	359
16.3 Acceptance criteria	360
16.4 Distribution methods	361
16.5 About networking workflows	363
16.5.1 Basic networking workflow example	364
16.5.2 Making the decision to process locally or distribute	365
16.5.3 Refining the short list of eligible networked sites	366
16.6 Configuring a networking workflow	368
16.7 Configuring the networking resources	369
16.7.1 Configuring the telephone lines for networking	370
16.7.2 Configuring a networked site	371
16.7.3 Configuring a network transit number	372
16.7.4 Configuring the networking settings for a queue	374
16.8 Configuring the networking options	374
16.8.1 Configuring the general networking settings	374
16.8.2 Configuring the networking acceptance settings	375
16.8.3 Configuring the networking distribution settings	376
17 Working with central reporting	379
17.1 Central reporting data consolidation	380
17.2 Central reporting limited functionality	380
17.3 Configuring a user on a central reporting machine	381
17.4 Configuring the central reporting options	382
17.4.1 Configuring the central reporting server machine settings	382
17.4.2 Configuring the server settings for networked sites	383
18 Working with the high availability (warm standby) feature	385
18.1 Call Director configuration in a high availability (warm standby) environment	386
18.2 Configuring the high availability (warm standby) option	386

Contents

19 Working with the multitenancy feature	389
19.1 Changing to multitenancy	390
19.2 Changing to multitenancy in a high availability (warm standby) environment	391
19.3 Administrator roles in a multitenant environment	392
19.3.1 Configuration of system-related options in a multitenant environment	393
19.4 Updating a design database in a multitenant environment	393
19.5 Configuring the multitenancy resources	394
19.5.1 Configuring a business unit	394
19.5.2 Configuring a user at the system level	396
19.5.3 Configuring an e-mail destination in a multitenant environment	399
19.5.3.1 Configuring an e-mail destination at the system level	399
19.5.3.2 Configuring an e-mail destination at the business unit level	400
19.6 Configuring the error business unit	400
20 Configuring other global options	403
20.1 Configuring the personal options	403
20.1.1 Configuring the confirmation options	405
20.2 Configuring the advanced options	406
20.2.1 Configuring the diagnostic settings	406
20.2.2 Changing the password	407
20.2.3 Restoring the default settings	408
20.3 Configuring the system options	408
20.3.1 Configuring the general system settings	408
20.3.2 Configuring the e-mail server settings	410
20.3.3 Configuring the Web server settings	412
20.3.4 Configuring the enhanced security option	414
20.3.5 Configuring the network communication settings	415
20.4 Configuring the application options	416
20.4.1 About the Contacts Waiting Indicator	418
20.5 Configuring the contact lookup options	419
20.6 Configuring the data management options	420
20.6.1 Configuring the data maintenance time	420
20.6.1.1 Effect of different time zones on data maintenance	422
20.6.2 Adding a data location	424
20.6.3 Deleting a data location	426
20.6.4 Configuring the retention periods for reporting data	426
20.6.5 Configuring the retention period for e-mail data	428
20.6.6 Configuring the retention period for Web collaboration data	429
20.7 Configuring the statistics options	430
20.7.1 Configuring the service level interval	430
20.7.1.1 Choosing the service level calculation formula	431
20.7.1.2 Service level calculation formulas	432
20.7.2 Configuring the wait time	434
20.7.3 Configuring the user calculation	435
20.7.4 Configuring how contacts that are finished in Call Director or an IVR are considered	436
20.7.5 Configuring the shifts	437
20.8 Configuring the CRM integration options	437
20.8.1 Configuring the SAP CIC settings	438
20.8.2 Configuring the SAP ICI settings	440
Index	442

1 About this guide

This guide provides an overview of the OpenScape Contact Center Manager application and walks users through the various administration tasks that need to be performed on an ongoing basis.

1.1 Who should use this guide

This guide is intended for contact center administrators, who are responsible for configuration maintenance, and for supervisors and managers, who use the OpenScape Contact Center productivity tools.

1.2 Formatting conventions

The following formatting conventions are used in this guide:

Bold

This font identifies OpenScape Contact Center components, window and dialog box titles, and item names.

Italic

This font identifies references to related documentation.

Monospace Font

This font distinguishes text that you should type, or that the computer displays in a message.

NOTE: Notes emphasize information that is useful but not essential, such as tips or alternative methods for performing a task.

IMPORTANT: Important notes draw special attention to actions that could adversely affect the operation of the application or result in a loss of data.

About this guide

Documentation feedback

1.3 Documentation feedback

To report an issue with this document, call the Customer Support Center.

When you call, be sure to include the following information. This will help identify which document you are having issues with.

- **Title:** Manager Administration Guide
- **Order Number:** A31003-S22B0-M100-01-76A9

2 Planning an implementation

Most customers work closely with their service representative through the planning and design phase of an OpenScape Contact Center implementation. The service representative takes responsibility for creating and implementing the initial configuration. The design database that is created for you is set up with definitions of the essential resources, an initial set of users, workflows that dictate how incoming contacts and queued contacts are handled, and mappings to the communication platform resources that OpenScape Contact Center monitors.

This chapter provides an overview of the key concepts that must be considered when planning an OpenScape Contact Center implementation, including a summary of the basic configuration tasks that must be performed to create a design database, put the design database into production, and perform the initial configuration of the system.

After the initial configuration has been put into production, on-going tasks include routine maintenance, such as maintaining users, profiles and extensions, and day-to-day supervisory tasks such as configuring and using the productivity tools.

Policy changes, new business, changes in performance requirements, and simple growth can result in the need to modify the contact routing aspects of your configuration. This commonly amounts to relatively isolated reconfiguration tasks, such as changing a Call Director menu setup, adding service for a new dialed number, or revisiting your queue setup. The latter part of this guide provides instructions on how to perform these types of reconfiguration tasks.

NOTE: Contact your service representative for assistance with major reconfiguration.

2.1 OpenScape Contact Center processing

This section introduces the highest level elements of the OpenScape Contact Center configuration.

2.1.1 Initial processing

Incoming contacts are directed to OpenScape Contact Center as follows:

- **Voice** – For each dialed number serviced by the contact center, incoming contacts are held on the communication platform. The platform notifies OpenScape Contact Center of the contact, provides relevant contact information, and then waits for OpenScape Contact Center to provide directives on how to further process the contact. For more information on voice support, see [Chapter 11, “Working with voice resources”](#).
- **Callback** – In addition to basic voice support, OpenScape Contact Center supports callbacks. Callback is a feature that lets customers and users schedule outgoing calls to customers. OpenScape Contact Center then establishes and administers the call. For more information on callback support, see [Chapter 13, “Working with the callback feature”](#).
- **E-mail** – E-mail messages are routed through a corporate e-mail server to the OpenScape Contact Center E-mail Server. All e-mail messages are stored in a single mailbox on the corporate e-mail server. Support for multiple e-mail addresses can be handled by providing aliases. For more information on e-mail support, see [Chapter 14, “Working with the e-mail feature”](#).

2.1.2 Workflow processing

On arrival in OpenScape Contact Center, incoming contacts are processed by a routing strategy workflow. The workflow gathers contact requirements and determines how each contact is to be routed. For more information, see [Section 9.2, “About routing strategy workflows”](#), on page 184.

If you are using the networking feature, a networking workflow executes immediately after a routing strategy workflow finishes executing. Networking workflows make decisions on whether incoming contacts are to be routed to other sites. For more information, see [Section 16.5, “About networking workflows”](#), on page 363.

2.1.3 Queue processing

While a contact is in queue, OpenScape Contact Center executes a number of steps to try to match the contact to a specific user. The way in which the queue steps are configured depends on the type of routing: group-based or skills-based. For details, see [Section 8.1, "About group-based routing", on page 157](#), or [Section 8.2, "About skills-based routing", on page 160](#).

Although queued contacts are typically handled in the order that they are placed in the queue, OpenScape Contact Center has routing decision and queue properties, such as priority, that can determine the handling order.

While a contact is waiting in queue, a queue processing workflow is applied to the queue simultaneously. The queue or the queue processing workflow can handle the contact. For more information, see [Section 10.1, "About queues", on page 231](#) and [Section 9.5, "About queue processing workflows", on page 212](#).

2.2 Design database configuration overview

This section provides a high-level overview of the steps required to configure a design database.

NOTE: Before you begin to configure the design database, you should complete the resource worksheets for the communication platform to which you are connecting. This ensures that you have all the required information for the configuration.

For detailed instructions on how to complete each task, refer to the procedures provided in later chapters or in the *Manager Help*.

2.2.1 Basic design database configuration

Start by creating a new, empty design database, and then activate the required product features by using the license file.

NOTE: In a multitenant environment, to prevent conflicts between different business units, only a system administrator can activate product features and upload a design database.

Planning an implementation

Design database configuration overview

To configure a basic design database:

1. Log on to the Manager application.
2. Create a new design database.
3. Activate the product features using a license file.

NOTE: By default, the system is configured to use group-based routing. If you intend to use skills-based routing, the feature that allows you to change to skills-based routing must be enabled.

2.2.2 Communication platform connectivity and voice resources

To route telephone calls and gather statistics, the system monitors a set of key resources on the communication platform. Using the Manager application, you must configure a matching definition within OpenScape Contact Center for each resource on the communication platform.

For a list of communication platform resources, see [Section 11.3, "Communication platform resources"](#), on page 264.

To configure communication platform connectivity and voice resources:

1. Configure the communication platform settings.
2. Configure the default time-out extension.
3. Configure the resources for the communication platform. The resources depend on the type of communication platform to which you are connecting.

2.2.3 Configuring the corporate server connections

Depending on the features that are licensed, you must configure the connections to the corporate e-mail server for the OpenScape Contact Center e-mail feature, and to the corporate Web server for the OpenScape Contact Center Web-enabled features.

To configure the corporate e-mail server connections:

1. Configure the IMAP server settings that the OpenScape Contact Center E-mail Server uses to communicate with the corporate e-mail server to route incoming e-mail messages.
2. Configure the SMTP server settings that the OpenScape Contact Center E-mail Server uses to communicate with the corporate e-mail server to route outgoing e-mail messages.

To configure the corporate Web server connections:

1. Configure the port number of the unsecured port and TLS-enabled port that the Web Interaction Server uses to communicate with the corporate Web server.
2. Configure the port number that the Web Interaction Server uses to communicate with the corporate Web server for Web callback requests.
3. Configure the port number that the Web Interaction Server uses to communicate with the corporate Web server for Web callback requests, Web collaboration sessions, and VoiceXML integration.

2.2.4 Configure networking resources

If the networking feature is licensed, you must configure the networking resources. When networking is enabled at the site level, the site can accept and distribute contacts according to the details of the networking configuration at the site. You can disable a site's participation in networking to correct errors or otherwise modify the configuration.

To configure networking resources:

1. Configure the remote networked sites that the local site communicates with for networking purposes.
2. Configure the network transit numbers.

2.2.5 Configuring users and user-based resources

When you create a new user, you must specify at a minimum, the following attributes: the user's first name, last name, ID, user name, and either the password for OpenScape Contact Center authentication or the domain name for Windows authentication.

To configure users and user-based resources:

1. Configure groups for group-based routing, or skills and virtual groups for skills-based routing.
2. Configure departments.
3. Configure locations.
4. Configure users. You can configure each user manually, or you can create multiple users.
 - To create multiple users based on a user template, configure the user templates.
 - To create multiple users by importing a user list, create the user list.
 - If you created multiple users, complete the user definitions. For example, after creating multiple users based on a user template, you may need to assign users to departments and team lists.

2.2.6 Configuring wallboard and Broadcaster resources

To use the wallboard and Broadcaster, you must configure them to display messages.

To configure wallboard and Broadcaster resources:

1. Create wallboard definitions (optional).
2. Configure wallboard views.
3. Configure wallboard distributions.
4. Configure Broadcaster views.
5. Configure Broadcaster distributions.

2.2.7 Configuring the routing resources

For each media type that is licensed (for example, voice, e-mail), you must configure the routing resources.

To configure routing resources for each media type:

1. Configure queues.
2. Configure components for each workflow type.
3. Make a copy of the sample routing strategy workflow provided and modify it, as required.
4. Make a copy of the sample queue processing workflow provided and modify it, as required. You can skip this step if you want the communication platform to handle all queue processing.
5. If networking is licensed, make a copy of the sample networking workflow provided and modify it, as required.

2.2.8 Completing the setup

For each media type that is licensed (for example, voice, e-mail), you can configure further settings for handling contacts.

Complete the setup for each media type:

1. Configure the default routing strategy, queue, and error queue settings.
2. Configure the Unavailable reasons, Work reasons, and Wrap-up reasons.
3. For e-mail, configure the destinations, categories, templates, Discard reasons, and the remaining e-mail options, such as the default routing schedule. You can also display confidence levels, if required.
4. For callbacks, configure the Delete reasons, Retry reasons, Excluded numbers, and the remaining callback options, such as the default routing schedule.
5. For Web collaboration, configure the languages, standard messages, URLs, emoticons, monitored sources and destinations, and the remaining default options, such as the location for storing transcripts.
6. For networking, configure the acceptance and distribution settings, data exchange interval, and default networking workflow.

2.2.9 Configuring report definitions

A report definition defines the properties of a report. Some properties are common to all report types, while others options are specific to certain report types. A particular report definition depends on the report type, the resources that need to be reported on, the required format of the report, the report schedule, and so on. Many options are available.

2.2.10 Configuring Call Director

If Call Director is licensed, you must configure a voice processor to be used with the system. A voice processor is used with Call Director to play messages and interact with the caller.

IMPORTANT: When using the Communication Platform OpenScape Business, you cannot deactivate the feature "Call Director" in the **Features** tab of the **Options** window. This is due to the fact that the "Disconnect" node requires Call Director functionality for this switch type.

To configure Call Director:

1. Configure the voice processors.
2. Configure the Call Director subscriber numbers or Call Director extensions.

NOTE: When the system is configured for high availability (warm standby), redundant voice processors are required. For details, see [Section 18.1, "Call Director configuration in a high availability \(warm standby\) environment"](#), on page 386.

2.2.11 Validating the design database

You can check for and resolve any inconsistencies in the design database. For example, the system can find any servers or communication platform resources that are not configured, or users who are not included in a group.

2.3 Performing the initial Manager configuration

After the communication platform is configured and you have installed the OpenScape Contact Center server and client software and integrated the third-party components, you must configure the Manager application for first-time use.

This section provides an overview of the steps required to perform the initial Manager configuration. For detailed instructions, see the *Manager Help*.

NOTE: In a multitenant environment, to prevent conflicts between different business units, only a system administrator can activate product features and upload a design database. For details, see the *Manager Help*.

To perform the initial Manager configuration:

1. Log on to the Manager application and connect to the already configured design database.
2. Activate the product features in the production database using the same license file that you used to activate features in the design database, and then upload the design database.
3. After restarting the **OpenScape Contact Center** and **OpenScape Contact Center AutoPA** services, log on to the Manager application and connect to the production database.
4. If you have not already done so, change the default password for the Master Administrator user account to align with the organization's corporate security policy.
5. Ensure that the Config Sync feature is enabled.
6. In the **Telephony Center**, under **Communication Platform Resources**, ensure that the state is **Active** for the following resources. The resource types depend on the type of communication platform:
 - OpenScape Voice – User subscriber numbers, Music On Hold Hunt Groups, and Initial Hunt Groups
 - OpenScape 4000 or HiPath 4000 – User extensions and ACD groups
 - OpenScape Business – User extensions and UCD groups
7. In the **Administration Center**, under **Users**, ensure that the state is **Active** for all users (except supervisors or administrators who are not handling contacts).

Planning an implementation

Performing the initial Manager configuration

8. Ensure that the required .wav files are installed on the main server machine, and then assign the .wav files to the appropriate routing strategy and queue processing workflows.

NOTE: When the system is configured for high availability (warm standby), the .wav files are not replicated on the backup server machine. You must manually copy the .wav files to the WaveFiles folder on the backup server machine and ensure that the .wav files on the backup server machine and the primary server machine remain synchronized.

9. Configure wallboards, as required.

3 Getting started

This chapter introduces you to the Manager application and describes how to log on to the application.

3.1 About the Manager application

The Manager application provides contact center managers and supervisors with a unified, easy-to-use interface for performing all contact center management tasks.

Manager features include:

- An intuitive user interface for system configuration and user administration tasks.
- A powerful design tool for creating routing strategy and queue processing workflows.
- Real-time statistics and performance data that can be distributed to user desktops or wallboards.
- Customizable real-time, cumulative, and historical reports in graphical and tabular format.
- Built-in analytic model for predicting trends in operating conditions.
- Configurable alerts, thresholds, and notifications.
- Automatic detection and identification of synchronization errors or mismatched resources.

3.2 Logging on to the Manager application

Each Manager user has a unique user name, as well as a password that might be required to log on to the Manager application. Your user definition determines what permissions you have. If you do not have the Manager access permission, you cannot log on to the Manager application.

Your user definition also determines whether you use OpenScape Contact Center authentication or Windows authentication when you log on. If you use Windows authentication, you will not be able to log on to a design database, and you will not see the Logon dialog box when you start the Manager application. The Manager application will simply verify your Windows user name and then open.

Getting started

Logging on to the Manager application

On an OpenScape Contact Center client machine, you can run two instances of the Manager application at one time. For details, see [Section 3.2.2, “Running two Manager instances on a client machine”](#), on page 26.

NOTE: If you are logging on to the Manager application for the first time, you are logging on using the Master Administrator user account. For details, see [Section 3.2.1, “About the Master Administrator”](#), on page 25.

To log on to the Manager application:

1. On the **Start** menu, point to **Programs**, then **OpenScape Contact Center Enterprise**, and then click **Manager**. The application displays the Logon dialog box.
2. In the **Logon profile** list, select the logon profile you want to use. For information on how to save a logon profile, see [Section 3.2.3, “Saving a logon profile”](#), on page 27.
3. To log on to the default database, proceed directly to step 4. To log on to a database other than the default database, click **Options**, and then do one of the following:
 - To connect to the production database:
 - In the **Connect to** list, select **Production Database**.
 - In the **Administration Server** box, type the address of the Administration Server on the main server machine in the format *portnumber@servername*. The default is *6000@servername*.

NOTE: When the system is configured for high availability (warm standby), in most cases, you should connect using the server cluster name in the format *portnumber@clustername* so that you access the active server machine. In a few cases, such as when you are activating product features using a license file, you must log on using the physical machine name in the format *portnumber@servername*.

- In a multitenant environment only, in the **Business unit** box, type the name of the business unit you want to log on to. If you want to perform system administrator tasks, you must log on to the system-level business unit. In this case, type **system**. In a non-multitenant environment, this value is ignored. For details on multitenancy, see [Chapter 19, “Working with the multitenancy feature”](#).

- To connect to a design database:
 - In the **Connect to** list, select **Design Database**.
 - In the **Design database file name** box, type the full path and file name for the database. You can click  to locate and select the database file. If you specify a database name that does not exist, the application will create a new blank design database. If you attempt to connect to a design database that uses an unsupported communication platform type, the application will prompt you to upgrade the database and select a supported type.
 - In a multitenant environment only, in the **Business unit** box, type the name of the business unit.
- 4. In the **User name** box, type your user name.
- 5. In the **Password** box, type your password.
- 6. Click **OK**.

3.2.1 About the Master Administrator

The Master Administrator is a default user account configured in each newly created OpenScape Contact Center database. The Master Administrator user account has access to all the functions in the Manager application. The default user name for the Master Administrator is **master**, and the default password is **password**. You should change the default Master Administrator password the first time you log on, and then change it periodically to conform to security policies at your site. For details, see [Section 20.2.2, “Changing the password”, on page 407](#).

NOTE: In a multitenant environment, the following restrictions apply: 1) The Master Administrator user accounts that are created at the system level and the business unit level have limited access to the Manager functions. For details, see [Section 19.3, “Administrator roles in a multitenant environment”, on page 392](#). 2) The password for the business unit Master Administrator is defined by the system administrator when the business unit is created. For details, see [Section 19.5.1, “Configuring a business unit”, on page 394](#). 3) On a central reporting server machine, the system administrator can only view business unit resources, so the system administrator cannot change the password for the business unit Master Administrator.

Getting started

Logging on to the Manager application

If the Master Administrator remains logged on but inactive for a configured period of time, the Master Administrator is logged off automatically. For details on how to configure the time-out interval for the Master Administrator account, see [Section 20.4, "Configuring the application options"](#), on page 416.

3.2.2 Running two Manager instances on a client machine

On an OpenScape Contact Center client machine, you can run two instances of the Manager application at one time. This allows you to connect to two different server machines (for example, the main server machine and the central reporting server machine) at the same time.

The following restrictions apply:

- You cannot run two instances of the Manager application using the same user name to log on to the same Administration Server (and using the same business unit in a multitenant environment).
- You cannot run two instances of the Manager application against the same design database.
- When you run two instances of the Manager application at one time, two Manager licenses are consumed.
- If you use Windows authentication, the first instance of the Manager application will verify your Windows user name and then open, but the second instance will display the Logon dialog box.

NOTE: You cannot run more than one instance of the Manager application on an OpenScape Contact Center server machine.

You can save a logon profile to simplify logging on to more than one instance of the Manager application. For details, see [Section 3.2.3, "Saving a logon profile"](#), on page 27.

3.2.3 Saving a logon profile

To simplify logging on to more than one instance of the Manager application, you can save a logon profile during the logon process.

To save a logon profile:

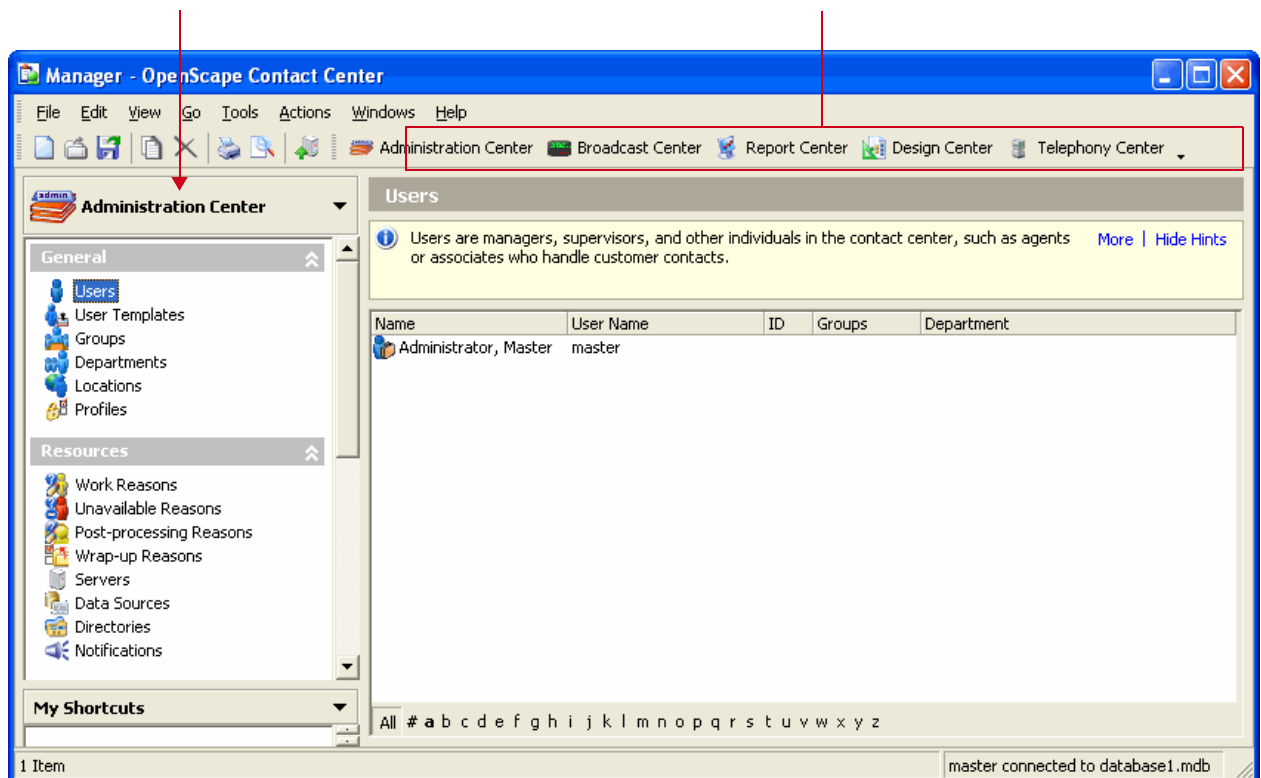
1. In the **Logon** dialog box, click **Options**.
2. After you have entered the required user name, password, and connection settings, click **Save Profile**.
3. In the **Save Logon Profile** dialog box, type a name for the logon profile you want to save, and then click **OK**. The logon profile is selected when you return to the Logon dialog box and will be available the next time you log on.

3.3 About the user interface

The Manager application has five main work centers dedicated to helping you perform key contact center management tasks: Administration Center, Broadcast Center, Design Center, Report Center, and Telephony Center.

Selected Manager work center

Access to other work centers



3.3.1 Administration Center

The Administration Center provides a central point of administration for all user-related configuration. The Administration Center is the area where you define and manage resources, such as users, user templates, profiles, data sources, directories, and notifications.

3.3.2 Broadcast Center

The Broadcast Center provides a fully integrated and powerful communication tool for keeping your contact center personnel informed at all times. You can send real-time statistics and performance data for all media types to wallboards or directly to user desktops via the Broadcaster.

The Broadcast Center is the area where you define and manage wallboard and Broadcaster views and definitions.

3.3.3 Design Center

The Design Center provides a powerful workflow-style tool for defining intelligent routing strategy and queue processing workflows to handle all multimedia contact center interactions.

To streamline the creation of workflows, OpenScape Contact Center provides a library of configurable and reusable routing strategy and queue processing components. A drag-and-drop interface allows you to configure workflows that are automatically validated for completeness as they are created.

The Design Center is the area where you define and manage the queues and workflows that determine how incoming contacts are routed.

3.3.4 Report Center

The Report Center provides a powerful, yet easily customized reporting engine for defining and viewing real-time, cumulative, and historical reports for all media types. Versatile reporting allows for better operational monitoring, more effective decision making, and the ability to proactively recognize and respond to patterns before they become issues.

The Report Center is the area where you define and manage the reports that provide insight into your contact center operations.

3.3.5 Telephony Center

The Telephony Center simplifies the synchronization between OpenScape Contact Center and the communication platform. The Telephony Center is the area where you configure the OpenScape Contact Center communication platform resources and other external components that OpenScape Contact Center monitors to route contacts and collect statistics for reporting.

Getting started

About the user interface

4 Working with users, templates and profiles

This chapter describes how to configure user definitions, as well as how to work with user templates and profiles.

4.1 Configuring a user

To use the Manager application, a user definition must be configured in the Manager application. Factors such as hiring, attrition, and contact center expansion require that user definitions be created, deleted, and modified on a regular basis. Administrators are normally responsible for configuring all users in the contact center. Administrators cannot modify their own user definitions.

NOTE: To create or change a user, you must have Full or Modify access, respectively, for the **Users** Manager permission. If the enhanced security option is enabled, you must also have the required security access to change the user. For details on the enhanced security option, see [Section 20.3.4, "Configuring the enhanced security option", on page 414](#).

NOTE: In a multitenant environment, this procedure describes how to configure users at the business unit level. To configure users at the system level, see [Section 19.5.2, "Configuring a user at the system level", on page 396](#).

For users who have voice capabilities/access, you must ensure that there is a matching user definition on the communication platform. You can use the Config Sync feature to assist with the management of users. For details, see [Section 11.4.1, "Config Sync treatment of user](#)

IDs”, on page 266.

NOTE: When you are on a central reporting server machine (see [Chapter 17, “Working with central reporting”](#)), you can configure only users who can administer the central reporting server machine and perform reporting operations on the replicated data. These users cannot be reported on (that is, they will not appear in the list of users that are presented when configuring a report).

NOTE: If you are integrating with Microsoft CRM, there are some special user requirements. For details, see [Chapter 21, “Microsoft CRM integration”](#).

Overview

The following is an overview of the steps required to configure all the attributes in a user definition:

1. Configure the general user properties – see [Section 4.1.1, “Configuring the general user properties”](#), on page 33.
2. Configure the user permissions – see [Section 4.1.2, “Configuring the user permissions”](#), on page 36.
3. Configure the contact handling settings for the user – see [Section 4.1.3, “Configuring the contact handling settings for a user”](#), on page 38.
4. Configure the media-specific settings for the user – see [Section 4.1.4, “Configuring the media-specific settings for a user”](#), on page 40.
5. Configure the thresholds for the user – see [Section 4.1.6, “Configuring the thresholds for a user”](#), on page 42.
6. Configure the resources that the user can monitor – see [Section 4.1.7, “Configuring the resources a user can monitor”](#), on page 45.
7. Configure the Team List for the user – see [Section 4.1.8, “Configuring the reports for a user”](#), on page 46.
8. Configure the reports that display data about the user – see [Section 4.1.8, “Configuring the reports for a user”](#), on page 46.

- Configure the users who can modify this user, and the resources that the user can modify – see [Section 4.1.9, "Configuring the security settings for a user"](#), on page 47.

NOTE: You can also create new users based on a user template (see [Section 4.2, "About user templates"](#)).

4.1.1 Configuring the general user properties

You can configure the general user properties, such as the user's name, system identification settings, department, and so on.

When creating a new user, as a minimum, you must specify the user's first name, last name, ID, user name, and either the password for OpenScope Contact Center authentication or the domain name for Windows authentication.

To configure the general user properties:

- On the **File** menu, point to **New**, then **Administration Center**, then **User**, and then click **User**.

Configure the general properties for this user

User

First name:

Last name:

System Identification

ID:

User name:

Authentication:

Password:

Verify password:

Templates

User template:

Broadcaster

Distribution:

Application

Application	Permissions	License Used
Manager	No	-
Client Desktop	No	-
System Monitor	No	-

Automatic Post-processing

Enable: ☐

Maximum time: mm:ss

Wrap-up reason required: ☐

Settings

Real-Time Server:

Department:

Location:

Working with users, templates and profiles

Configuring a user

2. On the **General** tab, under **User**, do the following:
 - In the **First name** box, type the user's first name.
 - In the **Last name** box, type the user's last name.
3. Under **System Identification**, do the following:
 - In the **ID** box, type a unique, numerical ID used to identify the user on the communication platform. If you are using the Config Sync feature and the ID you provide is not within a monitored domain range, you will be prompted to create a new Config Sync domain range. For more information, see [Section 11.4, "About Config Sync"](#), on page 265.
 - In the **User name** box, type a unique user name. This name is used when logging on to the Manager application and for recording statistics. If you want to use the Windows authentication method, the user name must match the name used for logging on to the Windows domain.
 - In the **Authentication** list, select one of the following:
 - To have the system validate the user, select **Use OpenScape Contact Center**, type the password in the **Password** box, and then type it again in the **Verify password** box to ensure that you typed it correctly.

NOTE: If you are configuring an SAP CIC user (see step 6), you must use OpenScape Contact Center authentication and the password must match the password specified in the SAP system.

- To have Windows validate the user, select **Use Windows**, and then type the NetBIOS name for the Windows domain in the **Domain** box. Ensure that the user name matches the name used for logging on to the Windows domain. When you select this option, this user will not be able to log on to a design database, and will not see the Logon window when starting the Manager application.
4. To set the user attributes based on a user template (see [Section 4.2, "About user templates"](#), on page 49), under **Templates**, click **Change** and select the user template you want to apply to the user from the list. If you later change an attribute in the user record or user template, an indicator shows that the template association is not current. For details, see [Section 4.2.1, "User template associations"](#), on page 50.
 5. Under **Broadcaster**, in the **Distribution** list, select the name of the Broadcaster distribution that you want the user to be assigned to.

6. Under **Application**, specify the user's access to the three OpenScape Contact Center applications. For each application, click the item in the **Permissions** column and select the access from the list. For the Manager and System Monitor applications, the access is simply **Yes** or **No**. The **License Used** column shows the type of license used based on your selection. You can check the product features to see how many licenses are available for the contact center.
7. Under **Automatic Post-processing**, do the following:
 - To have the system automatically place the user in Post-processing handling state after the user disconnects from a contact, select the **Enable** check box. If you configure this option, do not configure the Autowork feature for this user on the communication platform.
 - If you specify a time in the **Maximum time** box, the user will remain in Post-processing handling state for the duration of time specified.
 - To have the user remain in Post-processing handling state until a Wrap-up reason has been saved for the contact, select the **Wrap-up reason required** check box. If a Maximum time has also been specified, the user will remain in Post-processing handling state for the time specified after the user saves a Wrap-up reason.
8. Under **Settings**, do the following:
 - In the **Real-Time Server** list, select the Real-Time Server to which the user can connect. Your contact center may have only one main Real-Time Server (in which case there will be only one item in the list) or a number of auxiliary Real-Time Servers (see [Section 5.3.4, "Configuring a Real-Time Server on an auxiliary server machine"](#), on page 74).
 - To include statistics for this user in department-based reports, in the **Department** list, select a department for the user.
 - To enable user reports to be based on the time zone of the user's location, in the **Location** list, select the location of the user.
9. If you are finished working with this user definition, click **OK**.

4.1.2 Configuring the user permissions

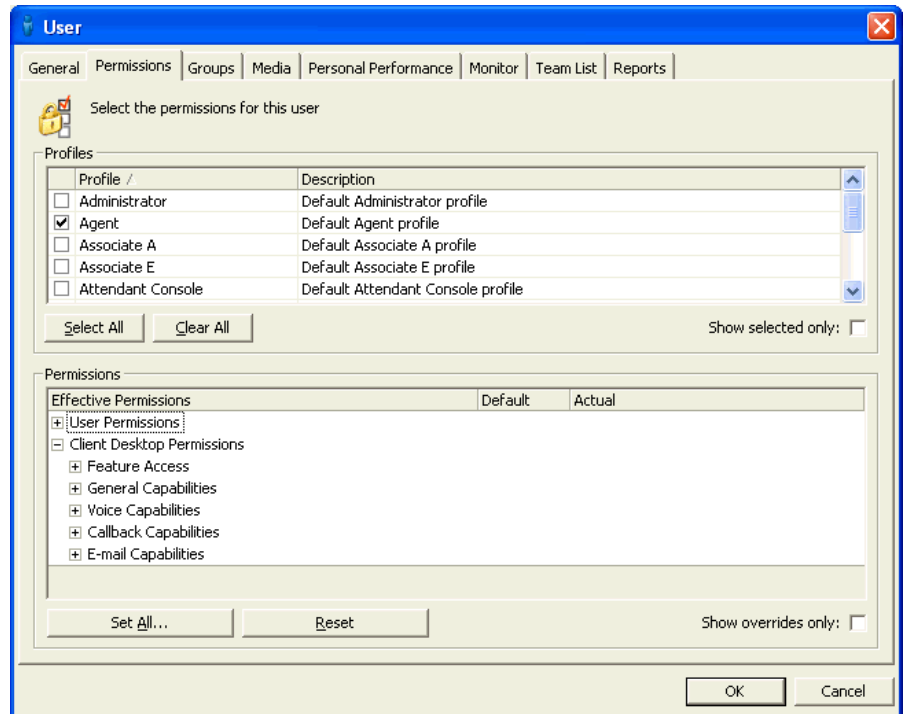
Permissions control the user's access to the Manager application features and the resources that the user can work with. Although you can assign each permission individually, you normally specify one or more user profiles to save time. For details, see [Section 4.3, "About user profiles", on page 58](#). You can use the default permissions as defined in the selected profile or you can modify the permissions, as required.

IMPORTANT: Use care when assigning permissions. The ability for a user to create other users and change their permissions should be strictly controlled.

NOTE: For some permissions, you must configure other settings in the Manager application. For example, if you want a user to have access to an external directory in the Mobile Supervisor application, you enable the **Directory** Supervisor permission, and then configure the contact lookup settings in the Options dialog box.

To configure the user permissions:

1. In the **Administration Center**, under **General**, click **Users**, and then, in the right pane, double-click the user you want to configure.
2. Click the **Permissions** tab.



3. In the **Profiles** table, select the check box for each profile that you want to assign to the user. If two or more profiles are selected, the user's actual access level is changed to the highest access level of the selected profiles.
4. Optionally, in the **Permissions** table, modify the default permissions. For each function you want to change, click the item in the **Actual** column and select the access level from the list. For a description of the access levels, see [Section 4.3.3, "Access levels"](#), on page 62.

NOTE: You can click **Reset** to reset the effective permissions to the default access levels.

5. To show only the permissions in the list for which the default access level has been modified, select the **Show overrides only** check box.
6. If you are finished working with this user definition, click **OK**.

4.1.3 Configuring the contact handling settings for a user

When the system is configured for group-based routing, you must select the groups that a user belongs to. The groups that you select determine the types of contacts that the user is eligible to receive. For more information, see [Section 8.1, "About group-based routing", on page 157](#).

When the system is configured for skills-based routing, you must select the skills that a user possesses. The skills that you select for the user determine the types of contacts that the user is eligible to receive. For more information on skills-based routing, see [Section 8.2, "About skills-based routing", on page 160](#).

When the system is configured for multiple contact handling, you must select the contact handling rules for the user. The rules that you select determine the number and types of contacts that the user can handle at one time. For more information on multiple contact handling, see [Section 8.3, "About multiple contact handling", on page 165](#).

NOTE: The Contact Handling tab in the User dialog box becomes active only when you select the **Receive contacts routed by OpenScape Contact Center** User permission.

To configure the contact handling settings for a user:

1. In the **Administration Center**, under **General**, click **Users**, and then, in the right pane, double-click the user that you want to configure.
2. Click the **Contact Handling** tab.
3. If the system is configured for group-based routing, under **Include**, select the check box for each group to which you want to assign this user. You can select up to 10 groups.
4. If the system is configured for skills-based routing, under **Include Skills**, select the check box for each skill that you want to assign to this user. You must configure the skills before they can be selected on this tab. For details, see [Section 8.2.2, "Configuring a skill", on page 161](#).

5. If skill levels are displayed, the value from the **Prefill level** box is entered automatically in the **Level** column. If you want to change this value, click the cell in the table and select a new value from the list.

NOTE: To specify the skill level that will be entered automatically into the **Level** column when you select a skill in the list, type or select a value in the **Prefill level** box. For more information, see [Section 8.4.7, "Displaying skill levels", on page 178](#).

6. If skill preferences are displayed, the value from the **Prefill preference** box is entered automatically in the **Preference** column. If you want to change this value, click the cell in the table and select a new value from the list.

NOTE: To specify the skill preference that will be entered automatically into the **Preference** column when you select a skill in the list, type or select a value in the **Prefill preference** box. For more information, see [Section 8.4.8, "Displaying skill preferences", on page 179](#).

7. To see the virtual groups that the user is eligible to be included in based on the selected skills, click **Show Eligible Virtual Groups**.
8. If the system is configured for multiple contact handling, under **Include Rules**, select the check box for each contact handling rule that you want to apply to this user. You must configure the rules before they can be selected on this tab. For details, see [Section 8.3.1, "Configuring a contact handling rule", on page 167](#).
9. If you are finished working with this user definition, click **OK**.

4.1.4 Configuring the media-specific settings for a user

For each user, you can configure the following settings that are specific to the media type:

- **Voice** – The backup group to be used if the OpenScape Contact Center system goes down. Also, if SAP ICI applications have been licensed, the SAP ICI integration settings.

NOTE: When the system is connected to an OpenScape Voice communication platform, a backup group is not required. In this case, if only the voice media has been licensed, the Media tab will be disabled.

NOTE: Multiple contact handling is not supported for SAP ICI users. If you configure the SAP ICI integration settings, only the system-defined single contact handling rules are available on the Contact Handling tab. If you have already selected a user-defined contact handling rule, the SAP ICI integration settings will be unavailable. For more information, see [Section 8.3, "About multiple contact handling"](#), on page 165.

- **E-mail** – The queue to which the user's e-mail messages are sent if you want to monitor the user silently.
- **Web collaboration** – The greeting and user message prefix that override the default settings configured for each Web collaboration language, if required. For details on the default Web collaboration settings, see [Section 15.5.1, "Configuring a Web collaboration language"](#), on page 342.

To configure the media-specific settings for a user:

1. In the **Administration Center**, under **General**, click **Users**, and then, in the right pane, double-click the user you want to configure.
2. Click the **Media** tab.
3. Under **Voice Settings**, select the backup group to be used if the OpenScape Contact Center system goes down and the communication platform is used to route calls. The backup routing configuration depends on the type of communication platform:
 - OpenScape 4000 or HiPath 4000 – In the **Backup ACD group** list, select the backup ACD group for the user.

- OpenScape Business – In the **Backup UCD group** list, select the backup UCD group for the user.
4. To enable SAP ICI integration for the user (available only if licensed), select the **Enable SAP ICI integration** check box, and then do the following:
 - In the **SAP ID** box, type the user ID required for the SAP ICI application.
 - In the **Extension** box, type the user extension required for the SAP ICI application.
 5. If this user has e-mail permission, under **E-mail Settings**, in the **Silent monitoring queue** list, select the e-mail queue to which the user's e-mail messages are queued after the user sends them. This feature allows the e-mail messages to be reviewed by a manager or supervisor before they are sent to a customer. This feature is optional.
 6. If this user has Web collaboration permission, under **Web Collaboration Settings**, you can override the default greeting and user message prefix for each configured language, if required:
 - To override the Web collaboration settings for a language, click **Add**, and then configure the new Web collaboration settings (see [Section 4.1.5, "Configuring the Web collaboration settings for a user"](#), on page 41).
 - To update an existing Web collaboration override, select a line in the list, click **Edit**, and then edit the Web collaboration settings (see [Section 4.1.5, "Configuring the Web collaboration settings for a user"](#), on page 41).
 - To delete an existing Web collaboration override, select a line in the list, and then click **Delete**.
 7. If you are finished working with this user definition, click **OK**.

4.1.5 Configuring the Web collaboration settings for a user

When you are configuring the media-specific settings for a user (see [Section 4.1.4, "Configuring the media-specific settings for a user"](#), on page 40), you can override the default greeting and user message prefix that are configured for a Web collaboration language, if required. You can configure only one override for each Web collaboration language.

To configure the Web collaboration settings for a user:

1. In the **Web Collaboration Settings** dialog box, in the **Languages** list, select the language for which you want to override the default settings. You must have already created the language you want to select.
2. In the **Greeting** box, type the greeting that you want to use instead of the selected language's default greeting.
3. In the **User message prefix** box, type the user message prefix that you want to use instead of the language's default user message prefix.
4. To insert a tag into either of the boxes, click **Insert Tag** and select one of the following tags from the list:

<USERNAME>	Displays the name of the contact center user, as defined in the Manager application.
<TIME12>	Displays the time in 12-hour format, with an AM or PM suffix.
<TIME24>	Displays the time in 24-hour format.
<DATE>	Displays the date in YYYY/MM/DD format.
<NAME>	Displays the customer's name.

NOTE: To ensure that the date format displayed in the Web Collaboration - Contact Details window matches the date format selected in the Windows Regional and Language options, you must select the language to be used for standards and formats, as well as for non-Unicode programs. If different languages are selected in these two places, the date format might not be displayed as expected.

5. To change the font style of the selected text, click .
6. Under **Preview**, view a preview of the selected text, including the actual value of any inserted tags.
7. Click **OK**.

4.1.6 Configuring the thresholds for a user

The system can display statistics in the users application based on whether a user has exceeded certain personal performance thresholds. These statistics can help to show how well the user is handling

contacts. You can set thresholds for values such as the maximum post-processing time, maximum handling time (for each media type), and utilization.

NOTE: The Thresholds tab in the User dialog box becomes active only when you select the **Receive contacts routed by OpenScape Contact Center** and **Personal performance** permissions. You must enable the **Receive contacts routed by OpenScape Contact Center** permission before you can select the **Personal performance** permission.

To configure the thresholds for a user:

1. In the **Administration Center**, under **General**, click **Users**, and then, in the right pane, double-click the user you want to configure.
2. Click the **Thresholds** tab.

Configure the personal performance thresholds for this user

Values

Maximum post-processing time: 00 : 05 : 00 hh:mm:ss

Average post-processing time: 00 : 03 : 00 hh:mm:ss

Utilization: 80 %

	Voice (mm:ss)	E-mail (hh:mm:ss)
Maximum handling time	06 : 40	00 : 21 : 40
Average handling time	04 : 10	00 : 16 : 40
Maximum handling time excluding post-processing	05 : 00	00 : 20 : 00
Average handling time excluding post-processing	03 : 00	00 : 15 : 00

E-mail

Maximum defer count: 3

Maximum external consult count: 3

OK Cancel

3. Under **Values**, do the following:
 - In the **Maximum post-processing time** box, type the maximum amount of time that the user should spend in Post-processing handling state while completing a contact.
 - In the **Average post-processing time** box, type the average amount of time that the user should spend in Post-processing handling state while completing a contact.

Working with users, templates and profiles

Configuring a user

- In the **Utilization** box, type the percentage of time the user should spend handling a contact. The Utilization calculation is based on the total time that the user is logged on to the communication platform. You can change the Utilization calculation to include Available time in addition to Work time. For details, see [Section 20.7.3, "Configuring the user calculation", on page 435](#).
4. In the grid, specify the following thresholds for each media type:
- In the **Maximum handling time** box, type or select the maximum amount of time that the user should spend handling a routed contact.
 - In the **Average handling time** box, type or select the average amount of time that the user should spend handling a routed contact.
 - In the **Maximum active time** box (available only when the system is configured for multiple contact handling), type or select the maximum amount of time that a routed contact should be active for the user.
 - In the **Average active time** box (available only when the system is configured for multiple contact handling), type or select the average amount of time that a routed contact should be active for the user.
 - In the **Maximum non-primary time** box (available only when the system is configured for multiple contact handling), type or select the maximum amount of time that a routed contact should be active but not primary.
 - In the **Average non-primary time** box (available only when the system is configured for multiple contact handling), type or select the average amount of time that a routed contact should be active but not primary.
 - In the **Maximum handling time excluding post-processing** box, type or select the maximum amount of time that the user should spend handling a routed contact, not including the time spent post-processing the contact.
 - In the **Average handling time excluding post-processing** box, type or select the average amount of time that the user should spend handling a routed contact, not including the time spent post-processing the contact.
5. If this user has e-mail permission, under **E-mail**, do the following:
- In the **Maximum defer count** box, type the maximum number of e-mail messages that the user should defer.

- In the **Maximum external consult count** box, type the maximum number of e-mail messages that the user should forward to external users for consultation.

6. If you are finished working with this user definition, click **OK**.

4.1.7 Configuring the resources a user can monitor

You can configure a user to monitor other resources in the OpenScape Contact Center database, such as users, groups, queues and aggregates. Monitoring permission is usually given only to supervisors, managers, and administrators.

When a user has monitoring permission for a resource, the user can:

- View statistics for the resource.
- Create a Broadcaster or wallboard view item about the resource in the Broadcast Center.
- Report on the resource in the Report Center.

When the monitored resource is a user, a user can:

- Edit and run reports owned by the monitored user.
- Assign the monitored user as the owner of reports.
- Add the monitored user to a Team List.
- View and edit Broadcaster and wallboard views owned by the monitored user.

NOTE: You cannot change your own monitored resources.

To configure the resources a user can monitor:

1. In the **Administration Center**, under **General**, click **Users**, and then, in the right pane, double-click the user you want to configure.
2. Click the **Monitor** tab.
3. Under **Include**, in the **Show** list, select the type of resource to be monitored.
4. Select the resources you want the user to monitor in one of the following ways:

Working with users, templates and profiles

Configuring a user

- To have the user monitor all resources in the list, select the **Monitor All** check box.

NOTE: You can select the Monitor All check box only if your own user definition has the Monitor All capability.

- To have the user monitor only some of the resources in the list, select the check box for each item you want the user to monitor.
5. Repeat steps 3 and 4 for each type of resource to be monitored.
 6. If you are finished working with this user definition, click **OK**.

4.1.8 Configuring the reports for a user

You can configure the reports that display data about a user.

NOTE: The Reports tab in the User dialog box becomes active only when you select the **Receive contacts routed by OpenScape Contact Center** User permission.

To configure the reports for a user:

1. In the **Administration Center**, under **General**, click **Users**, and then, in the right pane, double-click the user you want to configure.
2. Click the **Reports** tab.

3. Under **Reports**, in the **Select by** box, do one of the following:
 - Select **User**, and then select the check box for each report that you want to display data about this user. The list contains only the reports you own, or reports that are owned by users you can monitor.
 - Select **Department**, and then view the reports that display data about this user's department.
 - Select **Group** (or **Virtual Group**), and then view the reports that display data about this user's group (or virtual group).

NOTE: When **Department** or **Group** (or **Virtual Group**) is selected in the **Select by** box, you can only view the reports that display information about this user's department or group (or virtual group). You cannot add individual users to or remove individual users from these reports. Also, the list of reports shown on the Reports tab is not dynamically updated if the user's department or group (or virtual group) is changed while the User dialog box is open.

NOTE: When you are editing a user definition that is associated with a user template, the reports in the list that are associated with the user template are read-only. If you want to remove one of those reports from the user definition, you must either break the user's association with the user template, or remove the report from the user template and update all users (in which case, all users associated with the user template will be removed from the report).

4. If you are finished working with this user definition, click **OK**.

4.1.9 Configuring the security settings for a user

The enhanced security feature provides an additional level of security for the contact center. If the enhanced security option is enabled, you can:

- Configure the users who can modify this user.
- Configure the resources in the OpenScape Contact Center database that the user can modify.

Modify permission is usually given only to administrators.

Working with users, templates and profiles

Configuring a user

For details on the enhanced security option, see [Section 20.3.4, "Configuring the enhanced security option"](#), on page 414.

To configure the security settings for a user:

1. In the **Administration Center**, under **General**, click **Users**, and then, in the right pane, double-click the user you want to configure.
2. Click the **Security** tab.
3. To configure the users who can modify this user, do the following:
 - a) Under **Configure**, select **Users who can modify this user**. This option is disabled if the user you are configuring does not have access to the Manager application.
 - b) Under **Users**, select the check box for each user who you want to be able to modify this user. The list contains only the users who have Full or Modify access for the **Users** Manager permission.
4. To configure the resources that the user can modify, do the following:
 - a) Under **Configure**, select **Resources this user can modify**. This option is disabled if the user does not have Full or Modify access permission for any of the eligible resources.
 - b) Under **Include**, in the **Show** list, select the type of resource that you want to configure. The list contains only the resource types for which both you and the user have Full or Modify access permission.
 - c) In the resulting list, select the check box for each resource that you want this user to be able to modify.
5. If you are finished working with this user definition, click **OK**.

4.2 About user templates

User templates are very useful for the initial configuration of a large number of users. Instead of setting the attributes individually for each new user, you can assign most of the attributes to many users at one time.

When you configure a user template (see [Section 4.2.2, “Configuring a user template”, on page 50](#)), you specify all the user attributes except the following attributes which must be set individually for each new user:

- First name
- Last name
- ID
- User name
- Password (only if using OpenScape Contact Center authentication)
- SAP ID and SAP extension (only if SAP ICI applications have been licensed)

You can then use a template to create a single user or multiple users. For details, see the following topics:

- [Section 4.2.3, “Creating a user based on a user template”, on page 53](#)
- [Section 4.2.4, “Creating multiple users based on a user template”, on page 55](#)

You specify the default user template in the Options dialog box. For details, see [Section 20.1, “Configuring the personal options”, on page 403](#).

NOTE: If you intend to maintain the configuration of users within your contact center through the use of user templates, we recommend that you use only the templates to change the user properties, rather than changing the properties within other resources that have an association with the user. For example, if you want to change the users that are assigned to a particular department, you should change the department within the user template, rather than changing the users selected on the Users tab within the department, or changing the department selected within each user record. This will ensure that the association with the user template is maintained. For more information, see [Section 4.2.1, “User template associations”, on page 50](#).

4.2.1 User template associations

Each user template contains a list of users that are associated with that user template. The association between a user and a user template remains until an attribute (other than a user-specific attribute) is changed in the user record or user template record, at which time the association is broken. The association between a user and a user template is also broken if the user or user template is deleted.

If you break a user template association, the user record shows the last template applied to the user, with a clear indication that the association is historical rather than active.

When you update a user template, you can choose to update the user template only or to update all users associated with the user template. For details, see [Section 4.2.2.3, "Updating a user template", on page 52](#).

If a user report is part of a user template and you use the User Report dialog box to perform any of the following tasks, it will not change the user's template association:

- Add the user to a new report.
- Add the user to an existing report.
- Remove the user from an existing report.

In each of these scenarios, the user's template association will be maintained and neither the template nor any other users associated with the template will be affected.

NOTE: If a user report is part of a user template and you change the Report by and Select by options in the report to anything other than User, the report is removed from the user template and the user definitions that are associated with that template, but the user template associations are maintained.

4.2.2 Configuring a user template

You can configure user templates in several ways. For details, see the following topics:

- [Section 4.2.2.1, "Creating a user template"](#)
- [Section 4.2.2.2, "Creating a user template based on an existing user"](#)

- [Section 4.2.2.3, “Updating a user template”](#)

NOTE: To create or change a user template, you must have Full or Modify access, respectively, for the **User templates** Manager permission. If the enhanced security option is enabled, you must also have the required security access to change the user template. For details on the enhanced security option, see [Section 20.3.4, “Configuring the enhanced security option”](#), on page 414.

4.2.2.1 Creating a user template

You can create a new user template as described in this topic.

To create a user template:

1. On the **File** menu, point to **New**, then **Administration Center**, and then click **User Template**.
2. On the **General** tab, under **User Template**, do the following:
 - In the **Name** box, type a unique name for the user template.
 - In the **Description** box, type a description for the user template.
3. Under **Template**, click **Edit**.
4. Modify the settings (other than the user-specific attributes) in the same way that you configure the settings for a user. When you are finished, click **OK** to return to the user template dialog box.
5. Click the **Users** tab.
6. Under **Users**, select the check box for each user who you want to associate with this template. To select multiple users, hold down CTRL or SHIFT and click to select the users, and then press the SPACE bar. When you press the SPACE bar, all cleared check boxes will be selected and all selected check boxes will be cleared.
7. Click the **Security** tab. This tab is available only if the enhanced security option is enabled. For details, see [Section 20.3.4, “Configuring the enhanced security option”](#), on page 414.
8. Under **Users**, select the check box for each user who you want to be able to modify this user template. The list contains only the users who have Full or Modify access to the **User templates** Manager permission.
9. Click **OK**.

4.2.2.2 Creating a user template based on an existing user

You can create a user template based on an existing user definition.

To create a user template based on an existing user:

1. In the **Administration Center**, under **General**, click **Users**.
2. In the right pane, select the user on which you want to base the new user template.
3. On the **Actions** menu, select **Create Template from User**.
4. On the **General** tab, under **User Template**, do the following:
 - In the **Name** box, type a unique name for the user template.
 - In the **Description** box, type a description for the user template.
5. Under **Template**, click **Edit**.
6. Modify the settings (other than the user-specific attributes) in the same way that you configure the settings for a user. For details, see [Section 4.1, "Configuring a user", on page 31](#).

4.2.2.3 Updating a user template

When you update a user template, you can choose to update the user template only or to update all users associated with the user template.

To update a user template:

1. In the **Administration Center**, under **General**, click **User Templates**.
2. In the right pane, double-click the user template that you want to change.
3. Under **Template**, click **Edit**.
4. Modify the settings (other than the user-specific attributes) in the same way that you configure the settings for a user. See [Section 4.1, "Configuring a user", on page 31](#).
5. Click the **Users** tab.
6. Under **Users**, select the check box for each user who you want to associate with this template. To select multiple users, hold down CTRL or SHIFT and click to select the users, and then press the SPACE bar. When you press the SPACE bar, all cleared check boxes will be selected and all selected check boxes will be cleared.

7. Click **OK**.
8. In the **User Template Updates** dialog box, do one of the following:
 - To update the user template with your changes, select **Update template only**. If you choose this option, the association between the template and any users created based on the template will be broken and will be indicated as historical rather than active in the User dialog box.
 - To update all currently associated users with your changes, select **Update all users**. In this case, the association between the template and all users created based on the template will be maintained.
9. Click **OK**.

4.2.3 Creating a user based on a user template

Instead of setting the attributes individually for each new user, you can create a new user based on the default user template. For more information, see [Section 4.2, "About user templates", on page 49](#). You specify the default user template in the Options dialog box (see [Section 20.1, "Configuring the personal options", on page 403](#)).

Only the following user-specific attributes must be set individually for each new user: the first name, last name, ID, user name, password, and, if SAP ICI applications have been licensed, SAP ID and SAP extension.

To create a user based on a user template:

1. On the **File** menu, point to **New**, then **Administration Center**, and then click **User**, and then click **User from Default Template**. A User dialog box that contains the attributes of the selected user template is displayed.
2. On the **General** tab, under **User**, do the following:
 - In the **First name** box, type the user's first name.
 - In the **Last name** box, type the user's last name.

Working with users, templates and profiles

About user templates

3. Under **System Identification**, do the following:

- In the **ID** box, type a unique, numerical ID used to identify the user on the communication platform.
- In the **User name** box, type a unique user name. This name is used when logging on to the Manager application and for recording statistics.
- In the **Authentication** list, do the following:
 - To have the system validate the user, click **Use OpenScape Contact Center**, type the password in the **Password** box, and then type it again in the **Verify password** box to ensure that you typed it correctly.

NOTE: If you are configuring an SAP CIC user, you must use OpenScapeContactCenterauthenticationandthepasswordmustmatch the password specified in the SAP system.

- To have Windows validate the user, click **Use Windows**, and then type the NetBIOS name of the Windows domain in the **Domain** box. Ensure that the user name is the same in both Windows and OpenScape Contact Center. When you select this option, this user will not see the **Logon** window when starting the Manager application.

4. If SAP ICI applications have been licensed, click the **Media** tab and do the following:

- Select the **Enable SAP ICI integration** check box.
- In the **SAP ID** box, type the user ID required for SAP ICI applications.
- In the **Extension** box, type the user extension required for SAP ICI applications.

5. Click **OK**.

4.2.4 Creating multiple users based on a user template

When you are connected to a design database, you can create multiple users based on a user template simultaneously. For more information, see [Section 4.2, "About user templates", on page 49](#).

NOTE: You cannot create multiple users when you are connected to a production database.

For each user you create, you must provide the user-specific attributes (that is, first name, last name, ID, user name, password, and, if SAP ICI applications have been licensed, SAP ID and SAP extension). The remaining attributes are set based on a specified user template.

You also have the option of creating multiple users by importing a text file that lists the user-specific attributes. For details, see [Section 4.2.5, "Creating multiple users by importing a text file", on page 56](#).

To create multiple users:

1. On the **File** menu, point to **New**, then **Administration Center**, then **User**, and then click **Add Multiple Users**.
2. In the **Add Multiple Users** window, complete the following attributes for each user you want to create:
 - **First Name** – Type the user's first name.
 - **Last Name** – Type the user's last name.
 - **ID** – Type a unique, numerical ID used to identify the user on the communication platform.
 - **User Name** – Type a unique user name. This name is used when logging on to the Manager application and for recording statistics.
 - **Password** – Type the password required for OpenScape Contact Center authentication. If the user template specifies to use Windows authentication, this box can be left blank. If this box is left blank and the user template specifies to use OpenScape Contact Center authentication, the user will not be created.
 - **Confirm Password** – Type the password again to confirm that you typed it correctly.

- **SAP ID** – Type the user ID required for SAP ICI applications. This ID is required only if SAP ICI applications have been licensed. If there is no SAP ICI license, this box must remain blank.
 - **SAP Extension** – Type the user extension required for SAP ICI applications. This extension is required only if SAP ICI applications have been licensed. If there is no SAP ICI license, this box must remain blank.
 - **User Template** – Click the cell in the table and select the name of the user template from the list. If you leave this box blank, the default user template will be used; however, if a default user template has not been specified in the Options dialog box (see [Section 20.1, “Configuring the personal options”, on page 403](#)), the user will not be created.
3. Click **Create Users**. The application creates the users based on the information you provided. The User list indicates the status of the user creation process:
-  – Indicates that the user was created successfully.
 -  – Indicates that the user was not created.

4.2.5 Creating multiple users by importing a text file

When you are connected to a design database, you can create multiple users by importing a text file that lists the user-specific attributes. For specifications of the text file, see [Section 4.2.5.1, “User list requirements”, on page 57](#).

NOTE: You cannot create multiple users when you are connected to a production database.

To create multiple users by importing a text file:

1. On the **Tools** menu, click **Import Users**.
2. In the **Open File** dialog box, select the text file that contains the list of users you want to import, and then click **Open**.
3. In the **Add Multiple Users** window, verify that the attributes in the list were imported correctly.
4. Optionally, in the **User Template** column, click the cell and select the required user template from the list.

5. Click **Create Users**. The application creates the users based on the template specified in the text file or, if a template is not specified, based on the default user template. The User list indicates the status of the user creation process:

-  – Indicates that the user was created successfully.
-  – Indicates that the user was not created.

4.2.5.1 User list requirements

The user list is a text file that contains a list of users that you want to create. The text file must meet the following requirements:

- It must contain one user record per line.
- Each line must contain six fields separated by a | character (five | characters), unless SAP ICI applications are licensed, in which case, each line must contain eight fields separated by a | character (seven | characters).
 - For example, if SAP ICI applications are not licensed and you specify a user template, the line would contain:
First Name|Last Name|ID|User Name|Password|User Template
 - If SAP ICI applications are licensed and you do not specify a user template, each line would contain:
First Name|Last Name|ID|User Name|Password|SAP ID|SAP Extension|
where the last | character is required to indicate that a user template is not specified.
- The text is case-sensitive and will appear exactly as you type it.
- Comment lines that begin with // will be ignored.

The following table summarizes the fields for each record.

Field name	Mandatory	Field description
First name	Y	User's first name. Maximum 30 characters.
Last name	Y	User's last name. Maximum 35 characters
ID	Y	Numerical ID used to identify the user on the communication platform. For the OpenScape Business, maximum three digits. For the other communication platforms, maximum six digits.

Table 1 Fields required for each user record

Working with users, templates and profiles

About user profiles

Field name	Mandatory	Field description
User name	Y	Name used when logging on to the Manager application and for recording statistics. Maximum 35 characters.
Password	N	If the user template specifies Windows authentication, this field can be left blank. If the template specifies OpenScape Contact Center authentication and this field is left blank, the user will not be created. Maximum 16 characters.
SAP ID	N	Required only if SAP ICI applications are licensed.
SAP extension	N	Required only if SAP ICI applications are licensed.
User template	N	If this field is left blank, the default user template will be used; however, if a default user template has not been specified in the Manager application, the user will not be created. Maximum 32 characters.

Table 1 Fields required for each user record

4.3 About user profiles

A user profile is a set of default access permissions that can be used when configuring a particular type of user. For example, a user based on an Administrator profile can be given access to all Manager features and controls, but a user based on a Supervisor profile may be allowed to configure only users. You can create a user profile or use one of the default user profiles provided with the application.

4.3.1 Default user profiles

The Manager application is packaged with a set of default user profiles, which provide a wide range of roles and responsibilities. You can use these profiles as provided, or modify them to account for more specific permission requirements at your site.

4.3.1.1 Manager user profiles

The system provides the following default user profiles for the Manager application:

- **Administrator** – The Administrator profile is intended for users who have limited administrative responsibilities. This profile provides access to all configuration items except those directly

involved with contact routing and interaction with external resources, such as the communication platform. (Access to these items is provided in the Master Administrator profile.)

NOTE: In a multitenant environment, access for the Administrator profile within a business unit is further restricted to the items that can be configured only at the business unit level. For details, see [Chapter 19, “Working with the multitenancy feature”](#).

- **Manager** – The Manager profile is intended for users who are responsible for the overall contact center business targets, and are accountable for hiring and contact center performance. This profile provides access to reports that help the manager assess and measure performance.
- **Master Administrator** – The Master Administrator profile is intended for users who are responsible for configuring all the resources in OpenScape Contact Center. This profile provides full access to the system, including the ability to change all contact center settings.

NOTE: In a multitenant environment, the Master Administrator profile at the system level has restricted access to system-level tasks, such as uploading a design database and configuring communication platform resources. Similarly, the Master Administrator profile within a business unit has restricted access to tasks such as configuring the business unit resources. For details, see [Chapter 19, “Working with the multitenancy feature”](#).

- **Supervisor** – The Supervisor profile is intended for users who are responsible for the day-to-day supervision of contact center staff. Responsibilities include monitoring performance and ensuring customer satisfaction. This profile provides access to real-time communications and reporting.
- **Telecommunications Specialist** – The Telecommunications Specialist profile is intended for users, such as IT experts and administrators, who are responsible for providing support for the

Working with users, templates and profiles

About user profiles

contact center and configuring the computer and voice aspects of OpenScape Contact Center. This profile provides access to system and voice settings.

NOTE: In a multitenant environment, access for the Telecommunications Specialist profile within a business unit is further restricted to the items that can be configured only at the business unit level. For details, see [Chapter 19, “Working with the multitenancy feature”](#).

4.3.2 Configuring a user profile

You can create a new user profile or modify the existing profiles. For more information, see [Section 4.3, “About user profiles”, on page 58](#).

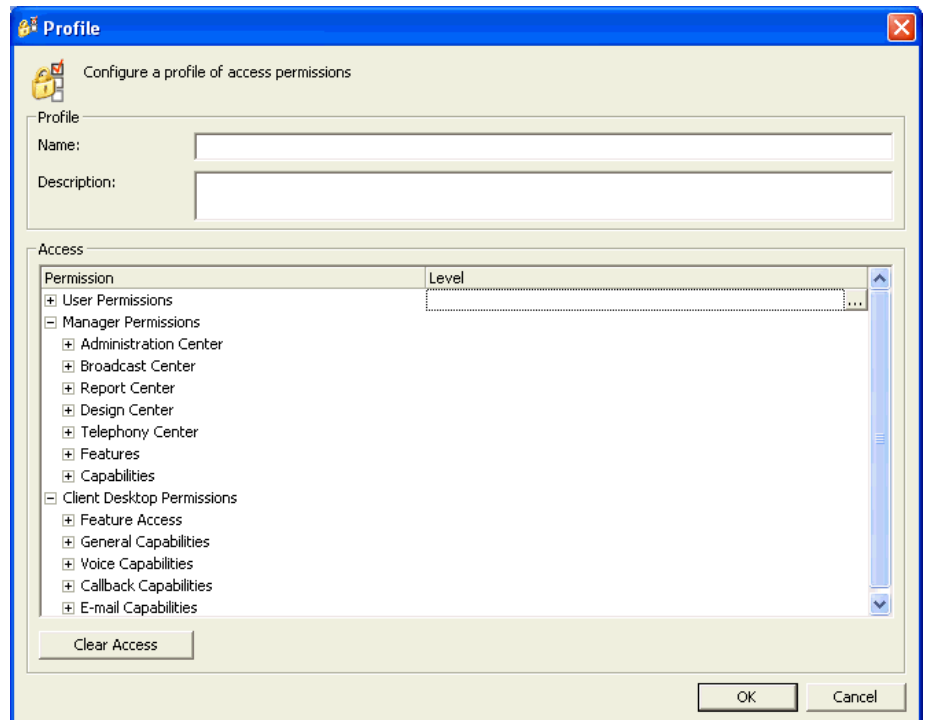
IMPORTANT: Use care when assigning permissions. The ability for a user to create other users and change their permissions should be strictly controlled.

NOTE: To create or change a user profile, you must Full or Modify access, respectively, for the **Profiles** Manager permission. If the enhanced security option is enabled, you must also have the required security access to change the profile. For details on the enhanced security option, see [Section 20.3.4, “Configuring the enhanced security option”, on page 414](#).

To configure a user profile:

1. On the **File** menu, point to **New**, then **Administration Center**, and then click **Profile**.

NOTE: To create a new profile based on a copy of a profile, in the **Administration Center**, under **General**, click **Profiles**, then, in the right pane, right-click the profile and select **Create Copy**.



2. On the **General** tab, under **Profile**, do the following:
 - In the **Name** box, type a unique name for the profile.
 - In the **Description** box, type a description for the profile. The description should explain what type of user should use this profile.
3. Under **Access**, by default, all the permissions are set to **No** or **No access**. For each permission you want to change, click the item in the **Level** column and select the new access level from the list. For details on the access levels, see [Section 4.3.3, "Access levels"](#), on page 62.
4. To reset all access levels to **No** or **No Access**, click **Clear Access**.
5. Click the **Security** tab. This tab is available only if the enhanced security option is enabled. For details, see [Section 20.3.4, "Configuring the enhanced security option"](#), on page 414.

6. Under **Users**, select the check box for each user who you want to be able to modify this profile. The list contains only the users who have Full or Modify access to the **Profiles** Manager permission.
7. Click **OK**.

4.3.3 Access levels

In OpenScape Contact Center, each user or user profile has a set of permissions, and for each permission, an access level that indicates the functions the user can perform with that permission.

IMPORTANT: Use care when assigning permissions. The ability for a user to create other users and change their permissions should be strictly controlled.

Some permissions are used for reading, modifying, and creating records in the database. The access levels for these permissions are:

- **No Access** – The user cannot view or modify the item.
- **Read Only** – The user can view, but not change, the item.
- **Modify** – The user can view and change the item.
- **Full** – The user can create, view, change, and delete the item.

Some features can only be turned on or off. The access levels for these permissions are:

- **No** – The user cannot access the feature.
- **Yes** – The user can access the feature.

If two or more profiles are selected for a user, the user's actual access level is the highest access level of the selected profiles. For example, if the access level in one of the profiles is **Full**, the user's actual access level will be **Full**.

When configuring a profile only, the **Restricted** access level is also available. Selecting **Restricted** for a permission in a profile means that when that profile is selected for a user, the user's actual access level will be **No** or **No Access** (as appropriate), even if you select another profile that has a higher access level.

5 Configuring other administration resources

Your service representative normally takes responsibility for creating and implementing the initial OpenScape Contact Center configuration. This includes the configuration of Administration Center resources, such as locations, servers, data sources, and directories. These items normally do not need to be reconfigured. However, you do need to configure departments and reasons, as described in this chapter, before putting your OpenScape Contact Center configuration into production.

NOTE: There are also some global options that normally need to be configured before putting your OpenScape Contact Center configuration into production. For more information, see [Chapter 20, "Configuring other global options"](#).

5.1 Configuring a department

A department is a collection of OpenScape Contact Center users that are grouped for reporting purposes. A department may be composed of several groups, or individual users from several groups.

NOTE: To create or change a department, you must have Full or Modify access, respectively, for the **Departments** Manager permission. If the enhanced security option is enabled, you must also have the required security access to change the department. For details on the enhanced security option, see [Section 20.3.4, "Configuring the enhanced security option"](#), on page 414.

To configure a department:

1. On the **File** menu, point to **New**, then **Administration Center**, and then click **Department**.
2. On the **General** tab, under **Department**, do the following:
 - In the **Name** box, type a unique name for the department.
 - In the **Description** box, type a description for the department. The description of the department should clearly indicate the common element for the users in the department.
3. Click the **Users** tab.

Configuring other administration resources

Configuring a location

4. Under **Users**, select the check box for each user who you want to include in the department.
5. Click the **Reports** tab.
6. Under **Include**, select the check box for each report that you want to display data about this department. The list contains only the reports you own, or reports that are owned by users you can monitor.
7. Click the **Security** tab. This tab is available only if the enhanced security option is enabled. For details, see [Section 20.3.4, "Configuring the enhanced security option"](#), on page 414.
8. Under **Users**, select the check box for each user who you want to be able to modify this department. The list contains only the users who have Full or Modify access to the **Departments** Manager permission.
9. Click **OK**.

5.2 Configuring a location

You can configure a location for each geographical area that you want to associate with OpenScape Contact Center users or wallboards. Locations enable user reports to be generated based on the time zone of a user's location, and wallboards to display local time in the time zone of the wallboard's location.

NOTE: To create or change a location, you must have Full or Modify access, respectively, for the **Locations** Manager permission. If the enhanced security option is enabled, you must also have the required security access to change the location. For details on the enhanced security option, see [Section 20.3.4, "Configuring the enhanced security option"](#), on page 414.

To configure a location:

1. On the **File** menu, point to **New**, then **Administration Center**, and then click **Location**.
2. On the **General** tab, under **Location**, do the following:
 - In the **Name** box, type a unique name for the location.
 - In the **Description** box, type a description for the location.
 - In the **Time zone** list, select the time zone of the location.

3. Under **Contact**, do the following:
 - In the **Name** box, type the name of the person responsible for the location. This person is usually the administrator who configures the OpenScape Contact Center database and provides technical support.
 - In the **Telephone number** box, type the telephone number where the contact person can be reached.
4. Click the **Users** tab.
5. Under **Users**, select the check box for each user who you want to associate with this location.

NOTE: If you want to remove a user from a location, you must change the user's location in the user definition. For details, see [Section 4.1.1, "Configuring the general user properties", on page 33](#).

6. Click the **Wallboards** tab.
7. Under **Wallboards**, select the check box for each wallboard that you want to associate with this location.
8. Click the **Security** tab. This tab is available only if the enhanced security option is enabled. For details, see [Section 20.3.4, "Configuring the enhanced security option", on page 414](#).
9. Under **Users**, select the check box for each user who you want to be able to modify this location. The list contains only the users who have Full or Modify access to the **Locations** Manager permission.
10. Click **OK**.

5.2.1 Configuring an Unavailable reason

An Unavailable reason is an explanation for a user entering Unavailable routing state. When the user is logged on to the communication platform, but is not available to handle incoming contacts, the user should select Unavailable routing state. Unavailable reasons are usually configured to handle common reasons for absences such as lunch breaks, and so on. The system will not route contacts to a user who is in Unavailable routing state.

NOTE: To create or change an Unavailable reason, you must have Full or Modify access, respectively, for the **Unavailable reasons** Manager permission.

NOTE: If you are using the OpenScape Contact Center Ring No Answer feature, the OpenScape Contact Center system places a user in Unavailable routing state if the user does not answer a routed contact. A default Unavailable reason is assigned to the change in routing state.

To configure an Unavailable reason:

1. On the **File** menu, point to **New**, then **Administration Center**, and then click **Unavailable Reason**.
2. In the **Name** box, type a unique name for the Unavailable reason.
3. In the **Description** box, type a description for the Unavailable reason.
4. Click **OK**.

5.2.2 Configuring a Work reason

A Work reason is an explanation for a user entering Work routing state. When the user is logged on to the communication platform, but is performing work tasks not associated with contacts, such as attending meetings or training sessions, the user should select Work routing state. The system will not route contacts to a user who is in Work routing state.

NOTE: To create or change a Work reason, you must have Full or Modify access, respectively, for the **Work reasons** Manager permission.

To configure a Work reason:

1. On the **File** menu, point to **New**, then **Administration Center**, and then click **Work Reason**.
2. In the **Name** box, type a unique name for the Work reason.
3. In the **Description** box, type a description for the Work reason.
4. Click **OK**.

5.2.3 Configuring a Post-processing reason

A Post-processing reason is an explanation for a user entering Post-processing handling state. A user is in Post-processing handling state when performing tasks after a contact has been disconnected, such as making notes or sending follow-up information.

Although users can explicitly enter Post-processing handling state, a user definition can also be set up to automatically place users in Post-processing handling state after they disconnect from a contact. For details, see [Section 4.1.1, "Configuring the general user properties", on page 33](#).

NOTE: To create or change a Post-processing reason, you must have Full or Modify access, respectively, for the **Post-processing reasons** Manager permission.

To configure a Post-processing reason:

1. On the **File** menu, point to **New**, then **Administration Center**, and then click **Post-processing Reason**.
2. In the **Name** box, type a unique name for the Post-processing reason.
3. In the **Description** box, type a description for the Post-processing reason.
4. Click **OK**.

5.2.4 Configuring a Wrap-up reason

A Wrap-up reason is an explanation of what a user did to complete a contact. For example, an indication that a sale was made, that a problem was solved, or that a customer record was updated. Historical reports monitor the Wrap-up reasons selected.

If the Wrap-up reason required option is selected for a user (see [Section 4.1.1, “Configuring the general user properties”, on page 33](#)), the user must select at least one Wrap-up reason for each contact.

NOTE: To create or change a Wrap-up reason, you must have Full or Modify access, respectively, for the **Wrap-up reasons** Manager permission.

To configure a Wrap-up reason:

1. On the **File** menu, point to **New**, then **Administration Center**, and then click **Wrap-up reason**.
2. On the **General** tab, under **Details**, do the following:
 - In the **Name** box, type a unique name for the Wrap-up reason.
 - In the **Description** box, type a description for the Wrap-up reason.
3. Click the **Queue** tab.
4. Under **Queue**, select the check box for each queue that you want to associate with this Wrap-up reason.
5. Click **OK**.

5.3 About the servers

The OpenScape Contact Center system uses the following servers:

- Administration Server
- Callback Server (only if the callback feature is activated)
- Call Director Server (only if the Call Director feature is activated)
- Config Sync Server
- Data Management Server
- E-mail Server (only if the e-mail feature is activated or the e-mail reports option is enabled)
- OpenMedia Server
- Presence Server
- Real-Time Server

NOTE: You can configure an additional instance of the Real-Time Server on an auxiliary server machine. For details, see [Section 5.3.4, "Configuring a Real-Time Server on an auxiliary server machine"](#), on page 74.

- Reporting Server
- Routing Server
- SAP CIC Server (only if the SAP CIC integration is activated)
- SAP ICI Server (only if the SAP ICI integration is activated)

NOTE: You can configure the SAP servers to run on either the main server machine or an auxiliary server machine. For details, see [Section 5.3.1, "Configuring the server properties"](#), on page 70.

- Statistics Server
- T-Server
- Watchdog Server

Configuring other administration resources

About the servers

- Web Interaction Server

NOTE: Some features that have been activated using a license file must be enabled before they can be used. For details, see ["Enabling activated features"](#).

You can configure the server properties, and create notifications used to advise the administrator if there is a problem with any of the servers.

NOTE: When you upload a design database, the system overwrites the host name of all servers that share the same host as the Administration Server with the host name of the server machine on which the production database resides. This ensures that the host name of the server is always configured correctly.

5.3.1 Configuring the server properties

For all the OpenScape Contact Center servers, except the Watchdog Server, you can change the name, host name, and port number of the server resource. To configure the properties of a Watchdog Server, see [Section 5.3.2, "Configuring a Watchdog Server", on page 71](#).

NOTE: To create or change a server resource, you must have Full or Modify access, respectively, for the **Servers** Manager permission.

NOTE: When you are connected to the production database, if you change the server properties, you will be required to restart the OpenScape Contact Center service on the main server machine.

NOTE: In a multitenant environment, only a system administrator can configure the server properties. For details, see [Section 19.3, "Administrator roles in a multitenant environment", on page 392](#).

To configure the properties of a server:

1. In the **Administration Center**, under **Resources**, click **Servers**.
2. In the right pane, double-click the server you want to change.
3. In the **Name** box, type the new name of the server.

4. In the **Host name** box, type the host name of the server machine where the server resides. You can type a maximum of 15 characters on a main server machine or central reporting server machine, or a maximum of 128 characters on an auxiliary server machine.

NOTE: If you are configuring an SAP server, and the SAP server is running on an auxiliary server machine, you must type the host name of the auxiliary server machine.

5. In the **Port number** box, type the port number of the server on the server machine.

NOTE: If a firewall is enabled on the server machine and you change the port number of a server after the initial system configuration, you must reconfigure the firewall settings.

6. Click **OK**.

5.3.2 Configuring a Watchdog Server

The application automatically creates a Watchdog Server on every machine where an OpenScape Contact Center server is installed. The Watchdog Server starts and monitors all other OpenScape Contact Center servers and issues notifications.

You can change the name and port number of a Watchdog Server, but you cannot change the host name. The application automatically changes the host name of the Watchdog Server if you change the host name of the server machine where the Watchdog Server resides.

You can also configure the modem that the Watchdog Server uses to connect an auxiliary server machine to the main server machine.

NOTE: To change a Watchdog Server, you must have Modify access for the **Servers** Manager permission.

NOTE: When you are connected to the production database, if you change the server properties, you will be required to restart the OpenScape Contact Center service on the main server machine.

Configuring other administration resources

About the servers

NOTE: In a multitenant environment, only a system administrator can configure a Watchdog Server. For details, see [Section 19.3, “Administrator roles in a multitenant environment”](#), on page 392.

To configure a Watchdog Server:

1. In the **Administration Center**, under **Resources**, click **Servers**.
2. In the right pane, double-click the Watchdog Server you want to change.
3. In the **Name** box, type the new name of the server.
4. In the **Port number** box, type the identifier used to distinguish the connections for the host.
5. Click the **Modem** tab.
6. To use a modem to connect an auxiliary server machine to the main server machine, select the **Use Modem** check box, and then do the following:
 - In the **Communication port** box, select the communication port of the server.
 - In the **Initialization string** box, type the string used to initialize the modem.
 - In the **Hang-up string** box, type the string used to hang up the modem.
7. Click **OK**.

5.3.3 Configuring the OpenMedia Server

The OpenMedia Server is the same server used by the Mobile Supervisor feature.

Before configuring the OpenMedia Server

Install the OpenScape Contact Center Application Server. For detailed information, see *OpenScape Contact Center Enterprise V10, Installation Guide*, chapter **Installing the OpenScape Contact Center Application Server**.

Configuring the OpenMedia Server

1. Enable the OpenMedia feature. In the **Administration Center**, under **Tools**, click **Options**. Then in the **System Settings** field, click **System** and the **Features** tab. Check the **OpenMedia** checkbox and click **OK**.
2. After enabling the feature, a new tab **OpenMedia** will appear. Follow the path **Tools->Options->System Settings->System** and click the **OpenMedia** tab.
3. This tab enables the creation of new Connectors. In the *Add Connector* area, give a **Connector name**, the **Business Unit** takes the value **Default** and click **Add**. A new Connector is added in the System Settings. You can add up to ten Connectors.

NOTE: When the OSCC is a Multitenancy system, you must choose the Business Unit from the Business Unit - dropdown list.

4. To delete a Connector, select the Connector you want to delete from the table that contains all the Connectors and click **Delete**.

Configuring a Connector

1. Before configuring a Connector, the Options form must be closed.
2. Follow the path **Tools->Options** and click on the **Connector** you want to configure.
3. In the **General** tab, select a **Picture** for the Connector.
4. In the **Connector** tab, give the **Server Settings**. Give the credentials for the Social Media server, that is the **Logon name** and the **Password**. The Token is a password generator on the OSCC server, which controls which Connector is connected to the Contact Center. Click **Generate** to create a password.
5. In the **Settings** tab, set the **Maximum number** of Deferred Messages, the **Automatic defer time** and the **Maximum defer time** in days: hours: minutes. Also you can set the **Session Timeout** in hours: minutes: seconds.

NOTE: In case of a Multitenancy environment, the connectors only appear when the Manager user is logged in to the respective Business Unit.

5.3.4 Configuring a Real-Time Server on an auxiliary server machine

The contact center can use an auxiliary server machine to accommodate additional users. In this case, you must configure a new Manager resource for the Real-Time Server that is installed on the auxiliary server machine. The OpenScape Contact Center software must be installed on the auxiliary server machine before you can configure the new Real-Time Server resource in the Manager application.

After the Real-Time Server has been configured, you can change the properties of the Real-Time Server in the same way as the other OpenScape Contact Center servers. For details, see [Section 5.3.1, "Configuring the server properties", on page 70](#).

NOTE: To create or change a Real-Time Server, you must have Full or Modify access, respectively, for the **Servers** Manager permission.

NOTE: When you are connected to the production database, if you configure a new Real-Time Server, you will be required to restart the OpenScape Contact Center service on the main server machine.

5.3.5 Configuring a notification

To ensure that administrators are kept informed of the system status, you can configure automatic notifications. You can configure the system to send an e-mail message or a page to an individual if there is a problem with the database usage or one of the OpenScape Contact Center servers.

NOTE: To create or change a notification, you must have Full or Modify access, respectively, for the **Notifications** Manager permission.

NOTE: In a multitenant environment, only a system administrator can configure a notification. For details, see [Section 19.3, "Administrator roles in a multitenant environment", on page 392](#).

For e-mail notifications, the sender address is "OpenScape_Contact_Center". If the SMTP server is configured to authenticate the sender as part of its security measures, you must ensure that the server machine is allowed to send e-mail messages using "OpenScape_Contact_Center" as the "from address".

To configure a notification:

1. On the **File** menu, point to **New**, then **Administration Center**, and then click **Notification**.
2. On the **General** tab, under **Notification**, do the following:
 - a) In the **Condition** list, select one of the following conditions:
 - **Database Usage** – Indicates that there is not enough disk space available to store the data that will be generated over the next two weeks, based on the configured retention periods. For details on the data retention periods, see [Section 20.6, "Configuring the data management options", on page 420](#).
 - **Server Down** – Indicates that the server is not operational.
 - **Server Response Time** – Indicates that the server response time is longer than expected.
 - **Server Up** – Indicates that the server is operational again.
 - b) In the **Component** list, select the server that you want to monitor.
3. Under **Type**, in the **Notification method** list, select the type of notification you want to use: **E-mail** or **Pager**.
4. If you selected **E-mail** in step 3, under **Details**, configure the e-mail message as follows:
 - a) In the **E-mail address** box, type the e-mail address to which the notification should be sent.
 - b) In the **Message** box, type the message you want to send to the specified e-mail address.
 - c) In the **SMTP server** box, type the host name of the machine where the SMTP server resides.

Configuring other administration resources

About the servers

5. If you selected **Pager** in step 3, under **Details**, configure the pager as follows:
 - a) In the **Pager number** box, type the number of the pager to be called.
 - b) In the **Numeric code** box, type the code for the selected condition. For example, if the digits 111 are dialed, then a numeric code appears on the pager.
 - c) In the **Number of attempts** box, select the number of times you want the pager to be contacted.
 - d) In the **Retry interval** box, select the length of time that you want to wait between attempts to contact the pager.
 - e) In the **Message delay** box, select the length of time that elapses between the time when the pager number is dialed and the digits for the numeric code are sent.
6. To test the configured notification, click **Test**.
7. Click **OK**.

5.4 Configuring a data source

You can access information in an external ODBC-compliant database, and then use that information in a Database Function component to help make decisions about contact routing. You must ensure that the external database provides mappings to ODBC-compliant data types.

To access an external ODBC-compliant database, you must do the following on the OpenScape Contact Center server machine:

- In Windows, configure an ODBC data source that connects to the external database. Since the OpenScape Contact Center system is a 32-bit system, only 32-bit ODBC data sources are supported.
- In the Manager application, configure a data source definition for each ODBC data source that you want to access.

NOTE: To create or change a data source definition, you must have Full or Modify access, respectively, for the **Data sources** Manager permission.

NOTE: When the system is configured for high availability (warm standby), the data source definition in OpenScape Contact Center is replicated, so you must ensure that the ODBC data source is configured in Windows with the same information on both the primary and backup server machines.

NOTE: A slow connection to a data source will affect contact center performance. Ensure that any data sources you connect to will not adversely affect the productivity of your contact center.

To configure a data source:

1. On the **File** menu, point to **New**, then **Administration Center**, and then click **Data Source**.
2. Under **Details**, do the following:
 - In the **Data source name** box, type the name of the data source. To locate the required data source name, click **Find**.
 - In the **Maximum connections** box, specify the maximum number of connections available to this data source.

Configuring other administration resources

Configuring a directory

3. Under **Access**, do the following:
 - In the **User ID** box, type the User ID of the user who can connect to this data source.
 - In the **Password** box, type the password for the User ID.
4. To test the connection to the data source, click **Test**.
5. Click **OK**.

5.5 Configuring a directory

You can configure a directory resource in the Manager application to provide access to an external LDAP directory. The LDAP directory can then be used to search for information, such as a name, telephone number, or e-mail address. In the Manager application, the external directory is used to select recipients when sending reports by e-mail. You can configure up to two directories for use in the Manager application.

NOTE: The connection between the client applications and the LDAP Server can be encrypted by using LDAPS (LDAP over TLS).

NOTE: To create or change a directory, you must have Full or Modify access, respectively, for the **Directories** Manager permission.

To configure a directory:

1. On the **File** menu, point to **New**, then **Administration Center**, and then click **Directory**.
2. On the **General** tab, under **Directory**, do the following:
 - In the **Name** box, type the name of the directory.
 - In the **Description** box, type a description for the directory.

3. Under **Connection**, do the following:

- In the **Host name** box, type the host name of the directory server.
- In the **Port number** box, type the TCP/IP port number of the directory server. The default value is **389**.

NOTE: To enable LDAPS, set the Port Number to **636**. For the Agent Portal Web and Agent Portal, check the flag in **Settings > Directories > Setup Connection > TLS**.

- To test the logon to the directory server, click **Test**. You must enter the account name and password to access the directory server.

NOTE: This tests the connection from this server machine, not from the client machine.

4. Click the **Query** tab.

5. Under **Fields**, do one of the following:

- To configure a new directory field to be queried, click **Add**, and then configure the field.
- To modify an existing directory field to be queried, select the directory field in the list, click **Edit**, and then configure the field.
- To delete an existing directory field, select the directory field in the list and click **Delete**.

NOTE: The top to bottom order of the fields in the list reflects the order in which the fields are displayed in the Manager application. To change the order of the fields, click anywhere in a row to select the row, and then click the up or down arrow key to the right of the list to move the row up or down, respectively.

6. Under **Query String**, specify the components of the query string used to locate entries in the directory:

- In the **Base distinguished name** box, type the base distinguished name to be used as the starting point for the query. The base distinguished name contains one or more Attribute Name and Attribute Value strings separated by the "=" character, for example, **ou=sales, o=mycompany.com**.

Configuring other administration resources

Configuring a directory

- In the **Scope** list, select the scope of the query from the list: **Base**, **One Level**, or **Subtree**.
 - In the **Object class** box, type the list of object classes to be used to filter the query. The object classes in the list must be separated by commas.
 - In the **Object categories** box, type the list of object categories to be used to further filter the query. The object categories in the list must be separated by commas.
7. Click the **Results** tab.
 8. Under **Fields**, do one of the following:
 - To configure a new directory field to be displayed in the search results, click **Add**, and then configure the field.
 - To modify a directory field to be displayed in the search results, select the directory field in the list and click **Edit**, and then configure the field.
 - To delete an existing directory field, select the directory field in the list and click **Delete**.
 9. Click **OK**.

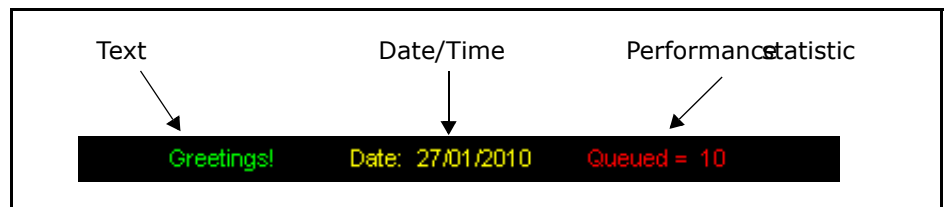
6 Using the Broadcaster and wallboards

Managers and supervisors can broadcast information to contact center users in the following way:

- To wallboards in the contact center (see [Section 6.1, "About wallboards"](#), on page 81)

You can display the following types of content:

- **Text** – Text can be used alone or in combination with date/time variables and statistics to provide a label for the variable or statistic. For example, if you include a date variable in a view, you could include the text **Today's date is**.
- **Date/Time variables** – Date and time variables display the current date or time, updated in real time.
- **Performance statistics** – Real-time statistics on various contact center resources are received from the OpenScape Contact Center servers and are updated in real time.



Each collection of content is referred to as a view. You broadcast these views to defined groups of users or wallboards, called distributions. The view/distribution mechanism lets you define content aimed at specific users, and broadcast either directly to those users or to particular wallboards. In a simple setup, you may have distributions based on your queue setup or users grouped according to their supervisor.

Each Broadcaster or wallboard can display only one view.

6.1 About wallboards

A wallboard is a display medium located in your contact center where several users can view information.

Wallboards have the following features:

- **Multiple lines** – Select the line on which the variable appears. You can synchronize lines, so that the statistic name appears above its value.

Using the Broadcaster and wallboards

About wallboards

- Text color – Select the color used to display the text (if supported by the wallboard model). For tri-color boards, the colors displayed are red, yellow and green.
- Scroll direction – Select the horizontal scroll direction. You can choose from Scroll left, Scroll left and hold, Scroll right and hold, Stationary and hold, or Flash and hold.

The system supports several Spectrum wallboard models using the EZ Key II protocol. For a list of supported wallboard models, and instructions on installing and configuring a wallboard, see the *System Management Guide*. If you have an unsupported wallboard model, you can create a custom wallboard type (see [Section 6.1.1, "Creating a wallboard type"](#), on page 82).

Read your wallboard documentation to determine the exact features supported by your particular wallboard. Ensure that you have downloaded the latest firmware for your wallboard.

6.1.1 Creating a wallboard type

The system provides default wallboard types for several Spectrum wallboard models. If you have an unsupported wallboard model, you can create a custom wallboard type that you can select when creating a wallboard definition or configuring a wallboard view.

NOTE: To create or change a custom wallboard type, you must have Full or Modify access, respectively, for the **Wallboard types** Manager permission.

To create a wallboard type:

1. On the **File** menu, point to **New**, then **Broadcast Center**, then **Wallboard**, and then click **Type**.
2. Under **Type**, do the following:
 - In the **Name** box, type the name used to identify the wallboard type.
 - In the **Description** box, type a description for the custom wallboard, including the length and model of the wallboard.
3. Under **Specifications**, do the following:
 - In the **Lines** list, select the number of lines that can be displayed on the wallboard.

- In the **Characters** list, type or select the number of characters that can be displayed on each line of the wallboard.
- If the wallboard type supports three colors, select the **TriColor** check box.

4. Click **OK**.

6.1.2 Creating a wallboard definition

A wallboard definition contains the name and description of the wallboard, the hardware settings for the wallboard, and the wallboard distribution. The definition normally describes the physical location of the wallboard in the contact center, for example, **third floor, south wall**.

While supervisors and managers are typically involved in configuring wallboard views and distributions, wallboard definitions are typically configured by the service technician. For detailed instructions, see the *System Management Guide*.

NOTE: To create or change a wallboard definition, you must have Full or Modify access, respectively, for the **Wallboard definitions** Manager permission.

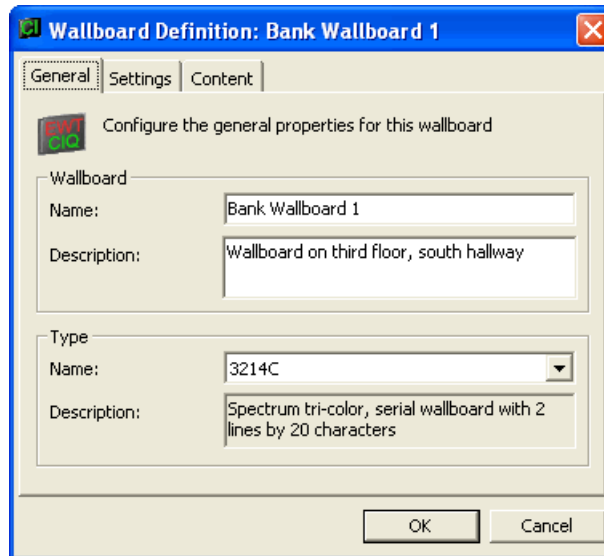
Before you begin, check the list of Wallboard types in the Broadcast Center to ensure that the type of wallboard you want to use is already configured. If the type of wallboard you have is not in the list, create a custom wallboard type (see [Section 6.1.1, "Creating a wallboard type", on page 82](#)).

Using the Broadcaster and wallboards

About wallboards

To create a wallboard definition:

1. On the **File** menu, point to **New**, then **Broadcast Center**, then **Wallboard**, and then click **Definition**.



2. Under **Wallboard**, do the following:
 - In the **Name** box, type a unique name for the wallboard.
 - In the **Description** box, type a description for the wallboard. Use the description to specify the physical location of the wallboard.
3. Under **Type**, in the **Name** list, select the wallboard type. After you select the wallboard type, the properties of the wallboard are shown in the **Description** box.
4. Click the **Settings** tab.
5. Under **Connection**, do the following:
 - In the **Host name** box, type the host name or IP address of the wallboard.
 - In the **Port number** box, type the port number of the wallboard. The port number indicates the connection to the wallboard on the OpenScape Contact Center server machine.
 - If you are connected to a production database, you can click **Test** to verify the configuration. If the test fails, check the host name or IP address and the port number of the wallboard.
 - In the **Location** list, select the location of the wallboard. The default is the location where the Manager application is installed.
6. Click the **Content** tab.

7. In the **Distribution** list, select a distribution. If there are no distributions listed, you can add this wallboard to a distribution when you create a wallboard distribution (see [Section 6.1.4, "Configuring a wallboard distribution", on page 92](#)).
8. Click **OK**.

6.1.3 Configuring a wallboard view

You can create different views that can be displayed on a wallboard. For more information, see [Section 6.1, "About wallboards", on page 81](#).

NOTE: To create or change a wallboard view, you must have Full or Modify access, respectively, for the **Wallboard views** Manager permission.

Overview

The following is an overview of the steps required to configure all the attributes in a wallboard view:

1. Configure the general information – see [Section 6.1.3.1, "Configuring the general information for a wallboard view", on page 85](#).
2. Configure the content – see [Section 6.1.3.2, "Configuring the content of a wallboard view", on page 87](#).
3. Configure a threshold for a wall board item – see [Section 6.1.3.4, "Configuring a threshold for a wallboard view item", on page 90](#).
4. Configure the distribution for a wallboard view – see [Section 6.1.3.5, "Configuring the distribution for a wallboard view", on page 91](#).

6.1.3.1 Configuring the general information for a wallboard view

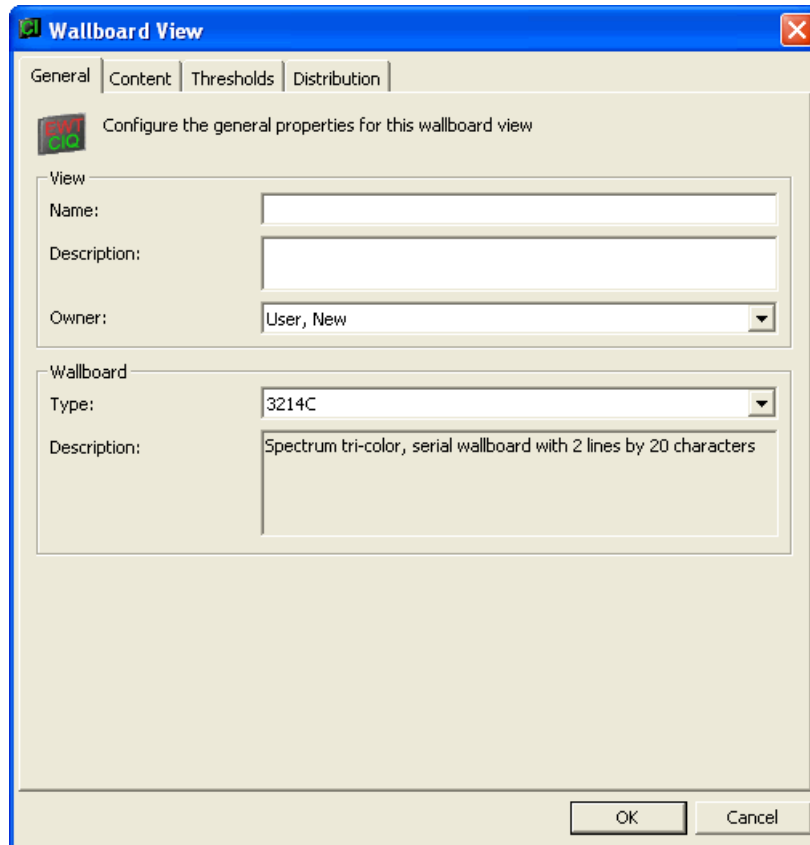
You can configure the name, description, owner and wallboard type for each wallboard view.

Using the Broadcaster and wallboards

About wallboards

To configure the general information for a wallboard view:

1. On the **File** menu, point to **New**, then **Broadcast Center**, then **Wallboard**, and then click **View**.



The screenshot shows the 'Wallboard View' configuration dialog box. It has a title bar with a close button. Below the title bar are four tabs: 'General', 'Content', 'Thresholds', and 'Distribution'. The 'General' tab is selected. The main area contains two sections: 'View' and 'Wallboard'. The 'View' section has three fields: 'Name' (empty), 'Description' (empty), and 'Owner' (a dropdown menu showing 'User, New'). The 'Wallboard' section has two fields: 'Type' (a dropdown menu showing '3214C') and 'Description' (a text box containing 'Spectrum tri-color, serial wallboard with 2 lines by 20 characters'). At the bottom right are 'OK' and 'Cancel' buttons.

2. Under **View**, do the following:
 - In the **Name** box, type a unique name for the view.
 - In the **Description** box, type a description of the view. Use the description to specify the information displayed in the wallboard view.
 - In the **Owner** list, click a user name. The owner is the only user, other than the Master Administrator, who can modify the properties of this view. You can select your own name or any other user who you can monitor. The owner can see only the users, groups, or queues in the view which the owner can monitor.
3. Under **Wallboard**, in the **Type** list, select the wallboard type for which you are configuring the view. After you select the wallboard type, the properties of the wallboard are shown in the **Description** box.

4. If you are finished working with this view definition, click **OK**.

6.1.3.2 Configuring the content of a wallboard view

You can configure a wallboard view to display text or statistics. Changes that you make to a wallboard view occur immediately and affect the users who are viewing the wallboard.

To configure the content of a wallboard view:

1. In the **Broadcast Center**, under **Wallboard**, click **Views**.
2. In the right pane, double-click the wallboard view for which you want to configure the content.
3. Click the **Content** tab.

Wallboard View: My WallboardView

General Content Thresholds Distribution

Configure the content of this wallboard view

Settings

Line: Bottom Line

Mode: Scroll left

Hold Time

Min Max

Data

Text	Statistic	For	Spaces After
Greetings!	MMM.DD, YYYY		<5 spaces>
Today is	MMM.DD, YYYY		<5 spaces>
Contacts Queued =	Contacts - Queued	Default Voice Queue	<5 spaces>
Current Service Le	Service Level - Curren	Default Voice Queue	<5 spaces>

Add... Edit... Delete

Preview

Today is Jan. 19, 201

ht Service Level = 1

OK Cancel

Using the Broadcaster and wallboards

About wallboards

4. Under **Settings**, in the **Line** list, select the line in the wallboard view for which you want to configure the content. Your choices are: **Top Line** and **Bottom Line**.

NOTE: The system supports the use of wallboards that have up to four lines, but the EZ Key II Protocol can only address the lines as Top Line and Bottom Line. So in the case of a three-line or four-line wallboard, the wallboard uses all its lines minus one to display the content defined in the Top Line. The Bottom Line begins immediately following the last line of the Top Line. For example, if the content configured in the Top Line takes up only two lines of a four-line wallboard, the content configured in the Bottom Line will start on the third line of the wallboard.

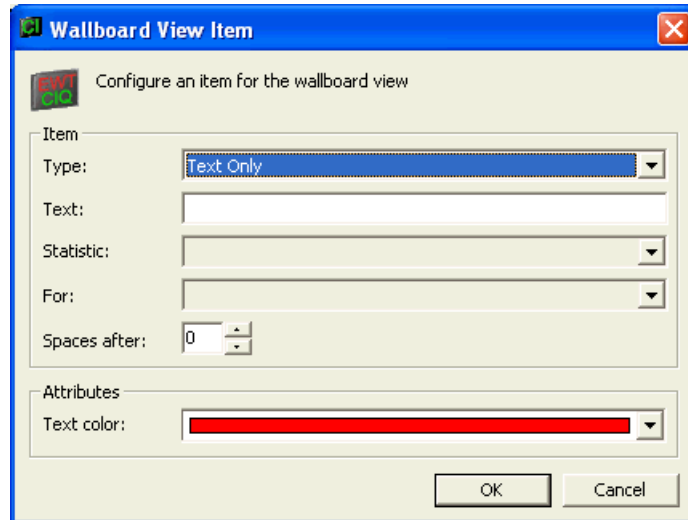
5. In the **Mode** list, select the scroll direction and action you want to use:
 - **Scroll left** – Continuously moves text to the left.
 - **Scroll left and hold** – Holds text on the screen for a specified amount of time before scrolling left.
 - **Scroll right and hold** – Holds text on the screen for a specified amount of time before scrolling right.
 - **Stationary and hold** – Holds text stationary for the specified amount of time. For large quantities of text, groups of characters are displayed for the specified amount of hold time.
 - **Flash and hold** – Continuously flashes text.
6. If you selected a mode that contains a hold action, under **Hold Time**, move the slider to specify the length of time an item pauses at the center of the wallboard.
7. Under **Data**, do one of the following:
 - To add a new wallboard item, click **Add**.
 - To edit an existing wallboard item, select the item in the list and click **Edit**.
8. Configure a wallboard view item (see [Section 6.1.3.3, "Configuring a wallboard view item"](#), on page 89).
9. Repeat steps 7 and 8 for each item you want to configure.
10. The **Preview** area shows the contents of the wallboard view. The selected scrolling action is shown, but not the selected hold action.
11. If you are finished working with this view definition, click **OK**.

6.1.3.3 Configuring a wallboard view item

You can configure a wallboard view item to display text, date and time variables, and performance statistics.

To configure a wallboard view item:

1. Open the **Wallboard View Item** dialog box.



2. Under **Item**, in the **Type** list, select one of the types provided. You can choose **Text Only** or one of several different variable types.
3. In the **Text** box, type the text to display on the wallboard.
4. If you selected a variable type, use the **Statistic** box to select the statistic you want to display on the wallboard view. You can configure the threshold for each threshold-eligible statistic that you select.
5. If you selected a Group, Queue or Aggregate variable type, use the **For** box to select the queue, group, or aggregate for which to display the statistic. You can select only the queues, groups, or aggregates that you and the owner of the view can monitor.
6. In the **Spaces after** box, type or select the number of spaces that you want to insert after the item in the wallboard view.
7. Under **Attributes**, select a **Text color** to apply to the item.
8. Click **OK**.

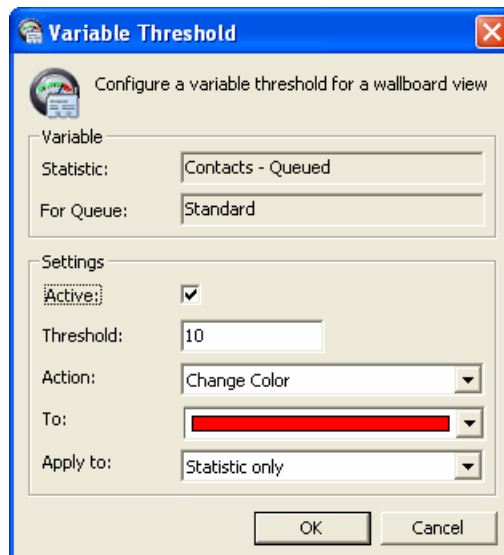
6.1.3.4 Configuring a threshold for a wallboard view item

You can configure a threshold for each statistic shown on the wallboard view. When a threshold is exceeded, you can display the statistic name in a different color (for tri-color wallboard types), or display text on the other line of the wallboard.

Before you can configure a threshold for a statistic, the wallboard view must be configured to display the statistic (see [Section 6.1.3.3, "Configuring a wallboard view item", on page 89](#)).

To configure a threshold for a wallboard view item:

1. In the **Broadcast Center**, under **Wallboard**, click **Views**.
2. In the right pane, double-click the wallboard view you want to configure.
3. Click the **Thresholds** tab.
4. Under **Items**, select the statistic for which you want to configure a threshold. The Items list contains only the statistics specified on the Contents tab for which you can set a threshold.
5. Click **Edit**. The **Statistic** and **For** boxes show the statistic you selected. You cannot edit them here.



6. Under **Settings**, select the **Active** check box. This enables you to configure the threshold. After the threshold has been configured, you can use the **Active** check box to activate or de-activate the threshold in the wallboard view.

7. In the **Threshold** box, specify the limit to which you want to compare the statistic. The statistic determines if this value is a maximum or minimum.
8. In the **Action** list, select the action that alerts users to the exceeded threshold:
 - **Change color** – In the **To** list, select the color to display.
 - **Show text** – In the **Text** box, type the text to display.
9. In the **Apply to** list, select whether to apply the threshold condition to the **Statistic only** or the **Entire item** (including text labels).
10. Click **OK**. The information you entered is displayed on the **Thresholds** tab. If the threshold is inactive, **None** appears under Threshold for the Statistic in the Items list.
11. If you are finished working with this view definition, click **OK**.

6.1.3.5 Configuring the distribution for a wallboard view

You can assign a wallboard view to specific wallboard distributions.

NOTE: You must create the wallboard distributions before you can select them in a view (see [Section 6.1.4, "Configuring a wallboard distribution", on page 92](#)).

To configure the distribution for a wallboard view:

1. In the **Broadcast Center**, under **Wallboard**, click **Views**.
2. In the right pane, double-click the wallboard view for which you want to specify the distribution.
3. Click the **Distribution** tab.
4. Under **Send to**, select the check box for each wallboard distribution where you want to send the view.
5. If you are finished working with this view definition, click **OK**.

6.1.4 Configuring a wallboard distribution

A wallboard distribution is a group of wallboards to which you can assign a single wallboard view (see [Section 6.1.3, "Configuring a wallboard view", on page 85](#)). After you create a wallboard distribution and assign a view to it, the view can be displayed on the selected wallboards.

Each wallboard can be a member of only one distribution at a time because only one view can be displayed on each wallboard.

NOTE: To create or change a wallboard distribution, you must have Full or Modify access, respectively, for the **Wallboard distributions** Manager permission.

To configure a wallboard distribution:

1. On the **File** menu, point to **New**, then **Broadcast Center**, then **Wallboard**, and then click **Distribution**.
2. Under **Distribution**, do the following:
 - In the **Name** box, type a unique name for the distribution.
 - In the **Description** box, type a description of the distribution.
3. Under **Current**, in the **View** list, select the wallboard view that you want to be displayed on all the wallboards in the distribution.
4. Click the **Wallboards** tab.
5. Under **Include**, select the check box for each wallboard where you want to display the current wallboard view.
6. Click **OK**.

7 Reporting

You can use the Manager reporting feature to view performance data which can help you resolve issues, evaluate the efficiency of your contact center, and optimize your OpenScape Contact Center configuration. Reporting provides real-time statistics, accumulated statistics for the current day, and historical statistics on various contact center resources. Options range from online views showing the current status of particular resources to traditional statistical summaries.

Real-time view showing the current status of a queue

Statistical summary with totals, rollups, and an interval

Example: Queue Status Report

Name	Contacts		Service Level		Wait Time
	Queued	Current	Estimated		Estimated Answer
Mutual Funds-DIV	0	100.0	100.0		00:00:23
Mutual Funds-EQU	1	83.0	77.0		00:02:53
Stocks	2	100.0	83.0		00:02:45
	3	81.0	86.0		00:01:00

Report Viewer

File View Tools Actions Help

Close Tab

Sample User Historical Report, 01/01/2010 to 25/01/2010

Name	Offered Contacts	Handled Contacts	Abandoned Offered Co...	Total Time			
	All	All	Routed	Logged On	Idle	Busy	Away
A1	9	8	1	1:01:18:34	19:57:09	00:00:00	05:17:08
19/01/2010	6	5	1	02:04:34	00:36:02	00:00:00	01:27:05
14:00	1	1	0	00:37:27	00:18:37	00:00:00	00:18:22
15:00	2	1	1	00:58:02	00:14:20	00:00:00	00:43:30
16:00	3	3	0	00:29:05	00:03:05	00:00:00	00:25:13
21/01/2010	3	3	0	13:08:38	09:15:45	00:00:00	03:50:03
22/01/2010	0	0	0	10:05:22	10:05:22	00:00:00	00:00:00
	9	8	1	1:01:18:34	19:57:09	00:00:00	05:17:08

32 Items

There are four main types of reports:

- **Real-time** – see Section 7.1, “About real-time reports”, on page 94.
- **Historical** – see Section 7.2, “About historical reports”, on page 97.
- **Cumulative** – see Section 7.3, “About cumulative reports”, on page 99.
- **Activity** – see Section 7.4, “About activity reports”, on page 100.

Reporting

About real-time reports

The Manager application provides a set of predefined report definitions that can be used as is, or as the basis for creating new reports. For detailed information on the report types, the predefined reports, and the content that can appear in reports, see the *Reporting Reference Guide*.

By default, reporting is available at the single site level. If you are using the networking and central reporting features, you can report at the network level. This lets you include site level statistics in certain reports and makes different types of reports available. For information on central reporting, see [Chapter 17, "Working with central reporting"](#).

NOTE: You can report on resources for which you have been assigned monitoring permission only. For more information, see [Section 7.5, "Monitoring permissions and reporting"](#), on page 101.

NOTE: You cannot run reports while the system performs data maintenance. For more information, see [Section 7.13.3, "Configuring the queue real-time report options"](#), on page 153.

7.1 About real-time reports

Real-time reports are reports that are viewed online to monitor the current status of the following resources:

- Users
- Groups (or virtual groups)
- Contacts
- Callbacks
- Queues and aggregates
- Sites

The data displayed in a real-time report is updated in real time. You can use the reports to help you make minute-to-minute decisions, for example, you can monitor activities in a group of users to evaluate if their workload indicates a need for more users. For a description of the statistics available, refer to the *Reporting Reference Guide*.

Real-time reports have an alarm mechanism to alert you to key column values in the report. For columns that have numeric or elapsed time values, you can set a threshold condition. For example, on a Contacts - Queued column you could set a threshold condition to trigger an alarm when the number of contacts in queue is greater than five.

NOTE: User real-time reports are available only if your site is operating with a reporting level of Full (see [Section 7.6, "Reporting level", on page 102](#)).

NOTE: You can configure the application to include ringing and unanswered contacts in queue real-time reports. For details, see [Section 7.13.3, "Configuring the queue real-time report options", on page 153](#).

For example, a key piece of information in a contact center is the number of contacts currently waiting in queue. If you wanted to monitor contacts waiting at the queue level, you could use a queue real-time report.

Example: Queue Status Report				
Name	Contacts	Service Level		Wait Time
	Queued	Current	Estimated	Estimated Answer
Mutual Funds-DIV	0	100.0	100.0	00:00:23
Mutual Funds-EQU	1	83.0	77.0	00:02:53
Stocks	2	100.0	83.0	00:02:45
	3	81.0	86.0	00:01:00

This report shows current contact waiting totals for a set of queues. Details for each queue include:

- The number of contacts waiting in that queue.
- The current service level based on the last 24 contacts and an estimated service level.
- The estimated time that a contact received will wait before being answered.

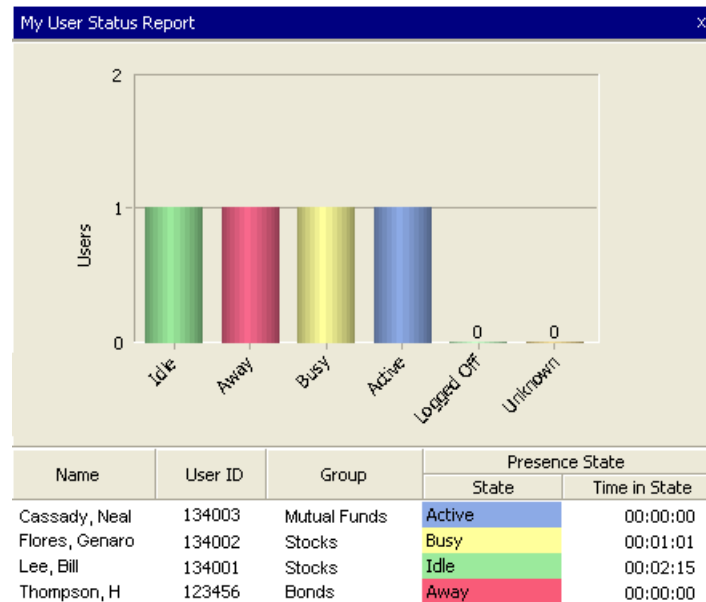
The highlighting on the Contacts - Queued column is an alarm mechanism that provides a visible or audible alarm to problem situations. Each real-time report subtype provides a set of columns for which you can set alarms. When setting up a report, you can define up to three different thresholds on a particular column. A different alarm can be displayed or sounded whenever each threshold value is exceeded. In a real life situation, the alarm on the Contacts - Queued

Reporting

About real-time reports

column might mean nothing more than an unusually busy day. You might use this information to take immediate action, for example, to have more users become available.

Alternatively, you may want to use the group real-time report as the first step in tracking down a problem. If you wanted more detail on what was going on with a problem queue, you could generate a user real-time report on users associated with that queue:



This report includes a bar chart, which consists of a bar graph representation of one statistic at the top of the report. When you create a real-time report, you have the option of including tabular information, chart information, or both.

In general, information in real-time reports can be helpful in identifying the following requirements and problems:

- Additional staffing
- User training
- Queuing bottlenecks
- Configuration changes such as reallocation of users among groups

7.2 About historical reports

Historical reports provide statistical summaries on the performance of specific resources over a specified time period. Historical reports are commonly used to evaluate or assess contact center performance, configuration efficiency, and the productivity of individual queues and users. Statistics are available at user, department, and site levels. For a description of the statistics available, refer to the *Reporting Reference Guide*.

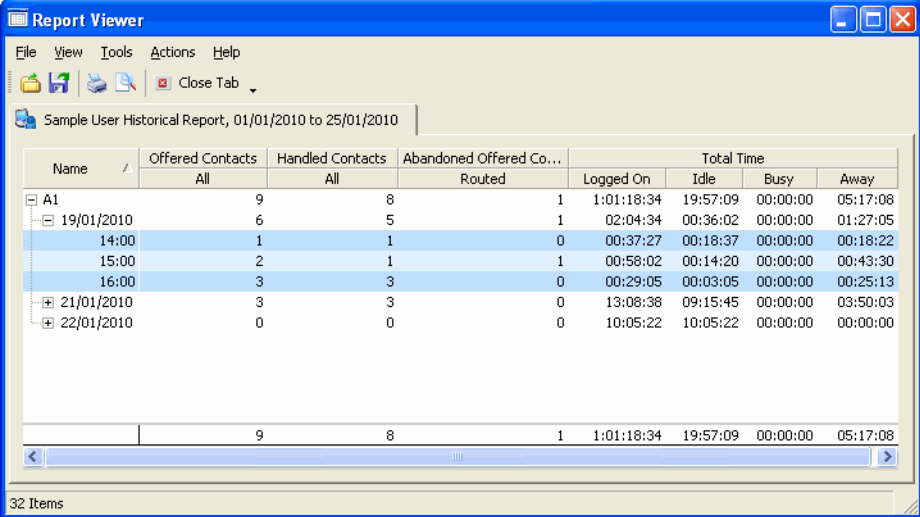
The resources that can be monitored in historical reports are:

- Users
- Groups (or virtual groups)
- Contacts
- Callbacks
- Queues
- Destinations
- Workflows
- Call Director components
- Wrap-up reasons
- Routing state reasons
- Post-processing reasons

Reporting

About historical reports

While common ranges for historical reports are daily, weekly, and monthly, you can also specify custom ranges. Within the range of a report, you can further break down the statistics for display by specified intervals. The report shown below is a daily report broken down into hourly intervals.



Report Viewer

File View Tools Actions Help

Close Tab

Sample User Historical Report, 01/01/2010 to 25/01/2010

Name	Offered Contacts	Handled Contacts	Abandoned Offered Co...	Total Time			
	All	All	Routed	Logged On	Idle	Busy	Away
A1	9	8	1	1:01:18:34	19:57:09	00:00:00	05:17:08
19/01/2010	6	5	1	02:04:34	00:36:02	00:00:00	01:27:05
14:00	1	1	0	00:37:27	00:18:37	00:00:00	00:18:22
15:00	2	1	1	00:58:02	00:14:20	00:00:00	00:43:30
16:00	3	3	0	00:29:05	00:03:05	00:00:00	00:25:13
21/01/2010	3	3	0	13:08:38	09:15:45	00:00:00	03:50:03
22/01/2010	0	0	0	10:05:22	10:05:22	00:00:00	00:00:00
	9	8	1	1:01:18:34	19:57:09	00:00:00	05:17:08

32 Items

Historical reports provide three scheduling options: run the report immediately, run the report once only at a specified date and time, or run the report on a regular basis. If you choose to run a report on a regular basis, you can also specify the frequency.

NOTE: The maximum number of database records that can be used to generate a historical report is 60,000 (10,000 if the report includes contact record details). If the number of database records used to generate a report exceeds these limits, the report will fail. The failed report will appear in the **Failed** folder with a message indicating that the number of records used to generate the report exceeded the maximum. To generate the report successfully, you must select fewer resources to report on, reduce the range of the report to cover a shorter time period, or select a longer interval.

7.3 About cumulative reports

Cumulative reports combine the “current status” benefits of real-time reports with the detailed statistics and rolup availability of historical reports.

The key differences between cumulative reports and historical reports are:

- Cumulative reports are online reports and cannot be scheduled.
- Cumulative reports show statistics for the current 24-hour period up until the last hourly or 15-minute interval defined for the report.
- When the next hourly or 15-minute interval passes, statistics for that interval for all included resources are added to the report in real time. In addition to the statistics for the new interval, totals at the department and site level are also updated.
- The charted statistic in a cumulative report can include a trend line that lets you compare current day intervals with the same intervals from the previous day or the same day last week.

For a description of the statistics available, refer to the *Reporting Reference Guide*.

The resources that can be monitored in cumulative reports are:

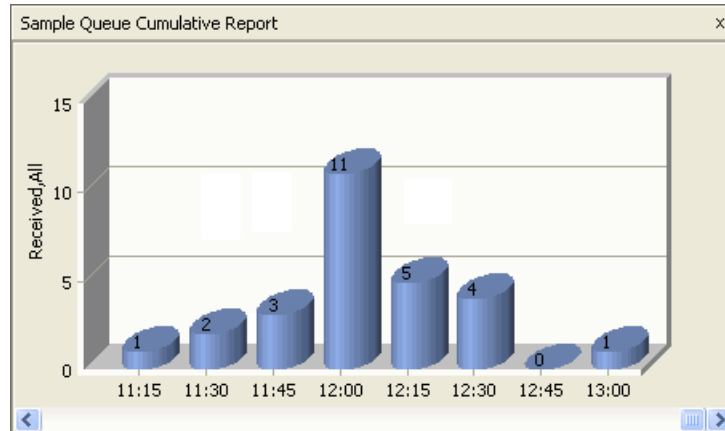
- Users
- Groups (or virtual groups)
- Callbacks
- Queues
- Destinations
- Workflows
- Call Director components
- Wrap-up reasons
- Routing state reasons
- Post-processing reasons

Cumulative reports have an alarm mechanism to alert you to key column values in the report. For columns that have numeric or elapsed time values, you can set a threshold condition. For example, on a Contacts - Queued column you could set a threshold condition to trigger an alarm when the number of contacts in queue is greater than five.

Reporting

About activity reports

The cumulative reports mechanism is designed to provide flexible, multipurpose reporting that complements historical and real-time reports. On a daily basis, you might use a report such as the one shown below to monitor contact center performance since start of shift or to keep running totals. For example, you might want to track actual performance statistics against projected or forecasted values. On a less frequent basis, you can create complex, one time only reports with a minimum of effort.



In addition to keeping running totals, a key benefit of a cumulative report is the use of the trend information to help with forecasting. The trend line is based on information collected for the previous day or the same day last week, and is present whenever you open the report. Tracking the current day's statistics against the selected trend, might alert you to upcoming problems. You may have to change staffing levels to accommodate anticipated volume fluctuations predicted by the trend line.

As an online report, the user interface provides viewing options such as showing or hiding levels of detail, and the ability to change views. Lastly, you can print or export the online report.

7.4 About activity reports

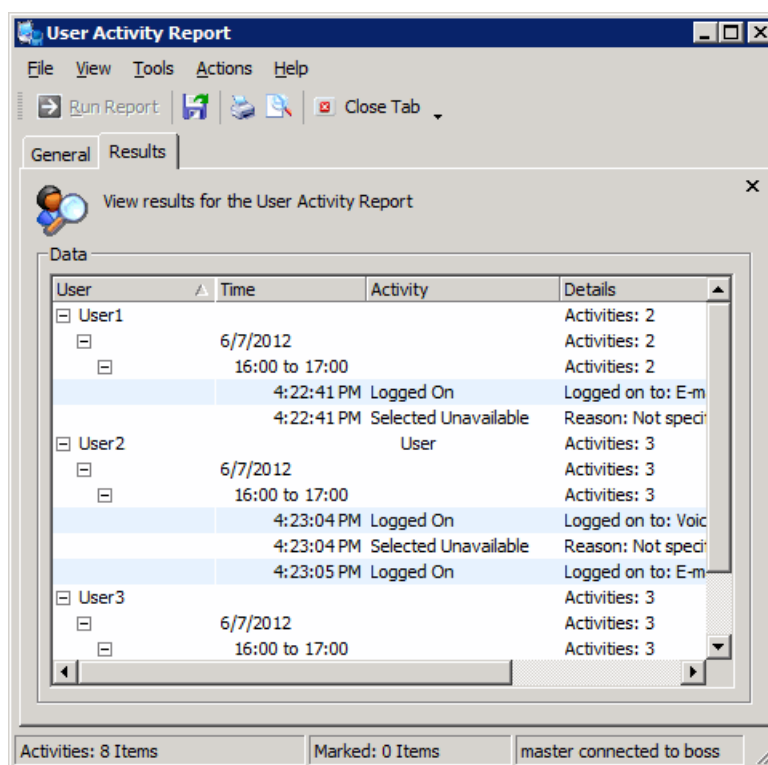
There are three types of activity reports that you can generate:

- **User Activity Report** – see [Section 7.10, "Generating a User Activity Report"](#), on page 141.
- **Source Activity Report** – see [Section 7.11, "Generating a Source Activity Report"](#), on page 142.
- **Scheduled Callback List** – see [Section 13.4, "Generating a Scheduled Callback List"](#), on page 307.

User and Source Activity Reports provide historical, step-by-step, state and activity data during a specified time interval for a specified date range. Note that the statistics are available only after the activity is complete, for example, after the current state has changed. In addition, the system requires a 15-minute delay so the statistics can be written to the OpenScape Contact Center database. For a description of the statistics available, refer to the *Reporting Reference Guide*.

A Scheduled Callback List provides a list of the callbacks scheduled for the contact center.

The following is an example of a User Activity Report for multiple users.



7.5 Monitoring permissions and reporting

If you are a supervisor or manager, you may have been assigned a number of users, groups, and queues that you have permission to monitor. As a result, you can report only on those resources that you have permission to monitor. For information on the resources that you can monitor, contact your administrator.

The reporting level also affects what you can monitor.

7.6 Reporting level

The reporting level is a licensed feature that restricts the amount of information that can be displayed for performance statistics in certain types of reports.

A site can have one of three reporting levels:

- **Full** – User historical and user cumulative reports can include detailed and summary statistics for each user. Events in source activity reports can identify specific users. User activity reports can be generated.
- **Department** – User historical and user cumulative reports can display statistics at the department level or site level only. Detailed and summary statistics for users are not available. Events in source activity reports pertaining to individual users identify only the user's department, not the individual user. User activity reports cannot be generated.
- **Site** – User historical and user cumulative reports can display statistics at the site level only. Detailed and summary statistics at the user and department level are not available. Events in source activity reports pertaining to individual users identify only the user's site and not the individual user. User activity reports cannot be generated.

For more information on the reporting level at your site, contact your service representative.

7.7 Configuring a report

When configuring real-time, cumulative, and historical reports, you create a report definition that defines the properties of the report. Some properties are common to all report types, for example, all reports have a layout property that dictates the columns displayed in the report and their order. Some properties are specific to certain report types. For example, real-time reports let you set alarms to draw your attention to certain values, and historical reports can be scheduled to run on a regular basis.

NOTE: To create or change a report definition, you must have Full or Modify access, respectively, for the associated Manager permission.

Before modifying an existing report, consider its ownership. If you have permission to monitor other users and have assigned users ownership of a report you want to modify, you may want to consult those users before you modify the report definition.

NOTE: Since activity reports are intended to be used as simple, case-by-case queries, there is no saved report definition for an activity report.

Overview

The following is an overview of the steps required to configure all the properties in a report definition:

1. Configure the general report properties – see [Section 7.7.1, “Configuring the general report properties”, on page 103.](#)
2. Select the resources that you want to report on – see [Section 7.7.2, “Selecting the content for a report”, on page 108.](#)
3. Specify the columns you want to appear in the report – see [Section 7.7.3, “Specifying the columns in a report”, on page 116.](#)
4. For real-time and cumulative reports, set the thresholds and alarms for particular columns – see [Section 7.7.4, “Setting thresholds and alarms in a report”, on page 117.](#)
5. Optionally, specify a bar chart for the report – see [Section 7.7.5, “Specifying a bar chart in a report”, on page 120.](#)
6. For historical reports, specify when to run the report and submit the report to the Scheduler – see [Section 7.7.6, “Scheduling a historical report”, on page 121.](#)
7. Specify the output options for the report – see [Section 7.7.7, “Specifying the output options for a report”, on page 124.](#)

7.7.1 Configuring the general report properties

When configuring a report, the first step is to configure the general report properties. The options you can select depend on the type of report you want to configure.

To configure the general report properties:

1. On the **File** menu, point to **New**, then **Report Center**, and then click the type of report you want to create.

NOTE: To make a copy of a predefined report, in the **Report Center**, under **Definitions**, click the type of report you want to copy, then, in the right pane, right-click the report definition you want to copy and click **Create Copy**.

2. Under **Report**, do the following:
 - In the **Name** box, type a unique name for the report.
 - In the **Description** box, type a description for the report. The description should include information about what the report contains, and what resources the report is monitoring.
3. In the **Owner** list, select the user who will be able to use this report when logged on to the Manager application. By default, your user name is selected. The list will contain all users that you have permission to monitor. You can assign a user who does not have permission to create reports as the owner of the report.
4. Under **Attributes**, do the following:
 - In the **Type** list, select the type of report you want to create: **Real-time**, **Cumulative**, or **Historical**. For some resources, only certain report types are available.
 - In the **Include** area, select the **Table** check box to include tabular information in the report, and/or select the **Chart** check box to include a bar chart in the report. A report is displayed in table format by default where the rows list the resources and the columns contain the statistics for those resources. If you clear the **Table** check box, the **Chart** check box is selected by default, but you can chart a single statistic only.
 - For a cumulative report, specify the range. For details, see [Section 7.7.1.1, "Specifying the range for a cumulative report"](#), on page 105.
 - For a historical report, specify the range. For details, see [Section 7.7.1.2, "Specifying the range for a historical report"](#), on page 105.
5. If you are finished working with this report definition, click **OK**.

7.7.1.1 Specifying the range for a cumulative report

When configuring a cumulative report, you must specify the range of the report.

To specify the range for a cumulative report:

1. In the **Report Center**, under **Definitions**, select the report type, then, in the right pane, double-click the report definition that you want to configure.
2. Under **Attributes**, in the **Range** list, select the range to be covered by the report in the current 24-hour period:
 - To show statistics accumulated since the start of the current shift, select **Since shift start**.
 - To show the most recent statistics, accumulated over a specified number of hours, select **Most recent**, and then in the **Time** box, type or select the amount of time (in hours and minutes) to be covered by the report.
 - To show statistics accumulated since some specified time of the day, select **Since**, and then in the **Time** box, type or select the starting time for the report.
 - In the **Interval** list, select the update interval for the report: **15 Minute** or **Hourly**.
3. If you are finished working with this report definition, click **OK**.

7.7.1.2 Specifying the range for a historical report

When configuring a historical report, you must specify the range of the report.

NOTE: The Start date, End date, Start time, and End time are determined based on the time and time zone settings configured on the server machine.

To specify the range for a historical report:

1. In the **Report Center**, under **Definitions**, select the report type, then, in the right pane, double-click the report definition that you want to configure.
2. Under **Attributes**, to specify a range that crosses over the midnight boundary, select the **Report over midnight** check box. This ensures that the data in the generated report includes intervals that cross over the midnight boundary.
3. In the **Range** list, select the range of the report. Your choices are:
 - **Yesterday** – Run a report on yesterday's statistics. The report can be broken down into 15-minute, hourly, or daily intervals.
 - **This Week** – Run a report on the accumulated statistics to date for this week. The **Start date** is based on the specified first day of the week setting. The report can be broken down into 15-minute, hourly, or daily intervals.
 - **Last Week** – Run a report on last week's statistics. The **Start date** is based on the specified first day of the week setting. The report can be broken down into 15-minute, hourly, daily, or weekly intervals.
 - **This Month** – Run a report on the accumulated statistics to date for this month. The **Start date** is the first day of the month. The report can be broken down into 15-minute, hourly, daily, or weekly intervals.
 - **Last Month** – Run a report on last month's statistics. The **Start date** is the first day of the month. The report can be broken down into 15-minute, hourly, daily, weekly, or monthly intervals.
 - **Custom** – Run a report on a custom range in which you specify the start and end dates. Reports covering a custom range can be broken down into 15-minute, hourly, daily, weekly, or monthly intervals, depending on the start date and end date that you specify.

NOTE: If you selected the **Report over midnight** check box in step 2, the ranges appear as **<Range>, Including Previous Day**. In each case, the **Start date** provided by the system will be one day before the start of the selected range. For example, if you select **This Month, Including Previous Day**, the **Start date** will be the last day of the previous month. Also, when the **Report over midnight** check box is selected, the report can only be broken down into 15-minute and hourly intervals.

4. If you selected **Custom**, in the **Start date** and **End date** boxes, type the start and end dates of the range. When the **Report over midnight** check box is selected, the start date cannot be the same as the end date.
5. In the **Interval** list, select the interval for which you want subtotals displayed within the range of the report. Refer to the descriptions in step 3, above.

NOTE: If you select **<None>** for the interval, the report will be generated using the 15-minute statistics. This can cause the report to fail if the number of database records used to generate the report exceeds the maximum.

6. In the **Start time** and **End time** boxes, specify only that part of the day that you want the report to cover. This is useful if your contact center is active only during part of the day or if you want to target particular shifts. The values are entered using a 24-hour clock. When the **Report over midnight** check box is selected, the **Start time** must be equal to or later than the **End time**. Some examples are as follows:
 - 09:00 to 17:00 – The report will cover between 9:00 A.M. and 5:00 P.M. on the same day.
 - 08:00 to 08:00 – The report will cover the 24-hour period.
 - 23:00 to 07:00 – The report will cover between 11:00 P.M. on one day to 07:00 A.M. on the next day. This configuration is only possible when the **Report over midnight** check box is selected.

NOTE: To specify 23:59 as the **End time**, select the **End of day** check box. When the **Report over midnight** check box is selected, the **End of day** check box is unavailable.

7. If multiple locations are configured, in the **Use time zone of** list, select the time zone option that you want to use to generate the contents of the report. Your choices are:
 - If you are on a main server machine and you are configuring a user, routing state reason, Wrap-up reason, or Post-processing reason report, your choices are **Local site** or **User location**. If you are configuring any other type of report on a main server machine, the **Use time zone of** list is not available.

Reporting

Configuring a report

- If you are on a central reporting server machine, for all historical report types, your choices are **Remote site** or **Central reporting site**.
- If you are on a central reporting server machine, and you are configuring a user, routing state reason, Wrap-up reason, or Post-processing reason report, your choices are **Remote site**, **User location**, or **Central reporting site**.

NOTE: On a central reporting server machine, if you select **Remote site** or **User location** and you select a **Weekly** interval, the **Start date** and **End date** will be based on the first day of the week configured at each remote site.

NOTE: If you select **User location**, you cannot report by queue or by aggregate in a Wrap-up reason historical report, as described in step 5 of [Section 7.7.2.3, "Selecting the resources for a historical report"](#), on page 112.

8. If you are finished working with this report definition, click **OK**.

7.7.2 Selecting the content for a report

A report definition must specify the resources that you want to report on. The resources that you can select depend on the type of report you are configuring and can include users, groups, queues, destinations, and so on. For details, see the following topics:

- [Section 7.7.2.1, "Selecting the resources for a real-time report"](#), on page 109
- [Section 7.7.2.2, "Selecting the resources for a cumulative report"](#)
- [Section 7.7.2.3, "Selecting the resources for a historical report"](#), on page 112

Each report can contain up to 100 resources; however, selecting a large number of resources will decrease system performance.

NOTE: You can report only on the resources for which you have been assigned monitoring permission (see [Section 7.5, "Monitoring permissions and reporting"](#), on page 101).

7.7.2.1 Selecting the resources for a real-time report

You can select different resources depending on the type of real-time report you are configuring.

To select the resources for a real-time report:

1. In the **Report Center**, under **Definitions**, select the report type, then, in the right pane, double-click the report definition that you want to configure.
2. Click the **Content** tab. The **Content** tab will display a list of resources, depending on the type of report you are defining. The **Content** tab will list only the resources that you have permission to monitor.
3. For a queue real-time report, use the **Report by** box to specify the level at which the resources can be selected:
 - **Queues** – The report will contain the queues you select in the list.
 - **Aggregates** – The report will contain the aggregates you select in the list.
4. For a user real-time report, use the **Select By** box to specify the level at which the resources can be selected:
 - **User** – The report will contain the users selected in the list.
 - **Group or Virtual Group** – The report will contain all users who are members of the groups (or virtual groups) you select and that you have permission to monitor.
 - **Department** – The report will contain all users who are members of the departments you select and that you have permission to monitor.
5. In the list of resources, select the check box for each resource that you want to include in the report.

NOTE: When you are editing a user report where both the **Report by** and **Select by** options are **User**, the users in the list who are associated with a user template are read-only. If you want to remove one of those users from the report, you must either break the user's association with the user template, or remove the report from the user template and update all users (in which case, all users associated with the user template will be removed from the report).

6. For a user real-time report, under **Exclude Users**, select the **Exclude logged off users** check box to exclude any users that are logged off the system from the report.
7. For a contact real-time report, under **Contact Options**, select the **Include processing before queued contact** check box if you want the contacts that have just arrived in the contact center and are still being processed to be included in the report. If this option is not selected, the contacts will not appear in the report until they have been enqueued.
8. If you are finished working with this report definition, click **OK**.

7.7.2.2 Selecting the resources for a cumulative report

You can select different resources depending on the type of cumulative report you are configuring.

To select the resources for a cumulative report:

1. In the **Report Center**, under **Definitions**, select the report type, then, in the right pane, double-click the report definition that you want to configure.
2. Click the **Content** tab. The **Content** tab will display a list of resources depending on the type of report you are defining. The list will contain only the resources that you have permission to monitor.
3. For a queue or callback cumulative report, use the **Report by** list to select the level at which the statistics are reported:
 - **Queue** – The report will display statistics at the queue level.
 - **Aggregate** – The report will display statistics at the aggregate level.
4. For a callback cumulative report, use the **Select by** list to select the level at which the resources can be selected:
 - **Queue/Aggregate** – The report will contain the queues or aggregates (depending on your selection in step 3, above) you select.
 - **Origin** – The report will contain the queues or aggregates (depending on your selection in step 3, above) that contain callbacks that were created in the ways you select.

5. For a user or routing state reason cumulative report, use the **Report by** box to select the level of detail in the report:
 - **User** – The report will display full user identification information and statistics.
 - **Department** – The report will display statistics only at the department level. User identification and detailed user statistics are suppressed.
 - **Site** – The report will display statistics only at the site level. User and department identification and detailed department and user statistics are suppressed.
6. For a Wrap-up reason cumulative report, use the **Report by** box to select the level of detail in the report:
 - **User** – The report will display full user identification information and statistics.
 - **Department** – The report will display statistics only at the department level. User identification and detailed user statistics are suppressed.
 - **Site** – The report will display statistics only at the site level. User and department identification and detailed department and user statistics are suppressed.
 - **Queue** – The report will display statistics only at the queue level. User and department identification and detailed department and user statistics are suppressed.
 - **Aggregate** – The report will display statistics only at the site level. User and department identification and detailed department and user statistics are suppressed.

NOTE: The **Report by** options described in steps 5 and 6, above, are available only within the constraints of the reporting level for your site (see [Section 7.6, "Reporting level", on page 102](#)). For example, if your site uses the Department reporting level, you cannot generate reports at the User level. The **Report by** options are also affected by your monitoring permissions. For example, if you have permission to monitor only two users, you can generate user reports with statistics on those two users only.

7. If you selected **User** in step 5 or step 6, use the **Select by** list to choose the level at which the users can be selected:
 - **User** – The report will display statistics for the users you select in the list.
 - **Group** (group-based routing) – The report will display statistics for all users who are members of the groups you select and that you have permission to monitor.
 - **Virtual Group** (skills-based routing) – The report will display statistics for all users who are eligible to handle contacts based on the skill expression in the virtual groups you select, and that you have permission to monitor.
 - **Department** – The report will display statistics for all users who are members of the departments you select and that you have permission to monitor.
8. In the list of resources, select the check box for each resource that you want to include in the report.

NOTE: When you are editing a user report where both the **Report by** and **Select by** options are **User**, the users in the list who are associated with a user template are read-only. If you want to remove one of those users from the report, you must either break the user's association with the user template, or remove the report from the user template and update all users (in which case, all users associated with the user template will be removed from the report).

9. If you are finished working with this report definition, click **OK**.

7.7.2.3 Selecting the resources for a historical report

You can select different resources depending on the type of historical report you are configuring.

To select the resources for a historical report:

1. In the **Report Center**, under **Definitions**, select the report type, then, in the right pane, double-click the report definition that you want to configure.
2. Click the **Content** tab. The resources that can be reported on (for example, users, queues, or destinations) are displayed. The **Content** tab will display only the resources that you have permission to monitor.

3. For a queue historical report, use the **Report by** list to select the level at which the queues can be selected:
 - **Queue** – The report will display statistics for the queues you select in the list.
 - **Queue by User** – The report will display statistics for the queues you select in the list, with details for the users within each queue.
 - **Aggregate** – The report will display statistics for the aggregates you select in the list.
4. For a user or routing state reason historical report, use the **Report by** box to select the level of detail in the report:
 - **User** – The report will display full user identification information and statistics.
 - **User by Queue** (not available for a routing state reason report) – The report will display full user identification information and statistics, with details for each queue from which the contact was assigned.
 - **Department** – The report will display statistics only at the department and site level. User identification and detailed user statistics are suppressed.
 - **Site** – The report will display statistics only at the site level. User and department identification and detailed department and user statistics are suppressed.
5. For a Wrap-up reason historical report, use the **Report by** box to select the level of detail in the report:
 - **User** – The report will display full user identification information and statistics.
 - **Department** – The report will display statistics only at the department level. User identification and detailed user statistics are suppressed.
 - **Site** – The report will display statistics only at the site level. User and department identification and detailed department and user statistics are suppressed.

Reporting

Configuring a report

- **Queue** – The report display statistics only at the queue level. User and department identification and detailed department and user statistics are suppressed.
- **Aggregate** – The report will display statistics only at the aggregate level. User and department identification and detailed user and department statistics are suppressed.

NOTE: The **Report by** options described in step 4 or step 5, above, are available only within the constraints of the reporting level for your site (see [Section 7.6, "Reporting level", on page 102](#)). For example, if your site uses the Department reporting level, you cannot generate reports at the user level. The **Report by** options are also affected by your monitoring permissions. For example, if you have permission to monitor only two users, you can generate user reports with statistics on those two users only.

6. For a callback historical report, use the **Report by** box to select the level at which the callbacks statistics are reported:
 - **Queue** – The report will display callback statistics for the queues you select in the list.
 - **Aggregate** – The report will display callback statistics for the aggregates you select in the list.
 - **Disposition** – The report will display statistics for all callbacks that have the dispositions you select in the list.
7. If you selected **User** or **User by Queue** in step 4 or step 5, use the **Select By** list to choose the level at which the users can be selected:
 - **User** – The report will display statistics for the users you select in the list.
 - **Group** (group-based routing) – The report will display statistics for all users who are members of the groups you select and that you have permission to monitor.
 - **Virtual Group** (skills-based routing) – The report will display statistics for all users who are eligible to handle contacts based on the skill expression in the virtual groups you select, and that you have permission to monitor.
 - **Department** – The report will display statistics for all users who are members of the departments you select and that you have permission to monitor.

8. If you selected **Queue** in step 6, use the **Select By** list to choose the level at which the queues can be selected:
 - **Queue** – The report will display statistics for the queues you select in the list.
 - **Origin** – The report will display statistics for all callbacks that originated in the ways you select in the list.
9. If you selected **Aggregate** in step 6, use the **Select By** list to choose the level at which the aggregates can be selected:
 - **Aggregate** – The report will display statistics for the aggregates you select in the list.
 - **Origin** – The report will display statistics for all callbacks that originated in the ways you select in the list.
10. In the resulting list of resources, select the check box for each resource that you want to include in the report.

NOTE: When you are editing a user report where both the **Report by** and **Select by** options are **User**, the users in the list who are associated with a user template are read-only. If you want to remove one of those users from the report, you must either break the user's association with the user template, or remove the report from the user template and update all users (in which case, all users associated with the user template will be removed from the report).

11. For a contact historical report, or if you selected **Queue by User** in step 3 or **User by Queue** in step 4, select the **Include contact record detail in this report** check box to have the report include state and activity data. This check box is available only if the selected interval is daily, weekly, or monthly (see [Section 7.7.1.2, "Specifying the range for a historical report"](#), on page 105).

NOTE: If you select this check box, and the number of database records used to generate the report exceeds 10,000, the report will fail. The failed report will appear in the **Failed** folder with a message indicating that the number of records used to generate the report exceeded the maximum. To generate the report successfully, you must either select fewer resources to report on or reduce the range of the report to cover a shorter time period.

12. If you are finished working with this report definition, click **OK**.

7.7.3 Specifying the columns in a report

You can choose the statistics you want to appear as columns in your reports, as well as the order in which they appear. The statistics that are available for selection depend on the resources on which you are reporting (see [Section 7.7.2, "Selecting the content for a report", on page 108](#)).

To specify the columns in a report:

1. In the **Report Center**, under **Definitions**, select the report type, then, in the right pane, double-click the report definition that you want to configure.
2. Click the **Columns** tab. The tab lists all the statistics you can display in the report.
3. Under **Columns**, do the following:
 - a) In the **Report on** list, select the media you want to report on.
 - b) Select the check box for each column that you want to appear in the report. For descriptions of the columns you can select, see the *Reporting Reference Guide*.

NOTE: The column that identifies the resource being reported on is selected by default and cannot be cleared. In the case of user reports, either the Name or User ID check box must be selected. The application will not allow you to clear both check boxes.

- c) The top to bottom order of the statistics in the list reflects the left to right order in which the columns appear in the report. To change the order of the columns, click anywhere in the row (not in the check box) to select the row, and then click the up or down arrow key to the right of the list to move the row up or down, respectively.
 - d) When the system is configured for multiple contact handling, you can configure a user real-time report to contain information about the primary active contact only in the columns related to handling states. To do this, select the **Show primary contact details only** check box. When the box is cleared, the report will contain information about both primary and non-primary active contacts.

4. Under **Sort**, do the following:
 - In the **Sort By** list, select the column on which to sort the data in the report.
 - In the **Sort Order** list, select the sort order (**Ascending** or **Descending**) for the report.
5. If you are finished working with this report definition, click **OK**.

7.7.4 Setting thresholds and alarms in a report

Real-time and cumulative reports have an alarm mechanism that can alert you to key values in a report. You can set a threshold on a particular statistic in a report and, when the threshold is exceeded, a visible or audible alarm draws your attention to that statistic value. Alarm actions include logging a message to the System Messages window, color highlighting in the appropriate column of the report table, and playing a .wav file.

NOTE: The color highlighting alarm action cannot be displayed in a bar chart.

You can set thresholds only on threshold-eligible statistics. To determine if you can set a threshold on a statistic, see the description of the statistic in the *Reporting Reference Guide*.

NOTE: To set thresholds in a report, you must have the **Set view and report thresholds** Manager permission.

Reporting

Configuring a report

You can set up to three different conditions for a statistic for low, medium, and high thresholds. For example, you could set the following conditions on a Contacts - Queued statistic:

- Highlight the value in blue when the number of contacts waiting is greater than 5.
- Highlight the value in yellow when the number of contacts waiting is greater than 10.
- Highlight the value in red when the number of contacts waiting is greater than 15.

NOTE: Before setting thresholds and alarms, you must first specify the columns to be displayed in the report (see [Section 7.7.3, "Specifying the columns in a report"](#), on page 116).

To set a threshold and alarm in a report:

1. In the **Report Center**, under **Definitions**, select the report type, then, in the right pane, double-click the report definition that you want to configure.
2. Click the **Thresholds** tab.
3. Under **Defined Thresholds**, the application lists all existing threshold definitions for this report.
 - To create a new threshold, click **Add**.
 - To edit an existing threshold, select the threshold in the list and click **Edit**.
4. In the **Variable Threshold** dialog box, in the **Statistics** list, select the name of the statistic for which you want to set a threshold. The list contains only threshold-eligible statistics.
5. If you selected a state statistic, in the **State** list, select the state with which you want to associate the threshold.
6. In the **Contact Type** list, select the contact type with which you want to associate the threshold.
7. Select the **Active** check box to activate the threshold on this statistic.
8. Depending on the type of resource you are reporting on (see [Section 7.7.2, "Selecting the content for a report"](#), on page 108), select the check box for each resource for which the threshold will be displayed. For example, if you are configuring a user real-time report, under **Users**, select the check box for each user for which you want the threshold to be displayed.

9. Click the **Thresholds** tab.
10. Under **Activity**, in the **Range** list, select the threshold range for which you want to set the alarms: **Low**, **Medium**, or **High**.
11. If you selected the Medium or High threshold range, select the **Active** check box to activate the alarm on the range. You cannot clear the Active check box on the Low range – it is selected by default.
12. In the **Threshold** box, type or select the threshold value.
13. In the **Action** area, select the check box for each alarm you want to set for the threshold range:
 - If you want to log a system message each time the threshold is exceeded, select the **Log Alarm to System Messages window** check box.
 - If you want to highlight the text in a different color each time the threshold is exceeded, select the **Change color** check box and select a color from the list.
 - If you want to play a sound file each time the threshold is exceeded, select the **Play a sound file** check box, type the name of the .wav file stored on the main server machine. If you are on the main server machine, you can browse to select the .wav file.

NOTE: If you are connected to a production database, you can click  to play the .wav file. You cannot play .wav files when you are connected to a design database.

14. Repeat steps 10 to 13 for each threshold range you want to configure.
15. Under **Summary**, view the threshold ranges and alarms you have set.
16. Click **OK** to close the Variable Threshold dialog box. The threshold is displayed in the **Defined Thresholds** list.
17. If you are finished working with this report definition, click **OK**.

7.7.5 Specifying a bar chart in a report

All types of reports can contain a bar chart for a single statistic. Only some of the statistics in a report can be charted. To determine if a statistic can be charted, see the description of the statistic in the *Reporting Reference Guide*.

NOTE: The color highlighting alarm action for a statistic cannot be displayed in a bar chart. For details, see [Section 7.7.4, "Setting thresholds and alarms in a report"](#), on page 117.

NOTE: Before setting the charting options, you must first specify the columns to be displayed in the report (see [Section 7.7.3, "Specifying the columns in a report"](#), on page 116).

NOTE: On a central reporting server machine, when you run a report based on the time zone of a remote site and you select a weekly interval, if the first day of the week setting configured on the central reporting server machine is different from the setting configured on one of the remote sites, charts cannot be rendered.

To specify a bar chart in a report:

1. In the **Report Center**, under **Definitions**, select the report type, then, in the right pane, double-click the report definition that you want to configure.
2. Ensure that charting is enabled: on the **General** tab, under **Attributes**, select the **Chart** check box.
3. Click the **Chart** tab.
4. Under **Settings**, in the **Statistic** list, select the name of the statistic that you want to chart. The list contains only the columns that can be charted.
5. In the **Bar Color** list, select the color of the bars in the chart. You can select only one color for all the bars.
6. In the **Style** area, select the style of the bars: **2D** or **3D**.
7. For cumulative reports only, you can display a trend line on the chart. Select the **Show trend** check box and then specify the properties of the trend line, as follows:

- In the **Trend** box, choose **Yesterday** to display a trend line based on yesterday's statistics or choose **Same Day Last Week** to display a trend line based on statistics from seven days ago.
 - In the **Line style** list, select **Straight** or **Smooth**.
 - In the **Line color** list, select the color of the trend line.
 - Select the **Data points** check box if you want the trend line to show key data points.
8. Under **Preview**, view the choices you have made for your bar chart.
9. If you are finished working with this report definition, click **OK**.

7.7.6 Scheduling a historical report

You must submit the reports that you want to execute to the Scheduler. The Scheduler is the component responsible for scheduling reports, queuing reports to execute, and maintaining the completed reports.

NOTE: To schedule a historical report, you must have the **Schedule and view historical reports** Manager permission.

If a scheduled report executes while you are not logged on to the Manager application, the next time you log on you will be prompted to transfer the completed report to the local machine. At that time, the report will be output as specified in the report definition. The system keeps completed reports for up to seven days.

NOTE: If you encounter issues when trying to view or print a historical report, export a historical report to a file, or send a historical report by e-mail, it may be due to a network issue. For assistance, contact your network administrator.

You can schedule a historical report to:

- Run immediately – see [Section 7.7.6.1, “Scheduling a report to run immediately”, on page 122](#)
- Run at a specific date and time – see [Section 7.7.6.2, “Scheduling a report to run once at a specific date and time”, on page 122](#)
- Run on a regular basis – see [Section 7.7.6.3, “Scheduling a report to run on a regular basis”, on page 123](#)

NOTE: If you modify a scheduled historical report, in addition to saving the report definition, you must also resubmit the report to the Scheduler.

7.7.6.1 Scheduling a report to run immediately

When you configure a historical report, you can schedule the report to run immediately.

To run a report immediately:

1. In the **Report Center**, under **Definitions**, select the report type, then, in the right pane, double-click the report definition that you want to configure.
2. Click the **Schedule** tab.
3. In the **Run the report** list, select **Now**.
4. Click **Submit to Scheduler**. The report will run with the destination and format specified on the Output tab.

7.7.6.2 Scheduling a report to run once at a specific date and time

When you configure a historical report, you can schedule the report to run at a specific date and time.

To schedule a report to run once:

1. In the **Report Center**, under **Definitions**, select the report type, then, in the right pane, double-click the report definition that you want to configure.
2. Click the **Schedule** tab.

3. In the **Run the report** list, select **One Time**. The tab is updated to allow you to specify when your report is to run.
4. In the **Date** list, select the date when the report is to run.
5. In the **Time** list, specify the time when you want the report to run. The format is based on a 24-hour clock, for example, 4:00 P.M. is entered as 16:00.
6. Click **Submit to Scheduler**. The report will run with the destination and format specified on the Output tab.

7.7.6.3 Scheduling a report to run on a regular basis

When you configure a historical report, you can schedule the report to run on a regular basis.

To schedule a report to run on a regular basis:

1. In the **Report Center**, under **Definitions**, select the report type, then, in the right pane, double-click the report definition that you want to configure.
2. Click the **Schedule** tab.
3. In the **Run the report** list, select **More Than once**. The tab is updated to allow you to specify when your report is to run.
4. Use one of the following methods to schedule how often the report is to run:
 - Click **Daily** and then select the check box beside each day of the week when you want the report to run. In the **Time** box, type or select the time of day when the report is to run.
 - Click **Weekly** and then, from the **Day** list, select the day of the week when you want the report to run. In the **Time** box, type or select the time of day when the report is to run.
 - Click **Monthly** and then, from the **Day** list, select one of the following: **Last Day** to generate the report on the last day of the month, or **Specific Day** and then choose a date in the month from the box that appears. In the **Time** box, type or select the time of day when the report is to run.

NOTE: The format of the **Time** box is based on a 24-hour clock, for example, 4:00 P.M. is entered as 16:00.

5. Use one of the following methods to specify the duration of this report schedule:

- To run the report indefinitely, click the **Forever**.
 - To apply the schedule for a fixed length of time, click **Custom** and then use the **Start** and **End** lists to specify the start and end dates.
6. Click **Submit to Scheduler**. The report will run with the destination and format specified on the Output tab.

7.7.7 Specifying the output options for a report

Real-time and cumulative reports are normally designated for online viewing, whereas historical reports can be viewed online, printed, exported to a file, or sent as an attachment in an e-mail message. For more information, see the following topics:

- [Section 7.7.7.1, "Specifying the output options for a real-time or cumulative report", on page 124](#)
- [Section 7.7.7.2, "Specifying the output options for a historical report", on page 126](#)

7.7.7.1 Specifying the output options for a real-time or cumulative report

Real-time and cumulative reports can be designated for online viewing only because they contain information that is updated in real time. However, if you need a hard or soft copy of a real-time or cumulative report, you can print a copy or save it to a file while viewing it online. In these cases, you use the Output tab to specify the printer that is used when you print the report from the screen. You can also specify the format and file name to be used when you save a copy of the report to the hard drive.

The default output settings for reports are specified in the user reporting options. For details, see [Section 7.12.1, "Configuring the general user reporting options", on page 144](#)). However, you can override the default settings when you configure the output options for the report.

To specify the output options for a real-time or cumulative report:

1. In the **Report Center**, under **Definitions**, select the report type, then, in the right pane, double-click the report definition that you want to configure.
2. Click the **Output** tab.
3. Under **Default Output Settings**, the **View report** option is selected by default and cannot be changed.
4. Under **Output Mode Settings**, in the **Output mode** list, select the output mode for which you want to change the default settings.
5. If you selected **Print report** in step 4, do the following:
 - In the **Printer name** list, select the printer where you want the report to be printed.
 - To specify the formatting options, such as page orientation, headers, and footers, click **Advanced**.
6. If you selected **Export report** in step 4, do the following:
 - In the **Format** list, select the file format of the report. Your choices are Microsoft Excel Workbook (.xls), Web Page (.htm), CSV (Comma Delimited) (.csv), or Portable Document Format (.pdf).
 - In the **File Name** box, specify the location and name of the file to which you want to export the report. You must include the full path to the exported file, for example, C:\filename.
 - To specify the formatting options, such as page orientation, headers, and footers, click **Advanced**.
7. If you are finished working with this report definition, click **OK**.

7.7.7.2 Specifying the output options for a historical report

When you configure a historical report, you can designate the report to be viewed online, printed, exported to a file, or sent to one or more recipients by e-mail. Regardless of the output mode, completed historical reports are sent to a specified report folder.

NOTE: The option to send a historical report by e-mail is available only if the e-mail reports option is enabled, and you have the **E-mail historical reports** Manager permission. For details on how to enable the e-mail reports option, see [Section 7.13.5, "Configuring the e-mail reports option"](#), on page 156.

The default output settings for reports are specified in the user reporting options. For details, see [Section 7.12.1, "Configuring the general user reporting options"](#), on page 144. However, you can override the default settings when you configure the output options for the report.

To specify the output options for a historical report:

1. In the **Report Center**, under **Definitions**, select the report type, then, in the right pane, double-click the report definition that you want to configure.
2. Click the **Output** tab.
3. Under **Default Output Settings**, in the **Output folder** list, select the report folder where you want to send the completed report. You can choose the default Report Inbox or a custom report folder.
4. In the **Output mode** list, select the default output mode for the report:
 - **View report** – The report is available for online viewing only.
 - **Print report** – The report is sent to a printer.
 - **Export report** – The report is exported to a file.
 - **E-mail report** – The report is attached to an e-mail message and sent to one or more recipients.
5. Under **Output Mode Settings**, in the **Output mode** list, select the output mode for which you want to change the default settings.

6. If you selected **Print report** in step 5, do the following:
 - In the **Printer name** list, select the printer where you want the report to be printed.
 - To specify the formatting options, such as page orientation, headers, and footers, click **Advanced**.
7. If you selected **Export report** in step 5, do the following:
 - In the **Format** list, select the file format of the report. Your choices are Microsoft Excel Workbook (.xls), Web Page (.htm), CSV (Comma Delimited) (.csv), or Portable Document Format (.pdf).
 - In the **File Name** box, specify the location and name of the file to which you want to export the report. You must include the full path to the exported file, for example, C:\filename.
 - To specify the formatting options, such as page orientation, headers, and footers, click **Advanced**.
8. If you selected **E-mail report** in step 5, do the following:
 - In the **From** box, the application displays the outgoing e-mail address specified in the default output settings. You cannot edit the e-mail address.
 - Specify the e-mail recipients.
 - To select a recipient from an LDAP directory, click **To**, **Cc**, or **Bcc**, and select the recipient in the **Select Recipients** dialog box. To use this feature, a directory must already be configured. For details, see [Section 5.5, "Configuring a directory"](#).
 - In the **To**, **Cc**, or **Bcc** boxes, type the e-mail address of the recipient. To type an e-mail address, you must have the **Type e-mail address into Recipient field when e-mailing reports** Manager permission.
 - To specify more than one recipient in each of the **To**, **Cc**, or **Bcc** boxes, separate each recipient with a semi-colon.
 - In the **Subject** box, type the subject of the e-mail message. By default, the subject is the name of the report.

Reporting

An exercise in creating a simple real-time report

- In the **Message** box, type the body of the e-mail message in plain text only. By default, the message contains the signature specified in the default output settings.
 - In the **Format** list, select the format of the report that is attached to the e-mail message. Your choices are Microsoft Excel Workbook (.xls), Web Page (.htm), CSV (Comma Delimited) (.csv), or Portable Document Format (.pdf).
 - In the **File name** box, specify the name of the attached file. The default file name is the name of the report with an extension that corresponds to the selected file format.
 - To specify the formatting options of the report, such as page orientation, headers, and footers, click **Advanced**.
9. If you are finished working with this report definition, click **OK**.

7.8 An exercise in creating a simple real-time report

In [Section 7.1, "About real-time reports", on page 94](#), you saw a simple queue real-time report that displayed and categorized the current contacts waiting for a set of queues.

The following topics walk you through the process of creating and activating this report. This exercise is intended for practise purposes only.

Before you begin:

- Ensure that the system is running and your contact center is active. This is required to generate reports with live data.
- If you are a supervisor, you will be reporting on and monitoring resources such as queues and individual users. You will need permission to monitor these resources. To ensure that you have been granted these permissions, contact your administrator.

7.8.1 Creating a new report definition

The first step in creating a report is to specify a definition for the report, including the report type and the administrative details.

To create a new report definition:

1. In the **Report Center**, under **Definitions**, click **Queues**.
2. On the **File** menu, point to **New**, then **Report Center**, and then click **Queue Report**.

3. In the **Type** list, select **Real-time**. The tabs on the **Queue Report** dialog box reflect the various properties of a real-time report.

The screenshot shows the 'Queue Report' dialog box with the 'General' tab selected. The 'Report' section contains a 'Name' text box, a 'Description' text box, and an 'Owner' dropdown menu set to 'Administrator, Master'. The 'Style' section contains a 'Type' dropdown menu set to 'Real-time' and an 'Include' section with a checked 'Table' checkbox and an unchecked 'Chart' checkbox. The dialog has 'OK' and 'Cancel' buttons at the bottom right.

4. In the **Name** box, type **My Queue Real-Time Report**.
5. The owner can be you or any of the users you have permission to monitor. The report will be available to the owner whenever the owner logs on to the Manager application. For now, you can keep ownership of the report. Since this is the default option, no action is necessary.

7.8.2 Specifying the layout of the report

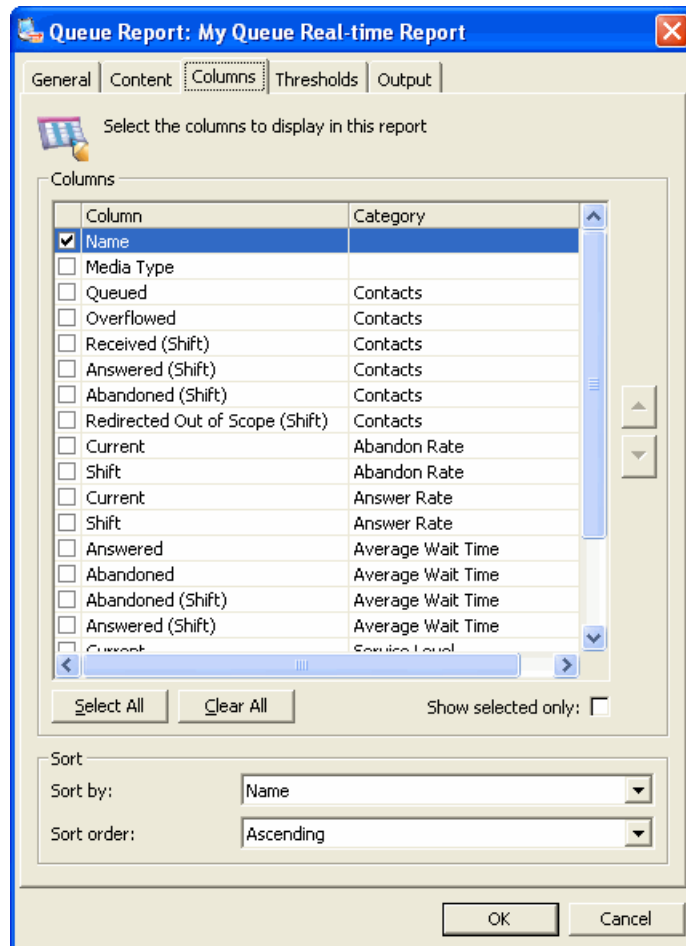
The most important part of the report is the set of columns displayed. This is the set of identifiers and statistics in the report and their sequence.

Reporting

An exercise in creating a simple real-time report

To specify the layout for the report:

1. Click the **Columns** tab.



2. Select the **Name, Contacts-Queued, Service Level-Current, Service Level-Estimated, Wait Time- Estimated Answer** check boxes. Each of the statistics associated with the check boxes corresponds to a column that can appear in the report. The top to bottom sequence of columns options corresponds to the left to right sequence of the columns in the report. Since the columns you want displayed are already in the sequence you want them displayed, specifying the layout is easy.

NOTE: The **Name** check box is automatically selected and cannot be cleared. Each report, regardless of the resource being reported on, must include an identifier for the key resource.

7.8.3 Choosing the queues to report on

The queues that you can monitor and report on depend on your role. For example, if you are a contact center supervisor, the OpenScape Contact Center administrator will have given you permission to monitor one or more queues.

To choose the queues you want to report on:

1. Click the **Content** tab.
2. Click **Select All**.

7.8.4 Setting a threshold and an alarm

The report you are creating will show an alarm on the **In Queue** column. In a real-life situation in which you were using several real-time reports to monitor several sets of resources, this is the visible alarm that draws your attention to the report and to the specific column values. For more information, see [Section 7.7.4, "Setting thresholds and alarms in a report"](#), on page 117.

To set the alarm in your report:

1. Click the **Thresholds** tab.
2. Click **Add**.
3. In the **Variable Threshold** dialog box, you can choose the column where you want to set the alarm. In the **Statistic** list, select **Contacts - In Queue**. This is the column where you want to set an alarm.

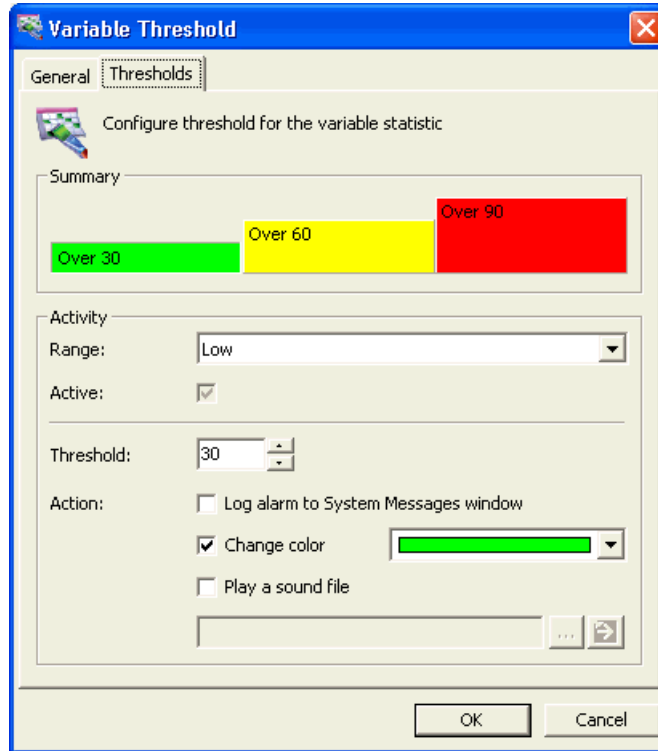
NOTE: The only items available in the **Statistic** list, are the items that you selected on the **Columns** tab that support a threshold value. For example, the **Name** column does not appear in the list, as thresholds cannot be set on the queue name.

4. You can also specify that the alarm should only be displayed for certain queues. The names that you see in the **Queues** area are the queues at your site that you have permission to report on. Click **Select All**. This indicates that the alarm will apply to all the queues that you selected on the **Contents** tab.

Reporting

An exercise in creating a simple real-time report

- Click the **Thresholds** tab. This is where you provide the details of your alarm. You can configure up to three levels of alarm. For now, a single alarm level will be sufficient. You will have to disable the other two alarms.



- In the **Range** list, select **High**.
- Clear the **Active** check box to disable the alarm at the **High** level. The settings for the **Medium** alarm are shown.
- Clear the **Active** check box to disable the alarm at the **Medium** level. The settings for the **Low** alarm are shown.
- In the **Threshold** box, type or select **1** as the threshold value for your alarm. Your alarm will be displayed whenever the Contacts - Queued column value is greater than one.
- Click the **Change color** check box and then select red as the color to display when the Contacts - Queued column value is greater than one.
- Click **OK** to close the Variable Threshold dialog box.
- Your report definition is now complete. Click **OK** to close the report definition.

7.8.5 Activating and viewing the report

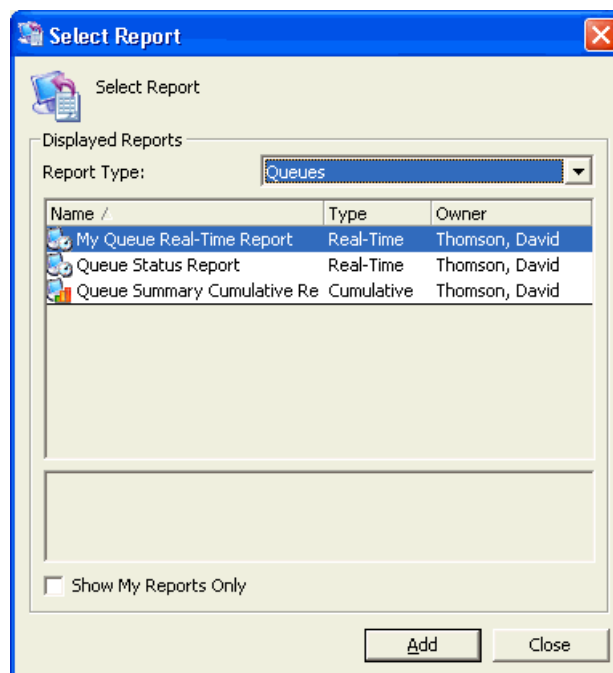
To view your report, you must first activate it. You activate the report by adding it to a view located in the **Report Views** folder.

To activate the report:

1. In the **Report Center**, under **Output**, click the **Report Views** folder. The list is updated to show the contents of the **Report Views** folder.

NOTE: Unless you are the OpenScape Contact Center administrator, your **Real-Time** folder is probably empty.

2. On the toolbar, click  (New). A **Report View** dialog box appears.
3. In the **Name** box, type **My Real-Time Reports**.
4. In the **Default Layout** list, select **1-Single**.
5. Click **Add**. A **Select Report** dialog box appears.



6. In the **Report Type** list, select **Queues**.
7. In the **Displayed Reports** list, click **My Queue Real-Time Report** to select it, and then click **Add**.
8. Click **Close** to close the **Select Report** dialog box.

Reporting

An exercise in adapting a predefined historical report

9. Click **OK** to close the **Report View** dialog box.

10. Double-click the **My Real-Time Reports** report view. The **Real-time Viewer** opens.

You have now successfully finished working through your first report.

7.9 An exercise in adapting a predefined historical report

Making a copy of an existing predefined report and then modifying it is often more efficient than creating a new report. The following sections walk you through the process of adapting the **Queue Summary Report** (a predefined queue historical report) to address a slightly different reporting requirement.

Consider a real-world situation involving your queue configuration. A Borrowing queue might have a Mortgages group as its primary group and a Savings group as its overflow group. If you monitored the Borrowing queue with a real-time report on a daily basis, you might notice a daily trend towards more contacts waiting in queue. This could mean several things. There might simply be increased traffic from customers interested in mortgages as a result of a recent sales or advertising campaign. You might be inadequately staffed with regards to users who are experts in handling mortgage-related contacts. Or you might have to change the step time in your queue configuration, or adjust the associated workflow.

A queue historical report contains statistics that could help you investigate further. The following is an example of a queue historical report with the basic information you need to get started.

Name	Service Level	Abandon Rate	Received Contacts	Answered Contacts		
			All	All	Primary	Overflow
☐ Mutual Funds	90	10	4000	3598	2598	1000
Oct 10	85	12	1100	935	600	335
Nov 10	92	9	1200	1104	750	354
Dec 10	88	11	800	704	500	204
Jan 10	95	8	900	855	600	255

Week-by-week reports for a period of three or four months might help you diagnose any trends. Based on the information contained in those reports, you might use other reports to examine the trends more closely. Historical reports on users might be the next step.

The predefined **Queue Summary Report** is a close approximation to the report shown above. In this exercise, you will modify the **Queue Summary Report** for use in inspecting the problems discussed above.

7.9.1 Creating a copy of the predefined report

The first step is to create a copy of the **Queue Summary Report**.

To create a copy:

1. In the **Report Center**, under **Definitions**, click **Queues**.
2. In the list, click **Queue Summary Report** to select that report.
3. On the **Edit** menu, click **Create Copy**.
4. In the **Queue Summary Report** dialog box, in the **Name** box, change the name to **Queue Summary Report Sample**.

Queue Report: Queue Summary Report Sample

General | Content | Columns | Schedule | Output

Configure details for the report

Report

Name: Queue Summary Report Sample

Description: Default queue summary report

Owner: Administrator, Master

Style

Type: Historical

Include: ☒ Table ☐ Chart

Range: Yesterday

Start date: Wednesday, 02 February, 2005

End date: Wednesday, 02 February, 2005

Interval: 15 Minute

Start time: 08:00

End time: 17:00

OK Cancel

7.9.2 Specifying the range for the report

Range and scheduling are closely related properties of a historical report. While the range dictates the length of time covered in the report, scheduling specifies when the report will be run. For example, if you are interested in daily reports (range), you might want to have the report for each day run at 10:00 A.M. the following day (schedule). You will set your new historical report to have a range of one day and have it run immediately.

To specify the range for this report:

1. Click the **Range** list to display the range options. Leave the **Yesterday** option selected.
2. For each queue in the report, statistics will be shown broken down by the interval you choose over the range of your report. If you were interested in fine detail, you could produce a report with 15-minute intervals. In the interest of producing a simple report definition, an hourly interval will do. In the **Interval** list click **Hourly**.
3. Your report should show only those times when the contact center is open. If you want, use the **Start Time** and **End Time** boxes to choose a different daily period to be covered in the report.

7.9.3 Scheduling the report

You schedule daily reports to run at a specified time on the day following the day that the report is to cover. For example, if you are concerned about minimizing the load on the system, you might run the report for the previous day at a time when the contact center is not open, such as 4:00 A.M.

For this exercise, you can leave the default **Now** option selected on the **Schedule** tab. For a description of the other options, see [Section 7.7.6, "Scheduling a historical report", on page 121](#).

7.9.4 Specifying the layout of the report

The next task is to specify the columns that will be displayed in your report, and their sequence. Each type of historical report presents a large variety of statistics that you can use as columns in your report. To bring this report in line with the report shown on [page 134](#), you will have to remove some statistics from the current definition, add others,

and change the ordering.

To specify the layout of your report:

1. Click the **Columns** tab.
2. Clear the check boxes for the following unnecessary statistics:

Column	Category
Redirected	Out of Scope
Abandoned	Abandoned Contacts
All	Average Wait Time

3. Select the check boxes for the following statistics you want to include:

Column	Category
Primary	Answered Contacts
Overflow	Answered Contacts

4. Select the **Service level** statistic. Do not clear the check box.
5. Click the up arrow at the right of the dialog box until the **Service level** statistic is immediately below the **Name** statistic.

Reporting

An exercise in adapting a predefined historical report

- Repeat steps 4 and 5 to move the **Abandon Rate** statistic to immediately below the new location of the **Service Level** statistic. Your **Columns** tab should now appear as follows:

Queue Report: Queue Summary Report

General | Content | Columns | Schedule | Output

Select the columns to display in this report

Columns

Column	Category
☒ Name	
☒ Service Level	
☒ Abandon Rate	
☒ All	Received Contacts
☒ All	Answered Contacts
☒ Primary	Answered Contacts
☒ Overflow	Answered Contacts
☐ Requeued	Received Contacts
☐ Out of Scope	Redirected Contacts
☐ Out Of Scope	Transferred Contacts
☐ Answer Rate	
☐ All	Average Wait Time
☐ Answered	Average Wait Time
☐ Abandoned	Average Wait Time
☐ Redirected	Average Wait Time
☐ All	Maximum Wait Time
☐ Answered	Maximum Wait Time

Select All Clear All Show selected only: ☐

Sort

Sort by: Name

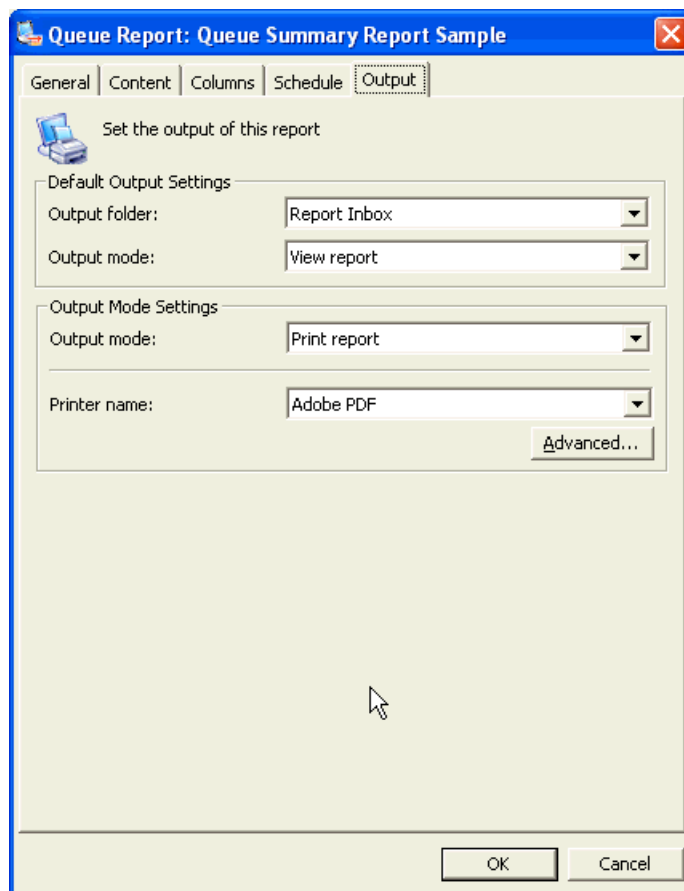
Sort order: Ascending

OK Cancel

7.9.5 Specifying the output options for the report

Typically, historical reports are printed. You can, however, specify other destinations for a historical report. For details, see [Section 7.7.7.2, “Specifying the output options for a historical report”](#), on page 126.

The default output mode of **View report** on the **Output** tab will work well for this exercise.



Reporting

An exercise in adapting a predefined historical report

7.9.6 Choosing the queues to report on

The queues that you can monitor and report on depend on your role. For example, if you are a contact center supervisor, the OpenScape Contact Center administrator will have given you permission to monitor one or more queues.

To choose the queues you want to report on:

1. Click the **Content** tab. It includes entries for all the queues that you have permission to monitor.
2. Click **Select All**.

7.9.7 Running the report

Your report definition is now complete. The remaining task is to run the report. Historical reports are managed by the Scheduler. For more information, see [Section 7.7.6, "Scheduling a historical report", on page 121](#).

To run the report:

1. Click **OK**. A dialog box appears, prompting whether you want to submit the report now.
2. Click **OK** to submit the report now. Your report may take several minutes to run. When finished, the report will be included in the **Report Inbox** folder, under **Output**. You can display the contents of that folder and double-click the report to display it.

You have now successfully finished working through your second report.

7.10 Generating a User Activity Report

When you generate a User Activity Report, the application displays historical, minute-by-minute, state and activity data for a user or group of users during a specified time interval for a specified date range. You can choose to report on an individual user or multiple users who were active during the time interval. If multiple locations are configured, you can choose to run the report based on the time zone of the local site or user location.

NOTE: To generate a User Activity Report, you must have the associated Manager permission.

NOTE: User Activity Reports are available only if your site has a reporting level of Full. For more information, see [Section 7.6, "Reporting level"](#), on page 102.

Each row in the report provides details on an individual state change. The columns in the report are:

- **User** – The user being reported on.
- **Time** – The date and time when the activity or state change occurred.
- **Activity** – The activity or state to which the user changed.
- **Details** – Additional details for the activity or state change.

To generate a User Activity Report:

1. On the **View** menu, point to **Activity Reports**, and then click **User**.
2. Under **Criteria**, in the **Report on** list, select the users to report on. Your choices are: **Individual user** or **Active users in time interval**.
3. In the **Start** box, type or select the start date and time of the interval that you want the report to cover. The time format is based on a 24-hour clock, for example, 4:00 P.M. is entered as 16:00.
4. In the **End** box, type or select the end date and time of the interval that you want to report on.
5. If multiple locations are configured, in the **Use time zone of** list, select the time zone option that you want use to generate the contents of the report. Your choices are **Local site** or **User location**.

Reporting

Generating a Source Activity Report

6. If you selected **Individual user** in step 2, in the **Name** box, type or select the name of the user who you want to report on.
7. If you selected **Active users in time interval** in step 2, do the following:
 - a) Click **Find Now**. The system generates the list of users who were active during the specified time interval.
 - b) Under **Users**, select the check box for each user who you want to report on, or click **Select All**. You can select a maximum of 100 users.
8. On the **Actions** menu, click **Run Report**.
9. Click the **Results** tab to view the report results. A complete activity report can display a maximum of 40,000 records. An incomplete activity report (one that reaches 40,000 records before all the users have been processed), can display up to 60,000 records.

7.11 Generating a Source Activity Report

When you generate a Source Activity Report, the application displays historical, minute-by-minute, state and event data for all contacts from a source or list of sources during a specified time interval for a specified date range. You can specify multiple sources or use wildcards to generate a list of sources from which to choose.

NOTE: To generate a Source Activity Report, you must have the associated Manager permission.

Each row in the report provides details on an individual state change. The columns in the report are:

- **Source** – The source being reported on.
- **Time** – The date and time when the event or state change occurred.
- **Event** – The event or state to which the contact changed.
- **Subject** – This typically contains the target of the Event. For example, for a transfer, the Subject will be the user to whom the contact was transferred.
- **Details** – Additional details for the event or state change.

To generate a Source Activity Report:

1. On the **View** menu, point to **Activity Reports**, and then click **Source**.
2. Under **Criteria**, in the **Media type** list, select the media type that you want to report on. Your choices are **Voice**, **E-mail**, or **Web Collaboration**.
3. In the **Start** box, type or select the start date and time of the interval that you want to report on. The time format is based on a 24-hour clock, for example, 4:00 P.M. is entered as 16:00.
4. In the **End** box, type or select the end date and time of the interval that you want to report on.
5. Depending on the media type you selected, in the resulting box (**Telephone number**, **E-mail address**, or **Web collaboration source**), type or select the source that you want to report on. To specify multiple sources, separate each source with a comma. The system supports the use of one wildcard per source. You can use a wildcard on its own or to substitute one or more characters at the end of a source, for example:
 - The telephone numbers 123* and * are valid. However, *567, *567*, and 56*7 are not valid.
 - The e-mail addresses sales* and * are valid. However, *sales, *@*, and sales@*.com are not valid.
 - The Web collaboration sources www.mycompany.com* and * are valid. However, */sales, *sales*, and www.mycompany.com/*/sales are not valid.
6. If you specified more than one source, do the following:
 - a) Click **Find Now**. The system generates a list of sources that match the criteria that you specified.
 - b) Under **Sources**, select the check box for each source that you want to report on, or click **Select All**. You can select a maximum of 100 sources.
7. On the **Actions** menu, click **Run Report**.
8. Click the **Results** tab to view the report results. A complete activity report can display a maximum of 40,000 records. An incomplete activity report (one that reaches 40,000 records before all the sources have been processed), can display up to 60,000 records.

7.12 Configuring the user reporting options

You can configure the default options that affect the reports that are generated by users.

7.12.1 Configuring the general user reporting options

You can configure the following general user reporting options:

- The notification method that is used to indicate when a historical report completes.
- The default output settings used when you configure a new report definition, and when you print, export, or send a report by e-mail (if enabled). You can override most of the default output settings in a specific report definition.

NOTE: The **Outgoing e-mail address** and **E-mail signature** boxes are available only if the e-mail reports option is enabled, and you have the **E-mail historical reports** Manager permission. For details on how to enable the e-mail reports option, see [Section 7.13.5, "Configuring the e-mail reports option"](#), on page 156.

To configure the report notification methods:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **User Settings**, click **Reporting**.
3. Under **When a Report Job Completes**, do the following:
 - To play a sound when the report is complete, click the **Play a sound** check box, and then type the name of the .wav file you want to play. You can click  to select the .wav file, and you can click  to play the selected .wav file.
 - To display a system message when the report is complete, select the **Log alarm to System Messages window** check box.
 - To display an icon in the system tray when the report is complete, select the **Show report icon in the system tray** check box.
4. Under **Default Output Settings**, do the following:

- In the **Output folder** list, select the report folder where you want to send completed reports. You can choose the default Report Inbox or a custom report folder.
- In the **Printer name** list, select the printer where reports are printed.
- In the **File format** list, select the file format for reports that are exported. Your choices are Microsoft Excel Workbook (.xls), Web Page (.htm), CSV (Comma Delimited) (.csv), or Portable Document Format (.pdf).
- In the **Outgoing e-mail address** box, type the e-mail address that is used as the From address when sending completed historical reports by e-mail. This e-mail address is required if you intend to use the e-mail reports option. You cannot override this e-mail address in a report definition.
- In the **E-mail signature** box, type the signature that is used when reports are sent by e-mail. The signature is plain text only.

5. Click **OK**.

7.12.2 Configuring the silent monitoring settings

When the system is connected to an OpenScape Voice communication platform, you can silently monitor an active call, silently monitor all calls, and barge in on an active call from a user real-time report. Before you can use these features, you must specify your subscriber number.

NOTE: To configure the silent monitoring settings, you must have the **Silently monitor calls from user real-time reports** or **Barge in on calls from user real-time reports** Manager permission.

When the system is connected to an OpenScape Voice V7 R1 communication platform or higher, you can also configure up to 10 telephone devices that can be used to silently monitor or barge in on active calls. When you have at least one telephone device configured, you can select the preferred device to be used when performing these

Reporting

Configuring the user reporting options

activities. If you intend to use the same telephone device to handle routed calls and silently monitor or barge in on active calls, we recommend that you use different subscriber numbers.

NOTE: When the system is connected to an OpenScape Voice V7 communication platform or higher, users who have been configured to handle routed calls and silently monitor or barge in on active calls cannot be silently monitored or barged in on by other users while silently monitoring a call.

NOTE: When the system is connected to an OpenScape Voice V6 communication platform, users who have been configured to handle routed calls and silently monitor or barge in on active calls cannot be silently monitored or barged in on by another user.

To configure the silent monitoring settings:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **User Settings**, click **Reporting**.
3. Click the **Silent Monitoring** tab.
4. Under **Subscriber Number**, in the **Number** box, type the subscriber number that you want to use to silently monitor or barge in on active calls.

NOTE: The subscriber number that you specify must be a user subscriber number that has been configured in the Telephony Center so that it can be monitored by the OpenScape Contact Center system.

5. Under **Devices** (only available when connected to an OpenScape Voice V7 R1 or V8 communication platform), do one of the following:
 - To configure a new device, click **Add**.
 - To edit an existing device, select the device in the list, and then click **Edit**.
6. In the **Device** dialog box, do the following:

- a) In the **Name** box, type a unique name for the telephone device, for example, Home.
- b) In the **Telephone number** box, type the telephone number in dialable or canonical format. The telephone number must not be any of the existing OpenScape Contact Center (CSTA-monitored) subscriber numbers and it must not be a number that is restricted by the OpenScape Voice communication platform (such as a long distance number).
- c) Click **OK**.

NOTE: When you edit an existing device, you can only change the name of the device, not the telephone number. If you want to change the telephone number, you must delete the device and configure a new device.

- 7. Under **Preferred Device** (only available when connected to an OpenScape Voice V7 R1 or V8 communication platform), in the **Device** list, select the telephone device that you want to use to silently monitor or barge in on active calls. The list contains Desk Telephone (the physical telephone device associated with the subscriber number) and all the devices configured in the Devices list.

NOTE: If you use the same subscriber number to handle routed calls and silently monitor or barge in on active calls, ensure that the same preferred devices are configured in the Manager application. Click **OK**.

NOTE: The users, who are silently monitored, are displayed in a different color in the user real time reports.

7.12.3 Configuring the directory options

You must configure the options for each external LDAP directory that you want to be able to access from within the Manager application. A directory is used to select recipients when sending reports by e-mail.

Before you begin, the e-mail reports option must be enabled and the directory for which you want to configure the options must already be configured. For details, see [Section 7.13.5, "Configuring the e-mail reports option"](#), on page 156 and [Section 5.5, "Configuring a](#)

directory", respectively.

7.12.3.1 Configuring the directory connection settings

If an external LDAP directory that you want to access from within the Manager application requires user authentication, you must configure the connection settings for the directory.

To configure the directory connection settings:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **User Settings**, click **Reporting**.
3. Click the **Directory** tab.
4. Under **Directory**, in the **Select a directory to configure** list, select the directory for which you want to configure the connection settings.
5. Under **Connection**, click **Change**.
6. In the **Set Up Connection** dialog box, do the following:
 - a) In the **Account name** box, type the user name needed to access the directory.
 - b) In the **Password** box, type the password needed to access the directory.
 - c) In the **Confirm password** box, retype the password to confirm that you entered it correctly.
 - d) Click **OK**.

7.12.3.2 Configuring the directory query settings

When you search a directory, you might need to perform several searches, and refine your search criteria for each new search. You can configure the query fields to save the search criteria that you enter, and use them as the default criteria for the next search.

At least one directory query field must be configured before you can configure the directory query settings.

To configure the directory query settings:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **User Settings**, click **Reporting**.

3. Click the **Directory** tab.
4. Under **Directory**, in the **Select a directory to configure** list, select the directory for which you want to configure the query settings.
5. Under **Query Field Settings**, click **Change**.
6. In the **Change Query Settings** dialog box, select the check box for each field that should save the search criteria you enter, and then click **OK**.

7.12.3.3 Configuring the directory results settings

You can configure how the results of a directory search are displayed, including the fields that are displayed, and the order in which they are displayed.

At least one directory results field must be configured before you can configure the directory results settings.

To configure the directory results settings:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **User Settings**, click **Reporting**.
3. Click the **Directory** tab.
4. Under **Directory**, in the **Select a directory to configure** list, select the directory for which you want to configure the results settings.
5. Under **Result Field Settings**, click **Change**.
6. In the **Change Results Settings** dialog box, do the following:
 - a) Select the check box for each field that you want to display. The top-to-bottom order of the fields in the list reflects the left-to-right order of the columns as they appear in the search results. You can use the up or down arrows to change the order of the fields in the list.
 - b) In the **Sort by** list, select the name of the field to sort on. Only selected fields appear as sort options.
 - c) In the **Sort order** list, select a sort order (**Ascending** or **Descending**).
 - d) Click **OK**.

7.12.4 Configuring the colors in reports

You can create reports to view and compare routing states, contact states, contact types, and callback origins (if the callback feature is enabled). The application provides a set of default colors in which these items are displayed in the reports. You can change the default colors for the foreground and background of each of these items.

To configure the colors in reports:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **User Settings**, click **Reporting**.
3. Click the **Colors** tab.
4. For the item whose color you want to change, click the cell in either the **Foreground** or **Background** column. The  button appears in the column. A preview of how the item appears in the report is also displayed at the bottom of the dialog box.
5. Click  to open the **Color** dialog box.
6. In the **Color** dialog box, select the color you want to use, and then click **OK**.

7.13 Configuring the system reporting options

You can configure the default settings that affect reports in the Manager application. For details, see the following topics:

NOTE: To configure any of the system reporting options, you must have Full or Modify access for the associated Manager permission.

NOTE: In a multitenant environment, only a system administrator can configure the system reporting options. For details, see [Section 19.3, "Administrator roles in a multitenant environment"](#), on page 392.

7.13.1 Configuring the global queue report intervals

The global queue report intervals are used in cumulative and historical queue reports to help you determine exactly when contacts are being enqueued since contacts can be in queue for a while. Cumulative and historical queue reports include breakdowns by interval of the time that customers wait before a contact is answered or abandoned, using the statistics "Answered in Interval" and "Abandoned in Interval". You can define up to five time intervals so that you can track the number of contacts that are answered by a user or abandoned within the different time intervals.

NOTE: When you are connected to a central reporting server machine, you cannot configure the global queue report intervals.

NOTE: In a multitenant environment, only a system administrator can configure the global queue report intervals. For details, see [Section 19.3, "Administrator roles in a multitenant environment"](#), on page 392.

To configure the global queue report intervals:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Reporting**.
3. Under **Global Queue Intervals**, do the following:
 - a) In the **Media** list, select the media type for which you want to configure the queue report intervals, for example, **Voice**.
 - b) In the **To** column for Interval 1, double-click the time and type the end time. The start of Interval 2 is updated to reflect the number you just typed.
 - c) In the **To** column for each other interval, double-click the time and type the end time. The end time for the last interval is always Forever.
4. Repeat step 3 for each media type you want to configure, and then click **OK**.

7.13.2 Configuring the first day of the week

Historical report definitions that have a range of This Week or Last Week display the Start date based on the configured first day of the week.

During installation, the host computer's Regional Options setting determines the default first day of the week. For example, for the United States, the default is Sunday, and for Germany, the default is Monday. Any time after installation, you can change this setting. The change will take effect in the next weekly rollup period. The change will not affect existing historical data which remains based on the previous setting.

NOTE: In a multitenant environment, only a system administrator can configure the first day of the week. For details, see [Section 19.3, "Administrator roles in a multitenant environment"](#), on page 392.

To configure the first day of the week for reporting:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Reporting**.
3. Under **First Day of Week**, in the **Select day** box, select the day of the week that you want to use as the Start date for historical reports that have a range of This Week or Last Week.
4. The application displays a warning to indicate that the change will not affect existing historical data which remain based on the previous setting.

7.13.3 Configuring the queue real-time report options

You can choose the following options, which affect the queue and aggregate statistics that appear in real-time reports and wallboard and Broadcaster views:

- **Include ringing and unanswered contacts** – If you choose this option, contacts that are in Ringing, Pending, and Unanswered state will be included in the Contacts - Queued and Contacts - Overflowed statistics, and the time spent ringing will be included in the Wait Time statistic.
- **Use weighted averages** – By default, the system uses a simple average to calculate current and estimated statistical summaries in queue real-time reports and real-time aggregate statistics. This option allows you to use a weighted average, which takes into account the number of contacts in each queue. For example, suppose you have the following values:

Queue	Contacts-Received(Shift)	Service Level - Shift
Sales	10	90
Support	5	50

In this example, the service level calculated using the simple average is

$(90 + 50) / 2 = 70\%$, and the service level calculated using the weighted average is $[(10 * 90) + (5 * 50)] / 15 = 77\%$.

Weighting is performed using the Contacts - Received (Shift) statistic when calculating shift statistics, and the Contacts - Queued statistic when calculating current and estimated statistics.

NOTE: Even when the **Use weighted averages** option is enabled, if there are no contacts in queue, the system uses the default simple average calculation method.

NOTE: When you are connected to a central reporting server machine, you cannot configure the queue real-time report options.

NOTE: In a multitenant environment, only a system administrator can configure the queue real-time report options. For details, see [Section 19.3, "Administrator roles in a multitenant environment"](#), on page 392.

Reporting

Configuring the system reporting options

To configure the queue real-time report options:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Reporting**.
3. Under **Queue Real-Time Report**, do the following, and then click **OK**:
 - To include calls that are in Ringing and Unanswered state, as described above, select the **Include ringing and unanswered contacts** check box.
 - To use a weighted average to calculate summaries in real-time reports and real-time aggregate statistics, as described above, select the **Use weighted averages** check box.

7.13.4 Configuring the workforce management output location

The OpenScape Contact Center system automatically exports statistical and administration data in XML format to the ShareData\XMLOutput folder on the main server machine. You can use this XML data in a third-party workforce management application to simplify the user scheduling and workforce forecasting process. For a description of the XML data that is exported by the system, see the *Workforce Management Integration Guide*.

NOTE: The schema for the XML data is defined in the OSCCSchema.xsd file. For more information, contact your service representative.

You can obtain the XML data in two ways:

1. You can copy the XML data from the ShareData\XMLOutput folder on the main server machine to a workforce management machine or other location. In this case, you must have read access to the ShareData\XMLOutput folder.
2. You can configure the system to write the XML data to a shared network folder (in addition to the ShareData\XMLOutput folder). In this case, you must:
 - Configure the output location (the location of the shared network folder), as described in the following procedure.
 - Ensure that the **hppc** user account on the main server machine has the permission to write the XML data to the configured output location.

NOTE: When you are connected to a central reporting server machine, you cannot configure the workforce management output location.

NOTE: In a multitenant environment, only a system administrator can configure the workforce management output location. For details, see [Section 19.3, "Administrator roles in a multitenant environment"](#), on page 392.

To configure the workforce management output location:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Reporting**.
3. Under **Workforce Management**, in the **Output location** box, type the full path to the folder where you want to write the XML data, in UNC format. You cannot use a mapped network drive. For example:
`\\WorkforceManagementMachine\XMLOutput\`
4. Click **OK**.

7.13.5 Configuring the e-mail reports option

The e-mail reports feature allows completed historical reports to be distributed as attachments to e-mail messages. You can enable or disable the e-mail reports option for the system.

The reports are distributed using the corporate SMTP server configured in the Options dialog box. For details, see [Section 20.3.2, “Configuring the e-mail server settings”, on page 410](#).

NOTE: In a multitenant environment, only a system administrator can configure the e-mail reports option. For details, see [Section 19.3, “Administrator roles in a multitenant environment”, on page 392](#).

NOTE: When the system is configured for high availability (warm standby), you normally log on to the Manager application using the cluster name so that you access the active server machine (see [Section 3.2, “Logging on to the Manager application”, on page 23](#)). In this case, the application will send empty reports by e-mail because the fact that the report contains no data is pertinent. However, if you log on using the physical machine name, empty reports will not be sent by e-mail. The system is designed this way to avoid any confusion that could result when a report that is sent from the active server machine contains data, while the same report sent from the standby server machine is empty.

To configure the e-mail reports option:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Reporting**.
3. To enable historical reports to be distributed by e-mail, under **E-mail Reports**, select the **Enable** check box.
4. Click **OK**.

8 Routing

This chapter provides information on how to configure routing components and develop a routing strategy.

8.1 About group-based routing

Group-based routing is the process of matching a contact to the best group of users eligible to handle the contact.

When OpenScape Contact Center routes a contact to a queue, the primary step in the queue attempts to route the contact to any user in a primary group of users who are most qualified to handle the contact. If the primary group cannot handle the contact within the specified time, then the contact is routed to one or more overflow groups. The overflow mechanism is additive. At each point where a contact overflows to a new group, the new group of users is added to the current pool of available users.

Group-based routing is the OpenScape Contact Center default routing method. For information related to skills-based routing, see [Section 8.2, "About skills-based routing"](#), on page 160.

8.1.1 Group setup considerations

A group can be any collection of users who share expertise or responsibility in some area and who are similarly qualified to handle incoming contacts. A single user can belong to several groups.

The first consideration in setting up groups is specialization. When you choose your groups, be as specific as your callers' requirements. In the simplest of scenarios, a service bureau might specialize in technical support for four different software products – Word Processing, Spreadsheet, Browser, and Project. In such a simple case, since the goal is to match caller requirements to a suitable user, you would set up one group for each product you support, and assign the specialists in those areas to the respective groups.

Routing

About group-based routing

If your areas of expertise are Stocks, Mutual Funds, and Bonds, and in each area, you offer services in two languages, you would consider six groups:

- Stocks/English
- Stocks/German
- Mutual Funds/English
- Mutual Funds/German
- Bonds/English
- Bonds/German

Apart from strict specialization, you should consider setting up a group for each additional functional area that will routinely be used as the first choice in routing a contact. For example, while your core areas of specialization might be Stocks, Mutual Funds, and Bonds, you may want first-time users directed to an Administration group for some form of preliminary processing. The best way to handle this is to set up an Administration queue, and use your routing strategy workflow to route first-time contacts to the Administration group.

In addition, if you have both specialists in particular areas and users with general abilities in one or more of your specialized areas, consider grouping the general users in backup groups that are intended as overflow options to your specialized groups. These groups could be used as overflow groups only, associated with several queues, and never be used as the primary group for a particular queue.

Since there is a strong correlation between group and queue setup, you should also consider factors that influence queue setup. For details, see [Section 10.2, "Queue setup considerations", on page 231](#).

8.1.2 Configuring a group

In group-based routing (see [Section 8.1, "About group-based routing", on page 157](#)), contacts are routed to a group where a user in the group can handle the contact.

After you have configured a group, you can assign it as a step in a queue definition (see [Section 10.3.2, "Configuring the queue steps", on page 244](#)).

NOTE: To create or change a group, you must have Full or Modify access, respectively, for the **Groups** Manager permission. If the enhanced security option is enabled, you must also have the required security access to change the group. For details on the enhanced security option, see [Section 20.3.4, "Configuring the enhanced security option", on page 414](#).

To configure a group:

1. On the **File** menu, point to **New**, then **Administration Center**, and then click **Group**.
2. On the **General** tab, under **Group**, do the following:
 - In the **Name** box, type a unique name for the group.

NOTE: You cannot change the name of a group after you save the group.

- In the **Description** box, type a description for the group. The group description should include the common information that determines which users belong in the group.
3. Click the **Users** tab.
 4. Under **Include**, select the check box for each user who you want to add to the group. The list contains only the users who have the **Receive contacts routed by OpenScape Contact Center** User permission. All selected users should be able to handle the contacts that are routed to this group.

NOTE: You can also select the groups a user belongs to when you configure the user's properties. See [Section 4.1.3, "Configuring the contact handling settings for a user", on page 38](#).

5. Click the **Reports** tab.

Routing

About skills-based routing

6. Under **Include**, select the check box for each report that you want to display data about this group. The list contains only the reports you own, or reports that are owned by users you can monitor.

NOTE: To add many groups to a report, you can open the group report definition, click the **Content** tab, and select all the groups that you want to add to the report.

7. Click the **Security** tab. This tab is available only if the enhanced security option is enabled. For details, see [Section 20.3.4, "Configuring the enhanced security option"](#), on page 414.
8. Under **Users**, select the check box for each user who you want to be able to modify this group. The list contains only the users who have Full or Modify access to the **Groups** Manager permission.
9. Click **OK**.

8.2 About skills-based routing

Skills-based routing is the term used to describe the matching of a contact with the best user eligible to handle the contact based on the user's skills.

NOTE: Group-based routing is the default routing method in OpenScape Contact Center. To change to skills-based routing, see [Section 8.4.3, "Changing to skills-based routing"](#), on page 171.

To understand skills-based routing, you must understand the following concepts:

- Skills – see [Section 8.2.1, "About skills"](#), on page 161
- Virtual groups – see [Section 8.2.3, "About virtual groups"](#), on page 162
- Skill levels – see [Section 8.4.6, "About skill levels"](#), on page 177

When OpenScape Contact Center routes a contact to a queue, the first step in the queue should attempt to route the contact to a user whose skill set best meets the requirements of the contact. For more information on queue setup, see [Section 10.3, "Configuring a queue"](#), on page 240.

8.2.1 About skills

Skills are the specific areas of expertise required to handle contacts at your site. Skills should be as specific as your customers' requirements. In a simple case, skills in a contact center for an investment firm might be Mutual Funds, Bonds, and Stocks. However, if you offered the same skills in two languages, the skills might be Mutual Funds, Bonds, Stocks, English, and German.

Each user is configured with a particular set of skills. Within a user definition you can specify skill levels and skill preferences for each skill, if those options are activated.

8.2.2 Configuring a skill

This section describes how to configure the skills that can be selected for a user. You select the skills that a user has when you configure the user definition. For details, see [Section 4.1.3, "Configuring the contact handling settings for a user", on page 38](#).

NOTE: To create or change a skill, you must have Full or Modify access, respectively, for the **Skills Manager** permission. If the enhanced security option is enabled, you must also have the required security access to change the skill. For details on the enhanced security option, see [Section 20.3.4, "Configuring the enhanced security option", on page 414](#).

To configure a skill:

1. On the **File** menu, point to **New**, then **Administration Center**, and then click **Skill**.
2. On the **General** tab, under **Skill**, do the following:
 - In the **Name** box, type a unique name for the skill.
 - In the **Description** box, type a description for the skill.
3. Click the **Users** tab.
4. Under **Include**, select the check box for each user who has the required skill.
5. Click the **Virtual Groups** tab. The application lists the virtual groups in which this skill is included. You cannot modify the list.

Routing

About skills-based routing

6. Click the **Security** tab. This tab is available only if the enhanced security option is enabled. For details, see [Section 20.3.4, "Configuring the enhanced security option"](#), on page 414.
7. Under **Users**, select the check box for each user who you want to be able to modify this skill. The list contains only the users who have Full or Modify access to the **Skills** Manager permission.

8.2.3 About virtual groups

A virtual group is a collection of one or more skills that you can select when you define the steps in a queue (see [Section 10.3.3, "Configuring the queue steps for skills-based routing"](#), on page 247). In skills-based routing, any available user whose skill set meets or exceeds the skills defined in the virtual group at a particular step in the queue becomes eligible to handle the contact.

You build an expression to define the skills that are included in a virtual group. The rules for building an expression are as follows:

- Each expression must contain at least one skill name. The skill name must be in quotation marks.
- If your contact center has skill levels turned on, the skill name is followed by the skill level separated by a comma (with no spaces).
- The only valid operators are AND, OR and NOT. The NOT operator must be followed only by a skill name and no skill level can be associated with the skill name.
- Expressions are evaluated from left to right. For example, the expression "Stocks" OR "Bonds" AND "German" is not the same as "German" AND "Stocks" OR "Bonds". The former would qualify users whose skill set specifies either the Stocks skill or the Bonds skill and the German skill. The latter would qualify users whose skill set specifies both the German skill and the Stocks skill, or users whose skill set specifies the Bonds skill. Therefore, to avoid confusion, use parentheses to explicitly group skills.

The application provides syntax highlighting to clearly differentiate skills from operators. We recommend that you always use the controls and operator building blocks provided in the dialog box to avoid syntax errors.

Examples of valid skill expressions with skill levels turned off:

- "Stocks" OR "Bonds"
- "Stocks" AND ("Bonds" OR "Mutual Funds") AND NOT "German"

Examples of valid skill expressions with skill levels turned on:

- "Stocks",9 OR "Bonds",9
- "Stocks",9 AND ("Bonds",5 OR "Mutual Funds",5) AND NOT "German"

8.2.3.1 Virtual group example

The virtual group feature lets you deconstruct the services offered by your contact center in a way that maximizes the chances of handling a contact with the best available user. This is useful where contact requirements can be broken down into two or more components.

For example, if your contact center offers support for four products in two languages, your individual skills might be Word Processing, Spreadsheet, Browser, Project, English, and German. Since these can be categorized into two areas, products and language, there are a total of eight skill combinations that can be used as the basis for creating virtual groups. And since virtual groups can include skill levels, there is a large number of virtual groups that can be created using the eight skill combinations.

Languages	Products			
	Word Processing	Spreadsheet	Browser	Project
German	4	4	4	4
English	4	4	4	4

If a dialed number was associated with each of the software skills, and a menu prompt let customers choose their preferred language, your routing strategy workflow might direct a contact to a queue set up to handle German language support for the Word Processing product. The first queue step might specify the following virtual group:

"German",9 AND "Word Processing",9

This would qualify all users whose skill set specifies skill levels of 9 in both Word Processing and German. If one of those users became available during the queue's first step, the contact would be directed to that user. Ideally, this is the preferred method of handling this particular contact.

If the first step expired without the contact being handled, the next step might specify the following virtual group:

"German",7 AND "Word Processing",9

Routing

About skills-based routing

This would expand the pool of users eligible to handle the contact to include all users whose skill set specifies a German skill level of 7. This setup would be appropriate if Word Processing was considered the more important skill relative to language.

Certain considerations in setting up groups for group-based routing also apply to virtual groups. For details, see [Section 8.1.1, "Group setup considerations", on page 157](#).

In addition, since there is a strong correlation between virtual group and queue setup, you should consider factors that influence queue setup. For details, see [Section 10.2, "Queue setup considerations", on page 231](#).

8.2.4 Configuring a virtual group

You must configure the virtual groups that can be specified in a queue. Before configuring virtual groups, you must create any skills that you want to use when building your virtual groups. For details, see [Section 8.2.2, "Configuring a skill", on page 161](#).

NOTE: To create or change a virtual group, you must have Full or Modify access, respectively, for the **Virtual groups** Manager permission. If the enhanced security option is enabled, you must also have the required security access to change the virtual group. For details on the enhanced security option, see [Section 20.3.4, "Configuring the enhanced security option", on page 414](#).

To configure a virtual group:

1. On the **File** menu, point to **New**, then **Administration Center**, and then click **Virtual Group**.
2. Under **Virtual Group**, do the following:
 - In the **Name** box, type a unique name for the virtual group.
 - In the **Description** box, type a description for the virtual group.
3. Under **Expression**, build the required skill expression using the following guidelines:
 - To specify a skill, click **Insert Skill** and select the skill name from the list.
 - To specify an operator, click the operator you want to use: **AND**, **OR** or **NOT**.
 - To group expressions, click one of the parenthesis buttons: **(,)**.

- When you are finished building the expression, click **Verify**. OpenScape Contact Center checks the expression to ensure that the syntax is valid.
4. To see the users that are eligible to be included in the virtual group based on the build expression you have specified, click **Show Eligible Users**.
 5. Click the **Queues** tab.
 6. Under **Queues**, select the queues that use this virtual group.
 7. Click the **Reports** tab.
 8. Under **Reports**, select the check box for each report that you want to display data about this virtual group. The list contains only the reports you own, or reports that are owned by users you can monitor.
 9. Click the **Security** tab. This tab is available only if the enhanced security option is enabled. For details, see [Section 20.3.4, "Configuring the enhanced security option"](#), on page 414.
 10. Under **Users**, select the check box for each user who you want to be able to modify this virtual group. The list contains only the users who have Full or Modify access to the **Virtual groups** Manager permission.
 11. Click **OK**.

8.3 About multiple contact handling

Multiple contact handling is a feature that allows OpenScape Contact Center users to handle more than one routed contact at the same time. When the system is configured for multiple contact handling, you can configure the contact handling rules that are applied to a user. For details, see [Section 8.3.1, "Configuring a contact handling rule"](#), on page 167. The system also provides default single contact handling

Routing

About multiple contact handling

rules, one for each media type.

NOTE: By default, the system is configured for users to handle one routed contact at a time. To change to multiple contact handling, see [Section 8.4.9, "Changing to multiple contact handling", on page 180](#).

NOTE: Multiple contact handling is not supported for Microsoft CRM, SAP CIC, and SAP ICI users. When configuring these types of users, only the system-defined single contact handling rules are available. For details, see [Section 4.1.3, "Configuring the contact handling settings for a user", on page 38](#).

You can apply more than one contact handling rule to a user. The system's routing logic takes the user's contact handling rules into account to determine the routing availability. For example, you can configure a contact handling rule that allows the user to handle one call and up to five e-mail messages at the same time. But if you want the user to be able to handle either one call or five e-mail messages at one time, you can assign two contact handling rules to the user – the Single Voice contact handling rule and a custom contact handling rule configured for five e-mail messages. In this case:

- If the user receives a call first, the Single Voice rule is applied and the user cannot receive any other contacts until the call is complete.
- If the user receives an e-mail message first, then the custom rule is applied and the user will be able to handle up to four more e-mail messages, but no calls.

The maximum number of active contacts that a user can handle concurrently is eight, of which no more than one contact can be a call or a callback.

Although users can handle multiple contacts concurrently, a user can be focused on only one active contact at a particular time. This is called the primary contact. The primary contact is the active contact. By default, if the user is handling an active call or callback, it is the primary contact, but you can change that configuration. For details, see [Section 8.4.10, "Configuring a call or callback as the primary contact", on page 180](#).

8.3.1 Configuring a contact handling rule

When the system is configured for multiple contact handling, you can configure the contact handling rules that are applied to a user.

NOTE: To create or change a contact handling rule, you must have Full or Modify access, respectively, for the **Contact handling rules** Manager permission. If the enhanced security option is enabled, you must also have the required security access to change the contact handling rule. For details on the enhanced security option, see [Section 20.3.4, "Configuring the enhanced security option"](#), on page 414.

To configure a contact handling rule:

1. On the **File** menu, point to **New**, then **Administration Center**, and then click **Contact Handling Rule**.
2. On the **General** tab, under **Contact Handling Rule**, do the following:
 - In the **Name** box, type a unique name for the contact handling rule.
 - In the **Description** box, type a description for the contact handling rule.
3. Under **Media Distribution**, for each media type, type or select the number of contacts that the user can handle at one time. You can specify a total of eight contacts.
4. Click the **Users** tab.
5. Under **Include**, select the check box for each user who you want to associate with this contact handling rule.
6. Click the **Security** tab. This tab is available only if the enhanced security option is enabled. For details, see [Section 20.3.4, "Configuring the enhanced security option"](#), on page 414.
7. Under **Users**, select the check box for each user who you want to be able to modify this contact handling rule. The list contains only the users who have Full or Modify access to the **Contact handling rules** Manager permission.
8. Click **OK**.

8.4 Configuring the routing options

You can configure the default settings that affect how contacts are routed within the OpenScape Contact Center system. For details, see the following topics:

- [Section 8.4.1, "Configuring the manual reserve time", on page 168](#)
- [Section 8.4.2, "Configuring the maximum offer time", on page 169](#)
- [Section 8.4.3, "Changing to skills-based routing", on page 171](#)
- [Section 8.4.5, "Configuring the skill scoring", on page 174](#)
- [Section 8.4.7, "Displaying skill levels", on page 178](#)
- [Section 8.4.8, "Displaying skill preferences", on page 179](#)
- [Section 8.4.9, "Changing to multiple contact handling", on page 180](#)
- [Section 8.4.10, "Configuring a call or callback as the primary contact", on page 180](#)

NOTE: To configure any of the routing options, you must have Full or Modify access for the associated Manager permission.

8.4.1 Configuring the manual reserve time

When a contact is reserved for a user in a contact real-time report, the manual reserve time is the length of time for which the contact can be reserved. If the contact is not assigned to the user within the manual reserve time, the contact is returned to the queue. You set the manual reserve time globally for each media type.

NOTE: The time a contact spends reserved for a user is included in the wait time. Reserved contacts that remain unanswered before proceeding to the queue steps could adversely affect the service level calculation.

NOTE: In a multitenant environment, only a system administrator can configure the manual reserve time. For details, see [Section 19.3, "Administrator roles in a multitenant environment", on page 392](#).

To configure the manual reserve time:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Routing**.
3. Under **Manual Reserve Time**, for each media type in the table, double-click the cell in the **Time** column and then type the amount of time that a contact can be reserved for a user.
4. Click **OK**.

8.4.2 Configuring the maximum offer time

You can configure the maximum offer time for each media type. If a contact is not accepted within the specified offer time, it will be returned to the queue (if configured) or designated unanswered.

NOTE: In a multitenant environment, only a business unit administrator can configure the maximum offer time. For details, see [Section 19.3, "Administrator roles in a multitenant environment"](#), on page 392.

The maximum offer time depends on the media type:

- **Voice** – The amount of time that a user is given to answer a call.
- **Callback** – The amount of time that the application or a user, if the user has the **Preview callbacks** permission, is given to accept a callback.
- **E-mail** – The amount of time that the application is given to accept an e-mail message. This includes the time required to download the e-mail message from the corporate IMAP server.

Routing

Configuring the routing options

- **Web collaboration** – The amount of time the application is given to accept a Web collaboration contact. This includes the time required to download the Web collaboration contact from the corporate web server.

NOTE: In a custom application, the user might be given the ability to manually accept a callback, e-mail message, or Web collaboration contact. In each of these cases, the maximum offer time is the amount of time that the user is given to manually accept the contact.

NOTE: You can configure the communication platform to use the OpenScape Contact Center Ring No Answer feature, which will requeue any contact that is not answered within the maximum offer time and place the user in Unavailable routing state. To configure the OpenScape Contact Center Ring No Answer feature, see [Section 11.5.3, “Configuring the communication platform settings”](#), on page 271.

To configure the maximum offer time:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Routing**.
3. Under **Maximum Offer Time**, for each media type in the table, double-click the cell in the **Time** column and then type a duration of time. For some media types this time refers to a user's reaction, for others to a reaction of the application.
4. Click **OK**.

8.4.3 Changing to skills-based routing

You can convert the OpenScape Contact Center system from group-based routing to skills-based routing. This conversion affects the way the system routes contacts and is irreversible.

IMPORTANT: Changing to skills-based routing is a one-way operation. The system cannot be converted back to group-based routing after it has been changed.

IMPORTANT: When you are connected to the production database, changing to skills-based routing will require that you restart the OpenScape Contact Center service on the main server machine.

NOTE: In a multitenant environment, only a system administrator can change the system to skills-based routing. For details, see [Section 19.3, "Administrator roles in a multitenant environment"](#), on page 392.

When the system is in skills-based routing mode, the skill levels and skill preferences are initially hidden. You have the option to expose either or both of these options, but they cannot be hidden again after they have been exposed. To enable these options, see [Section 8.4.7, "Displaying skill levels"](#), on page 178 and [Section 8.4.8, "Displaying skill preferences"](#), on page 179.

To change to skills-based routing:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Routing**.
3. Click the **Advanced** tab.
4. Click **Change to skills-based routing**.
5. In the warning dialog box, under **Do you want to change to skills-based routing?**, select **Yes**, and then click **OK**.
6. When the system prompts you to confirm that you want to convert to skills-based routing, click **Yes**. The system converts to skills-based routing.
7. Click **OK**.

8.4.4 About skill scoring

Skill scoring is a feature that finds the best match between users and contacts in the following circumstances:

- Several users are eligible for a single queued contact.
- A user becomes available and there are several contacts (tied in priority) that can be routed to that user.

NOTE: This feature is available only when skills-based routing is enabled (see [Section 8.4.3, “Changing to skills-based routing”, on page 171](#)).

A detailed description of the skill scoring calculation is beyond the scope of this document. However, an understanding of the factors that you can influence and their roles in the skill scoring calculation, will help you use the skill scoring feature more effectively.

In these tie-breaking situations, the system calculates a skill score that represents the strength of the match for each possible user/contact pairing. You can select one of five schemes that is used to calculate the skill scoring (see [Section 8.4.4.1, “Skill scoring schemes”, on page 173](#)). Each scheme is a combination of the skill score type (Closest skilled or Most skilled) and the weighting of various factors, such as the additional skills in a user's skill set or the amount of time the contact has been in queue.

The skill scoring has two major components:

- **Base component** – The base component is a skills-based measure of the fit between a user and a contact based on:
 - The virtual group skill expression specified in the first step of the queue associated with the contact. This expression represents the ideal match of a user's skills to a contact's requirements.
 - The skills (and optionally skill levels and skill preferences) included in a user's skill set.

The base component includes the four skills-based categories: Underqualified skills, Additional skills, User preference, and Forbidden skills.

- **Queue time component** – The queue time component is based on two variables:
 - The queue time variable, which increases the value of the queue time component the longer a contact stays in queue.

- The time to maximum importance variable, which places an upper limit on the time it takes a contact to reach maximum importance.

After a contact reaches the time to maximum importance, the value of the queue time component no longer increases.

The skill scoring feature lets you influence the skill score result by assigning a weight factor to each of the four base component categories and the queue time component.

8.4.4.1 Skill scoring schemes

You can select one of five schemes that are used for skill scoring. The weighting factors for each scheme reflect a contact-matching method commonly used in contact centers. For more information on skill scoring, see [Section 8.4.4, "About skill scoring", on page 172](#).

Scheme	Description
Firstin,firstout	All weight factors are set to zero. This scheme ensures that contacts are assigned to users in the same order as they are queued. Note that skill scoring is not the only criterion used in user/contact matching. For example, in one-contact/multiple-user tie-breaking situations, the time that a user has been available is a strong factor in assigning the contact.
Balanced	The Underqualified skills and User preference factors are set high while the Additional skills factor is set to zero. This scheme reduces the chance of routing a contact to a user with Underqualified skills, and increases the chance of routing a contact to a user with a high skill preference.
Time sensitive	Only the Queue time factor is considered, while all other factors are set to zero. This scheme maximizes the chance of routing contacts to users in the same order as they are queued. Note, however, that after the queue time for a contact exceeds the Time to maximum importance value, the queue time factor is maximized and the contact's skill score will not increase any further. This is an effective scheme if you want to override the system-wide Time to maximum importance value on a queue-by-queue basis.

Table 2 Skill scoring schemes

Routing

Configuring the routing options

Scheme	Description
Closest skilled	The Additional skills and Forbidden skills factors are set high while the Underqualified skills factor is set low. This scheme reduces the chance of routing a contact to a user who has Additional skills or Forbidden skills, while increasing the chance of routing a contact to a user who has Underqualified skills. The queue time factor is set low, increasing the chance of routing a contact with a long wait time.
Most skilled	The User preference factor is set high while the Under qualified skill factor is set to zero. This increases the chance of routing a contact to a user who has a high skill preference. This is the only scheme that uses the Most skilled Skill score type.

Table 2 Skill scoring schemes

8.4.5 Configuring the skill scoring

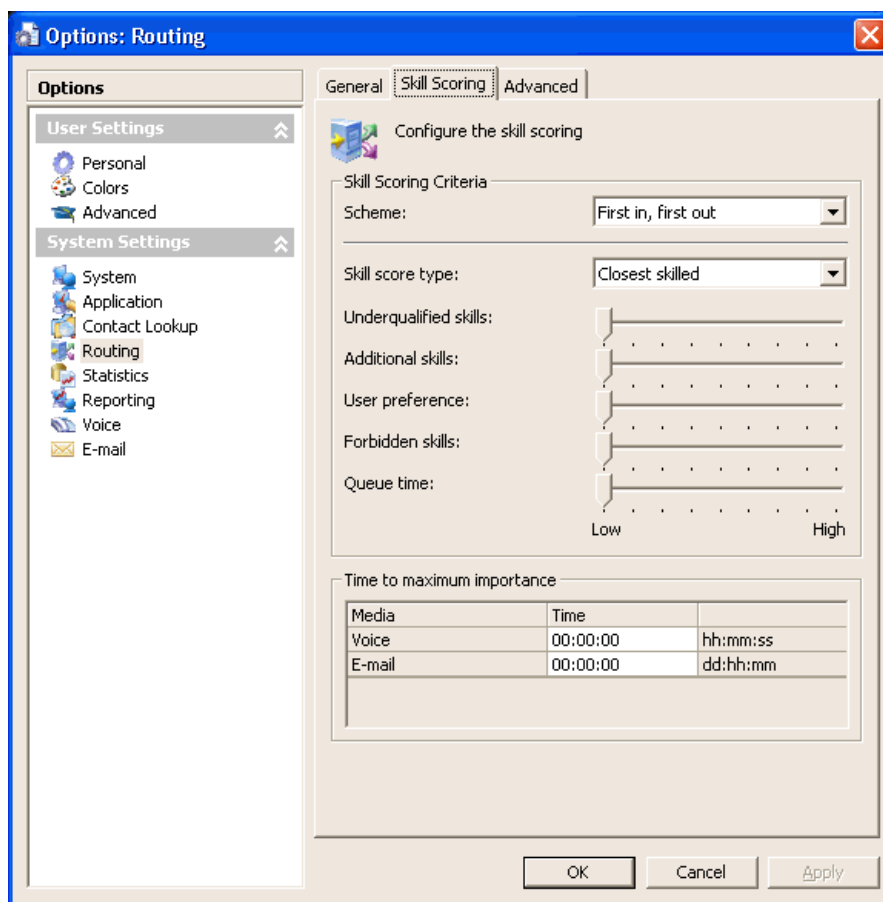
You configure the skill scoring to help you find the best match between users and contacts. For a description of the factors that affect skill scoring, see [Section 8.4.4, "About skill scoring", on page 172](#).

NOTE: This feature is available only when skills-based routing is enabled (see [Section 8.4.3, "Changing to skills-based routing", on page 171](#)).

NOTE: In a multitenant environment, only a system administrator can configure the skill scoring. For details, see [Section 19.3, "Administrator roles in a multitenant environment", on page 392](#).

To configure the skill scoring:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Routing**.
3. Click the **Skill Scoring** tab.



4. Under **Skill Scoring Criteria**, in the **Scheme** list, select the skill scoring scheme you want to use. The application sets the **Skill score type** and corresponding sliders based on your selection. For a description of the skill scoring schemes, see [Section 8.4.4.1, "Skill scoring schemes"](#), on page 173.

NOTE: To customize your selection, you can select a different **Skill score type** and/or adjust the sliders, as described in steps 5 and 6. If you make adjustments, the **Scheme** list is updated to reflect your changes. For example, if you select a **Balanced** scheme and then adjust the **Additional Skills** slider, a **Custom - Balanced** scheme is added to the list.

Routing

Configuring the routing options

5. To select a different routing preference, in the **Skill score type** list, select one of the following:
 - **Closest skilled** – The system attempts to match a contact to a user according to the least amount of difference between the user's skill set and the virtual group that is specified in the first step of the queue. This implies that the contact will be routed to a user with just enough of the required skills, saving more skilled users for other contacts.
 - **Most skilled** – The system attempts to match a contact to a user whose skill set meets and exceeds the virtual group that is specified in the first step of the queue. This implies that the contact will be routed to the user best qualified to handle the contact.
6. To change the weighting of the skill scoring factors, adjust the sliders as follows:
 - **Underqualified skills** – A user has Underqualified skills if their skill set has fewer skills or lower skill levels than those specified in the virtual group expression. Move the slider to the right to reduce the chance of routing a contact to a user who has Underqualified skills. Move the slider to the left to increase this chance.
 - **Additional skills** – Additional skills are the skills in a user's skill set that are not required by the virtual group. Move the slider to the right to reduce the chance of routing a contact to a user who has Additional skills. Move the slider to the left to increase this chance.
 - **User preference** – Users skill preferences can be optionally defined for each skill in a user's skill set. Move the slider to the right to increase the chance that a contact will be routed to a user whose skill set indicates a preference for skill that is specified in the virtual group. Move the slider to the left to reduce this chance.
 - **Forbidden skills** – A skill is forbidden if the skill can be found in the user's skill set but is preceded by a NOT logical operator in the virtual group expression. Move the slider to the right to reduce the chance of routing a contact to a user who has Forbidden skills. Move the slider to the left to increase this chance.

- **Queue time** – This slider controls the weighting of queue time in relation to the other skill scoring factors. Move the slider to the right to increase the effect of queue time on the skill score calculation. Move the slider to the left to reduce this effect.

NOTE: When skill levels or skill preferences are not enabled, default values are used for the Underqualified skills and User preference base values in the skill scoring calculation.

7. Under **Time to maximum importance**, for each media type in the table, double-click the cell in the **Time** column and type the amount of time the contact must have been in queue, after which the **Queue time** is of maximum importance and no additional weight can be given to it.
8. Click **OK**.

8.4.6 About skill levels

A skill level is a level of proficiency a user has for a particular skill. When skill levels are enabled, each skill in a user definition is given a skill level from 1 to 9, where 9 is the highest skill level. To be eligible to handle a contact, a user's skill set must specify a skill level that equals or exceeds the skill level specified in the virtual group at that step in a queue.

NOTE: This feature is available only when skills-based routing is enabled (see [Section 8.4.3, "Changing to skills-based routing", on page 171](#)).

For example, in a contact center with users who are experts in the area of investing, you might have four different levels for a skill called Investment: 3, 5, 7, 9. While a user with a skill level of 3 might only be qualified to process an order for a knowledgeable customer, a user with a skill level of 9 might be fully qualified to offer advice to a seasoned investor or to get an inexperienced investor started.

In gathering contact requirements, the routing strategy workflow that enqueues the contact could check for the customer requirements in this regard. If a contact was enqueued with a requirement for an Investment skill level of 7, only users with skill levels of 7 or 9 would qualify to handle the contact.

The next step in the queue might reduce the contact requirement to specify an Investment skill level of 5. This would add that collection of users to the pool of users currently eligible to handle the contact.

8.4.7 Displaying skill levels

A skill level is a level of proficiency a user has for a particular skill. When skill levels are enabled, each skill in a user definition is given a skill level from 1 to 9, where 9 is the highest skill level.

You specify skill levels in a user definition (see [Section 4.1.3, "Configuring the contact handling settings for a user"](#), on page 38) and when configuring a virtual group expression (see [Section 8.2.3, "About virtual groups"](#), on page 162).

IMPORTANT: Displaying skill levels is a one-way operation. The system cannot be converted back after it has been changed.

NOTE: This feature is available only when skills-based routing is enabled (see [Section 8.4.3, "Changing to skills-based routing"](#), on page 171).

NOTE: In a multitenant environment, only a system administrator can display skill levels. For details, see [Section 19.3, "Administrator roles in a multitenant environment"](#), on page 392.

To display skill levels:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Routing**.
3. Click the **Advanced** tab.
4. Under **Skill Level**, click **Display Skill Levels**.
5. In the **Display Skill Levels** dialog box, under **Do you want to show skill levels?**, select **Yes**, and then click **OK**.
6. When the system prompts you to confirm that you want to show skill levels, click **Yes**. The system turns on skill levels.
7. Click **OK**.

8.4.8 Displaying skill preferences

A preference is a predilection a user has for a particular skill. When preferences are enabled, each skill in a user's skill set is given a preference from 1 to 9, where 9 is the most preferred. Skill preferences are taken into consideration when calculating the skill scoring (see [Section 8.4.4, "About skill scoring", on page 172](#)).

IMPORTANT: Displaying skill preferences is a one-way operation. The system cannot be converted back after it has been changed.

NOTE: This feature is available only when skills-based routing is enabled (see [Section 8.4.3, "Changing to skills-based routing", on page 171](#)).

NOTE: In a multitenant environment, only a system administrator can display skill preferences. For details, see [Section 19.3, "Administrator roles in a multitenant environment", on page 392](#).

To display skill preferences:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Routing**.
3. Click the **Advanced** tab.
4. Under **Preferences**, click **Display Preferences**.
5. In the **Display Skill Preferences** dialog box, under **Do you want to show skill preferences?**, select **Yes**, and then click **OK**.
6. When the system prompts you to confirm that you want to show skill preferences, click **Yes**. The system turns on skill preferences.
7. Click **OK**.

8.4.9 Changing to multiple contact handling

You can convert the OpenScape Contact Center system to multiple contact handling, which allows users to handle more than one contact at the same time. This conversion affects the way the system routes contacts and is irreversible.

When the system is configured for multiple contact handling, you must configure the contact handling rules that can be applied to a user. For details, see [Section 8.3.1, "Configuring a contact handling rule", on page 167](#).

IMPORTANT: Changing to multiple contact handling is a one-way operation. The system cannot be converted back after it has been changed.

NOTE: In a multitenant environment, only a system administrator can change the system to multiple contact handling. For details, see [Section 19.3, "Administrator roles in a multitenant environment", on page 392](#).

To change to multiple contact handling:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Routing**.
3. Click the **Advanced** tab.
4. Click **Change to multiple contact handling**.
5. In the warning dialog box, under **Do you want to change to multiple contact handling?**, select **Yes**, and then click **OK**.
6. When the system asks you to confirm that you want to change to multiple contact handling, click **Yes**. The system changes to multiple contact handling.
7. Click **OK**.

8.4.10 Configuring a call or callback as the primary contact

When the system is configured for multiple contact handling, you have the option to specify that, if the user has an active call or callback, it is always the primary contact. This option is selected by default. In a

multitenant environment, only a system administrator can configure a call or callback as the primary contact. For details, see [Section 19.3, "Administrator roles in a multitenant environment"](#), on page 392.

To configure a call or callback as the primary contact:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Routing**.
3. Click the **Advanced** tab.
4. Under **Multiple contact handling**, to configure a call or callback as the primary contact, select the **Always make the active call or callback the primary contact** check box.

Routing

Configuring the routing options

9 Working with workflows

This chapter provides a detailed introduction to workflows, walks you through an exercise in creating a workflow, and provides information on related tasks.

The OpenScape Contact Center system uses the following types of workflows:

- Routing strategy workflows – see [Section 9.2, “About routing strategy workflows”](#), on page 184
- Queue processing workflows – see [Section 9.5, “About queue processing workflows”](#), on page 212.
- Networking workflows – see [Section 16.5, “About networking workflows”](#), on page 363.

9.1 About workflow diagrams

A workflow diagram is a visual script similar to a programming flowchart. It defines the sequence of events that is used to route or process contacts in queue. Decisions can be based on existing OpenScape Contact Center information such as contact data, performance statistics, database queries, and schedule information. Information can also be retrieved from an external data source.

NOTE: A slow connection to a data source will affect contact center performance. Ensure that any data sources you connect to will not affect the productivity of your contact center.

A workflow diagram includes components and connection lines between the components to indicate the contact workflow.

- Components are stopping points in the workflow diagram. They can be used to make a decision based on data, update performance statistics, transfer a contact to another location, simply pause, or perform other tasks.
- Connection lines are used to indicate the contact workflow between the components. If a decision is required, one line is created for each possible output of the component.

Workflow diagrams are configured using the Design Editor.

9.2 About routing strategy workflows

A routing strategy workflow is a sequence of events that determines the routing of a contact in the contact center. Workflow processing can route a contact based on criteria such as time, the source or destination of the contact, information obtained by database lookup, and performance statistics. Other media-specific criteria, such as information collected from the customer using Call Director or keywords in e-mail messages, can also be used.

Ultimately, a routing strategy workflow must result in one of the following actions:

- Route the contact to a user.
- Route the contact to a queue.
- Disconnect or discard the contact.

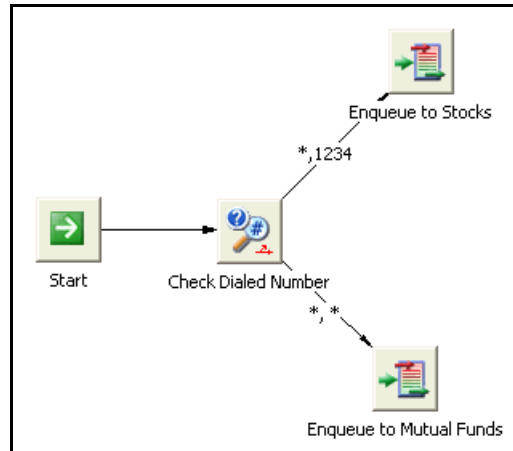
You can also configure a routing strategy workflow to link to another routing strategy workflow, if required.

For each media type available in the contact center, OpenScape Contact Center provides a default routing strategy to route contacts to a default queue. You can make a copy of the default routing strategy and use it as the starting point for creating a new routing strategy workflow, or you can create a new one.

NOTE: When the system is configured for high availability (warm standby), the execution of a routing strategy workflow can be impacted by a failover. This is because some decisions that are made in a routing strategy workflow are based on statistics that may have different values after a failover. For more details on the high availability (warm standby) feature, see [Chapter 18, "Working with the high availability \(warm standby\) feature"](#).

9.2.1 Basic routing strategy workflow example

The following diagram shows an example of a simple voice routing strategy workflow. It routes a contact to a queue based on the pilot number associated with a dialed number.



While simple, this example illustrates the most basic rules that you must follow when creating a routing strategy workflow. A routing strategy workflow:

- Begins processing at a **Start** component.
- Has intermediate processing that typically involves gathering information and making decisions based on that information. In the example, intermediate processing is provided by the **Check Dialed Number** component. Intermediate processing is normally more complex than shown here.
- Is terminated by a valid end component. In this example, the Enqueue components are the end components.

The small square objects are workflow components. You can trace the execution of a routing strategy workflow by following the connection lines that link the components in the workflow. Where a component branches into two or more execution paths, as in the case of the **Check Dialed Number** component, that component's execution involves a decision, and execution continues along only one of the paths depending on the results of the decision. The paths away from the component are known as outputs.

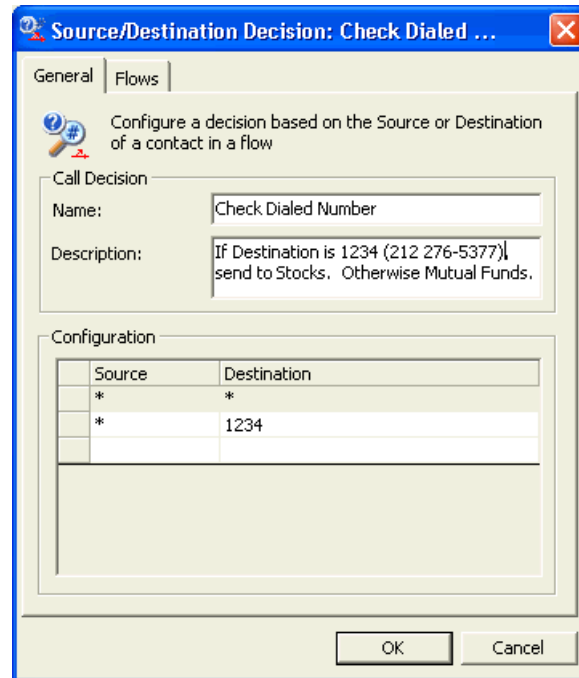


The icons on the components indicate different component types, which perform different actions. For example, while the **Enqueue to Stocks** and **Enqueue to Mutual Funds** components have different names, they are both Enqueue components. An Enqueue component's function is to route a contact to a specified queue.

Working with workflows

Routing strategy workflow considerations

The **Check Dialed Number** component is a Source/Destination Decision component.



A Source/Destination Decision component compares the source or destination associated with the incoming contact to a list of one or more sources and destinations specified when you create the component. In the example, the **Check Dialed Number** component checks the pilot number associated with the incoming call for a match with 1234. This destination is associated with the dialed number 212 BROKERS (212 276-5377) on the communication platform. If there is a match, the **Enqueue to Stocks** component will execute next. If they do not match, the **Enqueue to Mutual Funds** component will execute next.

9.3 Routing strategy workflow considerations

OpenScape Contact Center provides information from several sources that can be used in a routing strategy workflow. Some of this information can be used directly or indirectly in routing an incoming contact.

In planning your routing strategy workflow, you should focus on answering two questions:

- What information can a routing strategy workflow use to route contacts?

- How does a routing strategy workflow use that information to route contacts?

The following topics answer those questions.

9.3.1 Source/destination information

When configuring a Source/Destination Decision component, you can provide a list of sources, destinations, or source/destination combinations that the component is to compare with the source/destination details of an incoming contact. Every source/destination pair entered results in an exit point for that Source/Destination Decision component. The default (*,*) entry in the list of source/destination combinations is also an exit point that can be used for the case where there is no specific matching entry.

NOTE: The format of voice sources and destinations available to OpenScape Contact Center depends on your geographic location and on communication platform programming. The examples provided in this book take the following forms: destinations are pilot numbers mapped to the dialed number, and sources are 10-digit North American telephone numbers.

NOTE: Unlike other media, Web collaboration sources and destinations are site-defined. For details, see [Section 15.3, “Web collaboration sources and destinations”](#), on page 337.

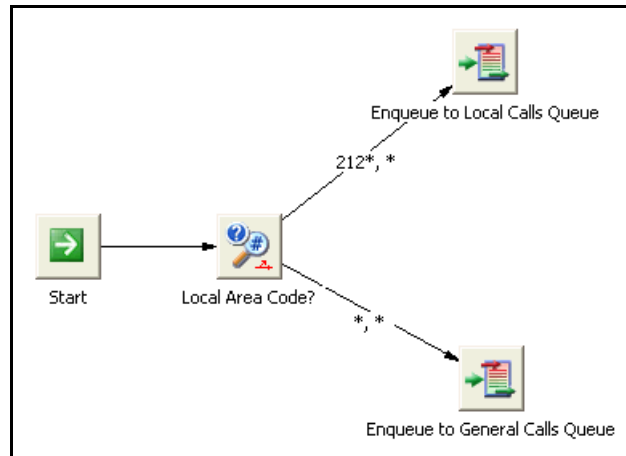
A destination is typically used directly in routing the contact to a queue. For example, if you have two lines, 212 BROKERS and 212 FUNDS4U, you could route the contact similarly to the routing strategy workflow shown in [Section 9.2.1, “Basic routing strategy workflow example”](#), on page 185. Contacts on the destination associated with 212 BROKERS (pilot number 1234) are routed to the Stocks queue, while contacts on the 212 FUNDS4U destination are enqueued to the Mutual Funds queue.

Working with workflows

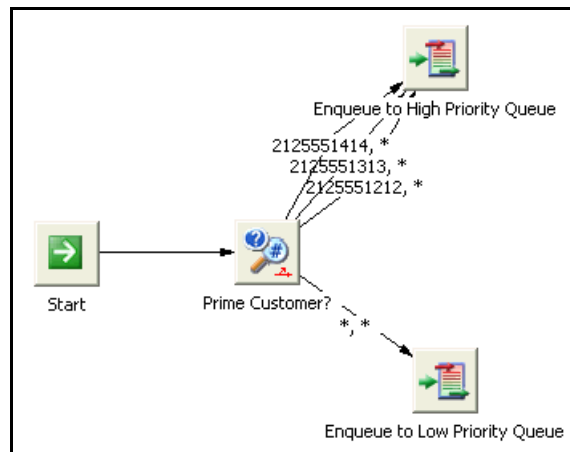
Routing strategy workflow considerations

Similarly, there are a number of uses for the source associated with a contact. For example:

- For calls, you could make a source-based decision based on the caller's geographic location. Since the configuration of a Source/Destination Decision component lets you use wildcards, you could check the area code portion of the source of an incoming contact and enqueue the contact based on whether it is local.



- You could configure a Source/Destination Decision component to look for matches against the e-mail addresses or telephone numbers of your biggest accounts or customers. This would let you check the source of an incoming contact against those sources and route the contact based on that criterion. In the following example, three outputs from the **Prime Customer?** Source/Destination Decision component all link to the same Enqueue component.

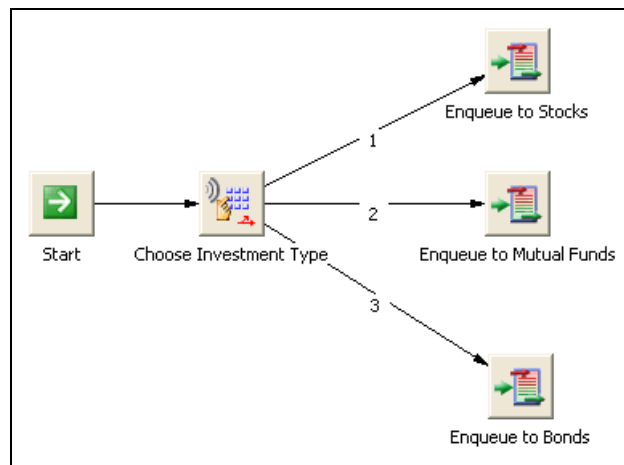


9.3.2 Information collected from a call

If you are using Call Director, the routing strategy workflow can drive Call Director to collect information from the caller. In the simplest scenario, you prompt the customer for the purpose of their call, and then use the information provided to direct the contact.

NOTE: In addition to using Call Director, you can also use an IVR to collect information from the caller.

For example, you could use a single 212 UINVEST line to service customers interested in talking to specialists in the areas of Stocks, Mutual Funds, or Bonds. When a contact arrives in OpenScape Contact Center, a menu could prompt the caller to choose one of these options.



In this example, **Choose Investment Type** is a Menu Prompt component. When you configure a Menu Prompt component, you specify the valid choices that a customer can make. You can then create an exit point on the Menu Prompt component for each of those choices. In the **Choose Investment Type** component, the three valid exit points correspond to Stocks, Mutual Funds, and Bonds.

In the above example, the caller's choices directly choose a queue. The information that you collect from the customer does not have to be used so directly. For example, you could prompt the user to make one of two choices:

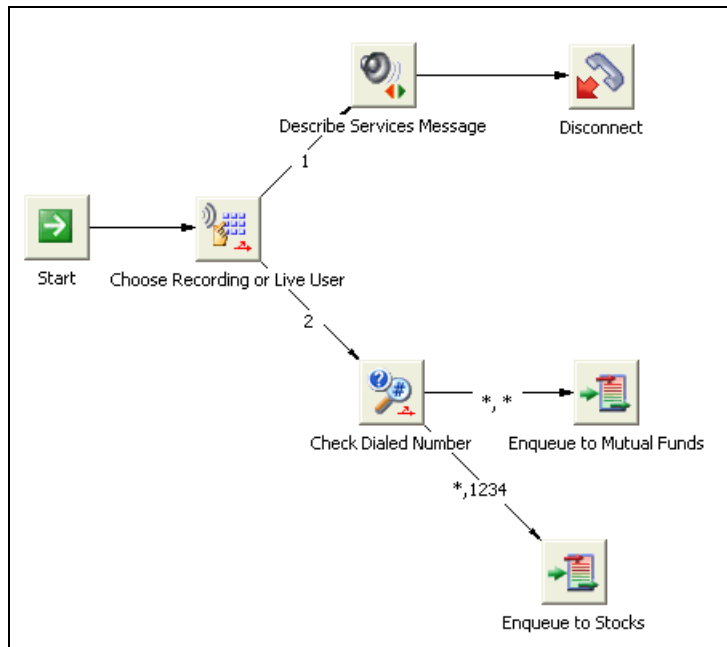
- **To hear a list of services we offer, press 1**
- **To talk to an agent, press 2**

If the caller presses 1, you play them a simple message and then disconnect. If the caller presses 2, you route the contact based on the destination. The following diagram illustrates the routing strategy

Working with workflows

Routing strategy workflow considerations

workflow that executes this strategy. The **Describe Services Message** is a Message component. It plays the caller a recorded message then passes execution to the next component.



In addition to menu prompting, if OpenScape Contact Center is working with Call Director, you can have a routing strategy workflow perform simple digit collection, such as having callers provide a credit card number.

9.3.3 Scheduling information

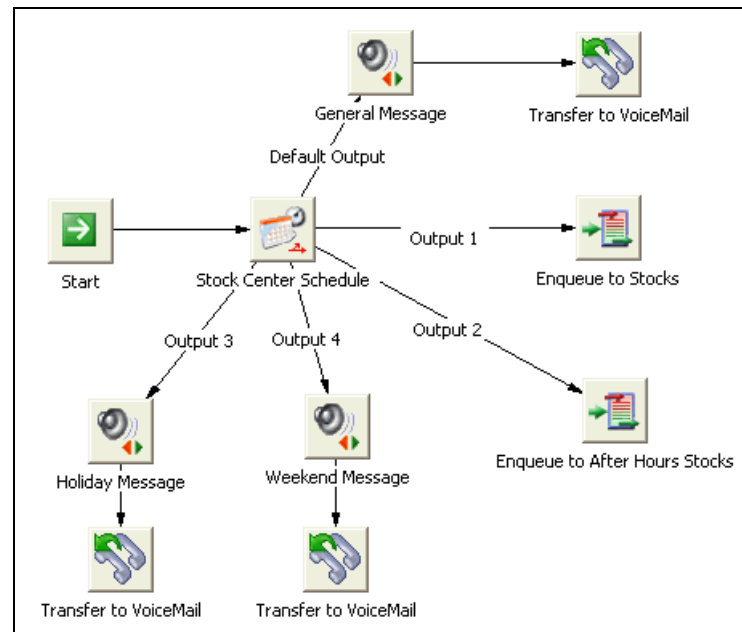
You can set up OpenScape Contact Center schedules that dictate how contacts are treated based on the time of day, day of week, and specific dates. You can set up schedules to handle contacts according to:

- Time of day and days of the week when your contact center is open
- Specific dates through the year that the contact center is closed
- Routing requirements changing throughout the day. For example, you may have different shifts working at different times with different staffing and contact volume requirements

For example, assume that you have the following voice scenario:

- During normal business hours, Monday through Friday, contacts to 212 BROKERS are directed to the Stocks queue. The Stocks queue is configured to route the contacts to specialists in the area of stocks, almost exclusively. You have similar setup for inquiries on Mutual Funds and Bonds.
- After-hours traffic is much lighter than through the day, and you have a smaller, less specialized staff working in the evening. With these factors, you lose the benefits of highly specialized queues. Between 5:00 P.M. and 9:00 P.M., contacts to 212 BROKERS could be directed to a General After Hours queue. That queue could initially try to match the contact to a stocks specialist, subsequently relax matching so that the contact is handled by a less-qualified user, and be configured to time out to a voice mail extension.
- The contact center is closed Saturday and Sunday every week. You want a specific weekend message played to customers on these days.
- The contact center is closed all day, January 1. You want a specific holiday message played to customers on this date.
- At all other times when the contact center is closed, you want a general message played to customers.

The following diagram shows a routing strategy workflow that performs the routing for this scenario.



Working with workflows

Routing strategy workflow considerations

Stock Center Schedule is a Schedule component. When configuring a Schedule component you create a specific case for each time/day/date that requires different handling. Any times and dates not covered by these cases are treated as a default case. Outputs 1 through 4 correspond to the daytime, evening, weekend, and January 1 periods mentioned above. The default output corresponds to all times not defined for Outputs 1 through 4.

You are not restricted to a single schedule. You can reference multiple schedules in the same workflow. If your contact center has a wide variety of functional areas, you might require a separate schedule for each area. You might for example, want to associate a separate schedule with each destination supported by your contact center.

For an example of how you set up a Schedule component, see [Section 9.10.3, "Adding a Schedule component", on page 223](#).

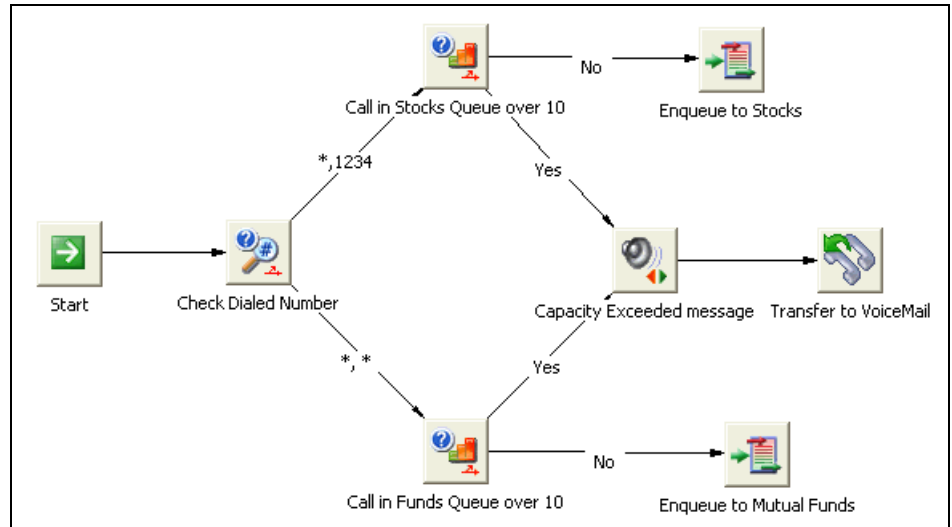
9.3.4 Statistics

OpenScape Contact Center maintains a continually updated set of performance statistics. In general, OpenScape Contact Center keeps track of:

- Count statistics such as the number of currently available users in a group, number of contacts waiting, and number of users logged on.
- Calculated statistics such as the current service level, estimated wait time, and abandoned time.

A routing strategy workflow has access to a number of these statistics at the queue level. This allows you to base your routing on current conditions, such as contact volume and staffing levels.

For example, prior to enqueueing, you could check the current number of contacts waiting in a voice queue. If there were no contacts waiting, or an acceptably small number, you would route the contact to that queue. Otherwise, you could play the caller a message and then transfer the contact to voice mail.



In this example, **Calls in Stocks Queue over 10** and **Calls in Funds Queue over 10** are Performance Decision components. This component type performs a simple comparison on a specific statistic using comparison operators such as equals, over (greater than) and under (less than). It then passes execution to the next component depending on whether the test returned yes (true) or no (false).

9.3.5 Contact data

Each contact being processed by OpenScape Contact Center has a set of information, referred to as contact data, that is available for the life of the contact. You can use the contact data to keep track of arbitrary information about the contact. You can make use of the contact data in a workflow to help you route a contact or for other purposes.

You can think of the contact data as a list of key/value pairs. For example, the following table demonstrates contact data consisting of four key/value pairs.

Key	Value
Name	Bill Lee
Address1	955 Morning Glory Circle
Address2	Buffalo, New York
Source	(716) 555-1212

Table 3 Contact data as a list of key/value pairs

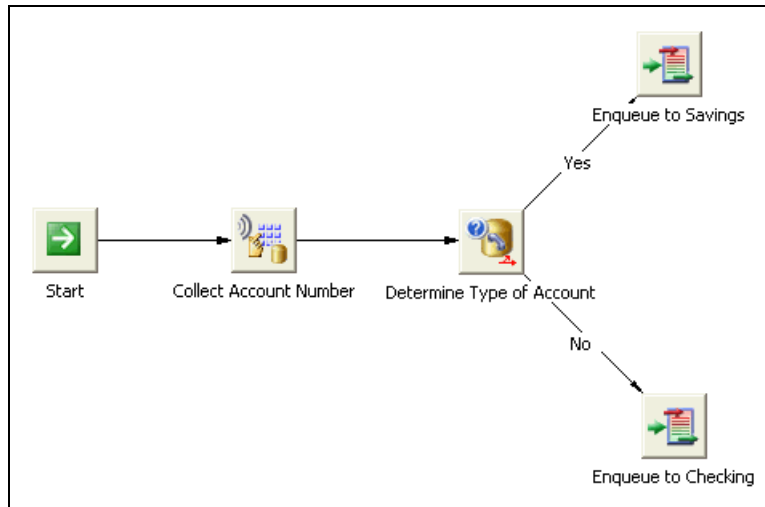
Working with workflows

Routing strategy workflow considerations

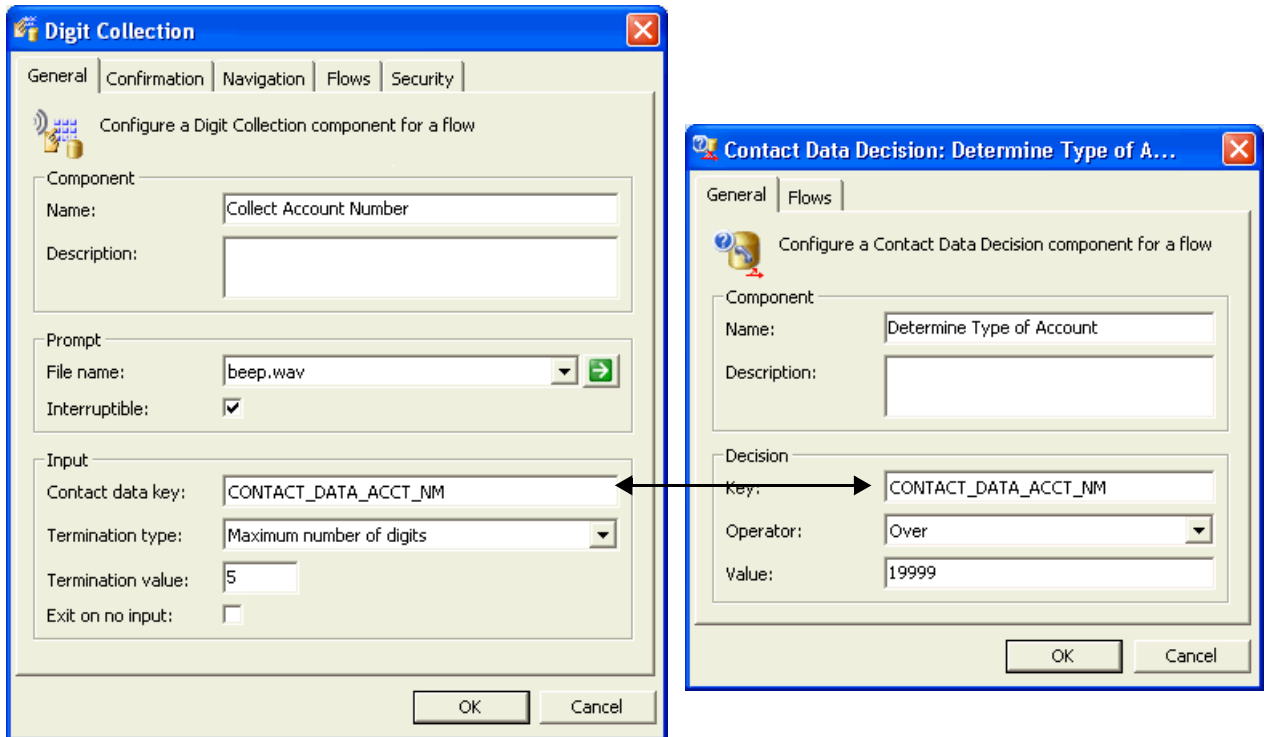
With some of the component types available for use in a routing strategy workflow, you can write key/value pairs to the contact data. For example, the contact data shown in the table could have been created by retrieving a record from a customer database and writing the results to the contact data.

NOTE: For more information on database lookup in a routing strategy workflow, see [Section 9.3.6, “Database functions”, on page 196](#).

You can also make routing decisions based on values in the contact data. For example, in a banking situation, when a call arrives in OpenScape Contact Center, you could have a customer enter their account number. This number might be used to identify the account as a savings or checking account. Writing this value to the contact data would allow you to later queue the contact using that criterion.



In this example, **Collect Account Number** is a Digit Collection component and **Determine Type of Account** is a Contact Data Decision component. The configuration for these components are shown below.



The **Collect Account Number** component prompts the customer for an account number and writes the provided digits as the value of a contact data key/value pair associated with the key `CONTACT_DATA_ACCT_NM`. In this example, checking account numbers are in the range 10001 through 19999 while savings account numbers are in the range 20000 through 29999. The **Determine Type of Account** component passes execution to one of the two Enqueue components, based on which of these ranges the `CONTACT_DATA_ACCT_NM` value falls within.

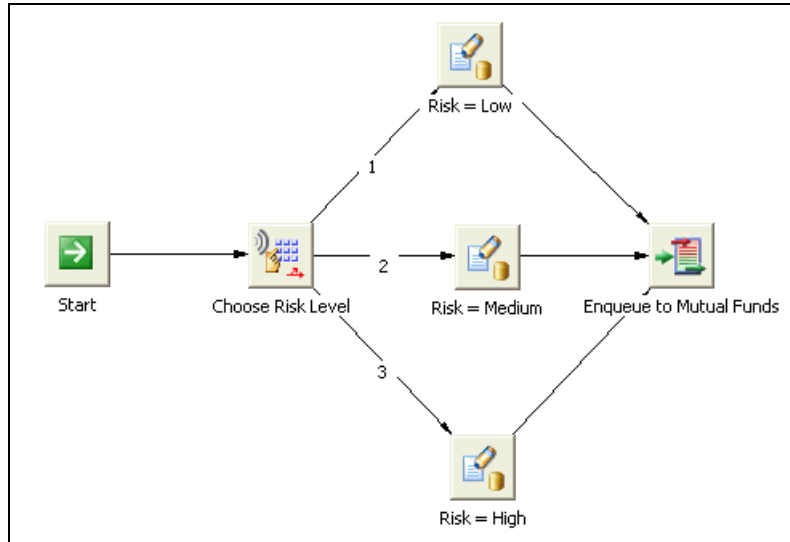
NOTE: Digit Collection components are available only if OpenScape Contact Center is working with Call Director.

Contact data information does not have to be used strictly in routing a contact. You can also record information to be used later, to record a caller's previous choices for example. Contact data is also useful to the user who is handling the contact.

Working with workflows

Routing strategy workflow considerations

For example, you might want callers to 212 FUNDS4U routed directly to the Mutual Funds queue. To do this, when a contact arrives, you could use a Menu Prompt component to allow the caller to indicate one of three levels of risk tolerance (high, medium, low). You could then record the choice in the contact data using a Contact Data Update component. In this example, the **Risk = Low**, **Risk = Medium**, and **Risk = High** components are Contact Data Update components.



This information would then be available to the user answering the contact. Alternatively, after the contact is enqueued, you might want to use this information in a queue processing workflow to choose a relevant message to play to the caller while the caller waits.

NOTE: You can pass contact data as a parameter to a DLL or COM module called from a Custom Function component. For details, see [Section 9.3.7, “Custom functions”, on page 204](#).

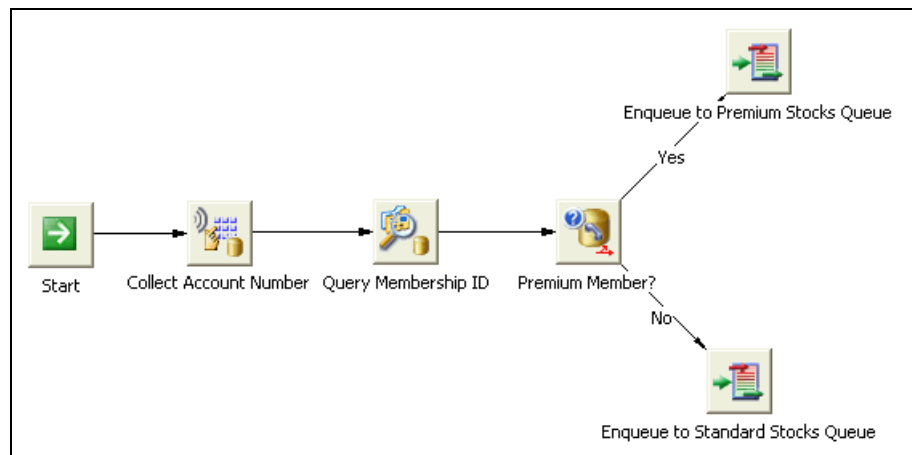
9.3.6 Database functions

If you have access to an ODBC-compliant data source, you can use any SQL statement in a routing strategy workflow to query or update the data source. While the most common use of this action is to access

customer database information, this functionality can be used for other purposes, for example, to access product information or other information used in routing the contact.

NOTE: In case you are querying data with non-west-european characters, be sure that your ODBC-compliant data source uses UTF-8 encoding and not any other code page containing those characters.

For example, your contact center could have two levels of customer membership: standard and premium. When a call arrives in OpenScape Contact Center, you could prompt the caller for their membership ID. You could then query the database to check the caller's membership level, and enqueue premium members to a queue set up specifically for premium members.



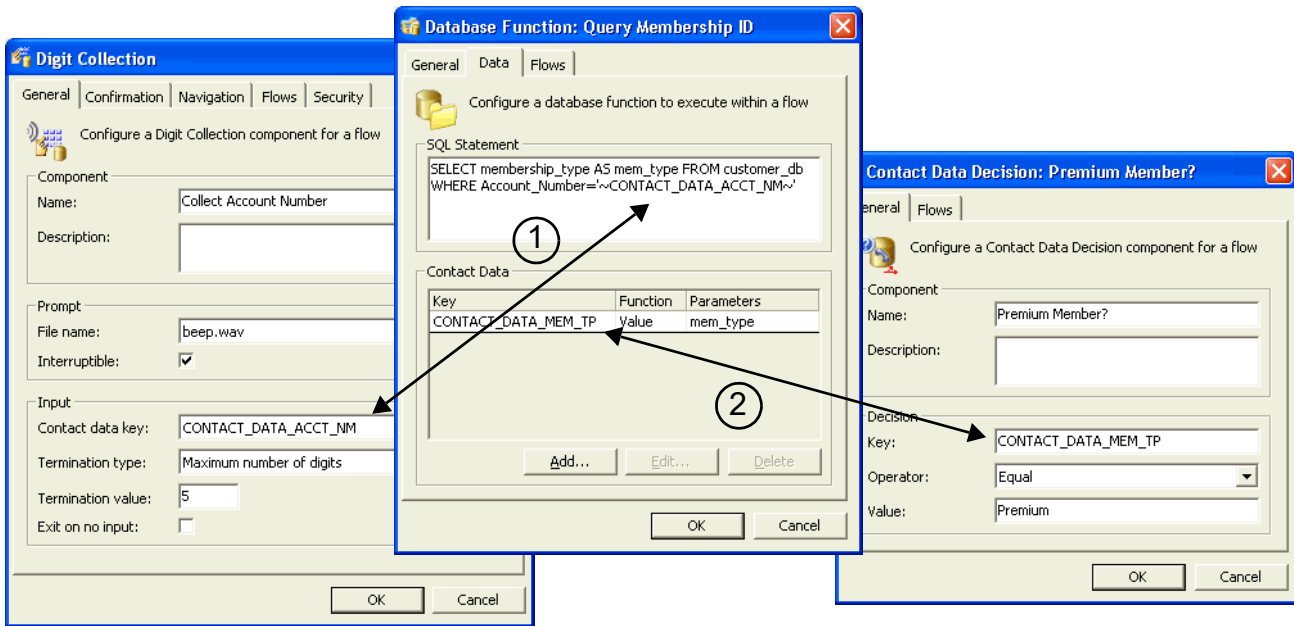
In this example, **Query Membership ID** is a Database Function component. A Database Function component lets you issue a query to an ODBC data source based on a contact data value. The results can be formatted and written to the contact data record for subsequent use.

The configuration of the **Collect Account Number**, **Query Membership ID**, and **Premium Member?** components are shown below. The **Collect Membership ID** Digit Collection component

Working with workflows

Routing strategy workflow considerations

prompts the customer for a membership ID and writes the provided digits as the value of a contact data key/value pair associated with the key CONTACT_DATA_ACCT_NM.



The **Query Membership ID** Database Function component:

1. Issues a query with a WHERE clause that returns the record associated with the CONTACT_DATA_ACCT_NM key's value. For details and examples of query construction, see the [Section 9.3.6.1, "Formatting database functions", on page 198](#).
2. Writes the membership_type returned with the record as the value of a contact data key/value pair associated with the key CONTACT_DATA_MEM_TP.

9.3.6.1 Formatting database functions

This section provides details and examples on the use of variables and parameterization in a Database Function component.

Variable substitution

You can use the ~ (tilde) character to populate the variables in an SQL statement:

- If the data type is a string, use '~VARIABLE~'.
- If the data type is numeric, use ~VARIABLE~.

You can specify a variable that takes its value from the contact data, or you can use the predefined SOURCE, DESTINATION, and CONTACTID variables, which take their values from the communication platform or enqueue request.

NOTE: If you use the SOURCE or DESTINATION variable, the contact source (ANI) or contact destination (DNIS) will be used, respectively, unless SOURCE or DESTINATION has already been specified as a contact data key, in which case, the value from the contact data will be used. If you use the CONTACTID variable, the Contact ID will always be used, regardless of whether it has been specified as a contact data key.

NOTE: For details on how to work with contact data, see [Section 9.3.5, "Contact data", on page 193](#).

Assume the following key/value pairs exist in the contact data:

<Caller_Name, Peter> and <Order_Number, 13478>

You can specify a contact data key name as a variable.

If the SQL statement on the Data tab is:

```
SELECT First_Name AS Name FROM Customer_table WHERE  
First_Name = '~Caller_Name~'
```

the actual database query will be:

```
SELECT First_Name AS Name FROM Customer_table WHERE  
First_Name = 'Peter'
```

If the SQL statement on the Data tab is:

```
SELECT Number AS Destination_Number FROM Customer_table  
WHERE Number = ~DESTINATION~
```

the actual database query will use the destination associated with the call:

```
SELECT Number FROM Customer_table WHERE Number = 1234
```

Formatting data retrieved using SQL

SQL statements are required when you create a Database Function component. Information is retrieved from or inserted into the data source using SQL.

You can use any SQL statement to retrieve data in a Database Function component, including stored procedures. If you use a stored procedure, you must code the procedure so that the returned data type

Working with workflows

Routing strategy workflow considerations

is supported by ODBC. Also, you must name the values in the returned data so that they can be used later by the Database Function component.

For detailed information on how to use SQL, refer to your SQL documentation.

IMPORTANT: You should create an SQL statement only if you are experienced in SQL.

After the information is extracted from the database, and then formatted, the information can be added to the contact data with a key you specify. You can use the contact data in other components of a workflow to make decisions.

The following functions can be used to extract information from the database value:

- ["Value function example"](#)
- ["Substring function example"](#)
- ["Rightstring function example"](#)
- ["Combine function example"](#)
- ["Tag function examples"](#)

You can use variable substitution to enhance your database query by integrating the database query with contact data information.

Value function example

Example: Extract an order number for customer # 1234

Sample data:

A database table "Orders" contains a Customer_ID, Customer_Name, Order_Date, and Order_Number. For example, the data reads: 1234, John Smith, 03222004, D65746.

Sample SQL statement:

```
SELECT Order_Number AS Current_Order_Number FROM Orders
WHERE Customer_ID = 1234
```

Result of SQL database search:

D65746, in the variable Current_Order_Number

Use the **Value** function with the parameter **Current_Order_Number** to extract the order number without any formatting. In the **Contact Data** dialog box, in the **Key** box, type the contact data key

Order_Number_Key, or any other key name. The contact data will contain Order_Number_Key, D65746 after the component is executed in a workflow.

Substring function example

Example: Extract the first three characters of the order number which indicate the region for the customer.

Sample data:

A database table "Orders" contains a Customer_ID, Customer_Name, Order_Date, and Order_Number. For example, the data reads: 1234, John Smith, 03222004, D65746.

Sample SQL statement:

SELECT Order_Number AS Order_Region FROM Orders WHERE Customer_ID = 1234

Result of SQL database search:

D65746, in the variable Order_Region

Use the **Substring** function with parameters **Order_Region, 1, 3** to extract the characters 1 – 3 of the Order_Region. In the **Contact Data** dialog box, in the **Key** box, type the contact data key Region, or any other key name. The contact data will contain Region, D65 after the component is executed in a workflow.

Rightstring function example

Example: Check to see if a customer had an invoice in the current year.

Sample data:

A database table "Orders" contains a Customer_ID, Customer_Name, Order_Date, and Order_Number. For example, the data reads: 1234, John Smith, 03222004, D65746.

Sample SQL statement:

SELECT Order_Date AS Current_Order_Date FROM Orders WHERE Customer_ID = 1234

Result SQL database search:

03222004, in the variable Current_Order_Date

Use the **Rightstring** function with parameters **Current_Order_Date, 4** to extract the last four numbers of the Current_Order_Date. In the **Contact Data** dialog box, in the **Key** box, type the contact data key Year. The contact data will contain Year, 2004 after the component is executed in a workflow.

Working with workflows

Routing strategy workflow considerations

Combine function example

Example: Highlight the order number for a rush order to a special customer.

Sample data:

A database table "Orders" contains a Customer_ID, Customer_Name, Order_Date, and Order_Number. For example, the data reads: 1234, John Smith, 03222004, D65746.

Sample SQL statement:

```
SELECT Order_Number AS Current_Order_Number FROM Orders  
WHERE Customer_ID = 1234
```

Result of SQL search in database:

D65746 in the variable Current Order Number

Use the **Combine** function with parameters **Current_Order_Number**, **"-SO"** to extract data from Current_Order_Number. In the **Contact Data** dialog box, in the **Key** box, type the contact data key Order Number. The contact data will contain Order Number, D65746-SO after the component is executed in a workflow.

NOTE: In the **Combine with space** function, the only difference is that a space is added between the two parameters.

Tag function examples

XML text is parsed using the following criteria:

- Every element must have an opening tag and a closing tag.
- Only one top level element is allowed.
- You can search only on child elements, not attributes.
- You can search for elements on different levels.

Example: Select a particular customer (in this case the second) from XML text.

Sample Data:

A database table, "Customer" contains Names and Country_Codes. For example, the Names data reads:
<Customer_Record><Customer_Name>Peter Jones</Customer_Name><Customer_Name>John Smith</Customer_Name></Customer_Record>, and the Country_Codes is 01.

Sample SQL statement:

```
SELECT Names AS Full_Name FROM Customer WHERE  
Country_Codes = 01.
```

Result of search:

```
<Customer_Record><Customer_Name>Peter Jones</  
Customer_Name><Customer_Name>John Smith</  
Customer_Name></Customer_Record>
```

Use the Tag function, with the parameters **Full_Name**, **"Customer_Name"**, **2** to extract the second occurrence of Full_Name. In the **Contact Data** dialog box, in the **Key** box, type the contact data key Name. The contact data will contain Name, John Smith, after the component is executed in a workflow.

NOTE: The Tag parameter must be in quotation marks.

Example: Select elements from different levels within XML text.

Sample Data:

```
<contact category="Sales"><fullname>John Smith</  
fullname><phonenumbers><home>8015552323</  
home><cell>8015553232</cell></phonenumbers><email  
address='jsmith@email.com'/></contact>
```

Search for full name (element labeled "fullname")

Result: John Smith

Search for telephone numbers (element labeled "phonenumbers")

Result: 80155523238015553232

Search for home telephone number (element labeled "phonenumbers" and sub-element "home")

Result: 8015552323

Search for attribute category (element labeled "category")

Not allowed – you can search only for a child element as in previous examples.

Search for contact category (element labeled "contact category")

Not allowed – contact is a tag name, category is an attribute name. They cannot be used together in a search.

Search for contact (element labeled "contact")

Result: John Smith80155523238015553232

NOTE: E-mail address does not go into this search result because it is stored in the attribute instead of a child element.

9.3.7 Custom functions

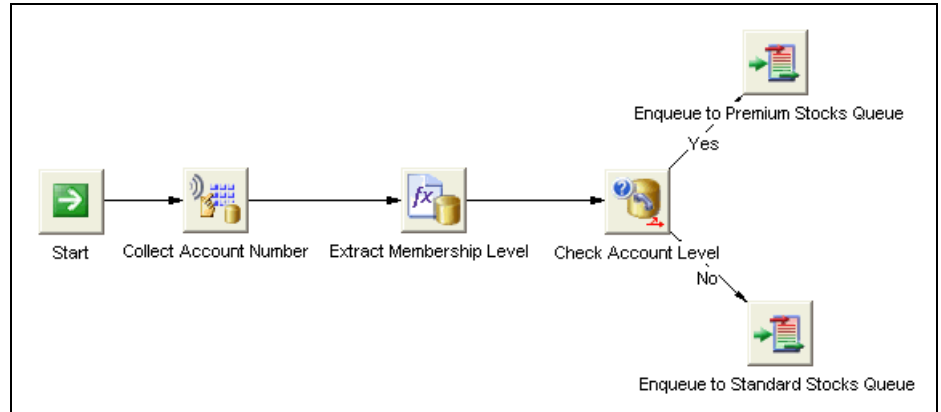
The workflow components provided with OpenScape Contact Center provide a wide range of functionality that lets you collect information on incoming contacts, make routing decisions, and otherwise automate aspects of your contact center. You can also make use of functionality that is outside the scope of the topics covered in this chapter.

You can write a custom function in a DLL or COM module and call the function from a routing strategy or queue processing workflow, for all supported media. The function is passed contact data associated with the contact and the function can:

- Modify the provided contact data values – For example, if you prompted the customer for a seven-digit account number, you could have the workflow format the number to include spaces or dashes, for display purposes.
- Add new contact data for use in the workflow – This would be useful if you wanted to make use of a value not normally available in a workflow. This might be derived from information passed as inputs, by a calculation for example. Similarly, the information might be obtained from a third party source, by a database query for example, processed in some way and passed back to the workflow. After the custom workflow finishes executing, the new information is available as contact data for use in the workflow.
- Perform tasks that are entirely outside the scope of OpenScape Contact Center processing – You could, for example, write contact details out to a custom contact log.

NOTE: For details on how to work with contact data, see [Section 9.3.5, “Contact data”, on page 193](#).

After you have written and compiled a custom function, you can call the function in a routing strategy or queue processing workflow. In the following example, the caller is prompted for a seven-digit account number.



The account number is written to the contact data and it is the responsibility of the **Extract Membership Level** Custom Function component to parse out the third, fourth, and fifth digits, corresponding to the caller's membership level, and create a new contact data key/value pair with these digits. The contact could then be enqueued based on whether the three digits constitute a premium or general membership.

9.3.7.1 Programming custom functions

This section provides direction in writing DLLs and COM module functions used in conjunction with Custom Function components.

Contact data as input and output parameters

When a DLL or COM custom function is called, it is passed a configured subset of the current contact data as a character string. Similarly, the custom function is expected to return a set of updates to the contact data as a character string.

NOTE: A queue set up to use the supplemental information feature can collect contact information and store it as contact data. For more information, see [Section 10.3.1.1, "About the supplemental information feature"](#), on page 243.

Working with workflows

Routing strategy workflow considerations

Datatype and declaration

Parameters storing the contact data input and output parameters must be declared as single byte character strings in DLLs and as BSTR (wide) character strings in COM modules. The following table shows the declarations.

Type	Declaration
DLL	long = CustomFunction(char * pInput, char * pOutput)
COM	HRESULT = CustomFunction(BSTR bstrInput, BSTR bstrOutput)

Table 4 Sample COM and DLL function declarations

NOTE: The custom function does not have to be named **CustomFunction**. The function name can be any value legal for a COM module or DLL function.

The first parameter stores the contact data key/value pairs to be passed into the custom function while the second parameter is used to return the contact data modified by the custom function to the workflow that called the custom function. The type of character data that may be stored and passed in both the input and the output parameters is restricted to ISO-8859-1 compatible characters:

- When the interface type is a DLL component, the characters must be ISO-8859-1 single byte characters.
- When the interface type is a COM component, the parameter contents must be encoded as UNICODE code page 28591 (ISO 8859-1 Latin 1).

Contact data string layout

Contact data is passed to and returned from custom functions in character strings. The first two characters in the string store the number of key/value pairs and each subsequent block of 160 characters stores a key/value pair. Up to 99 key/value pairs can be passed into and returned from the custom function.

Within each record, the first 32 characters are reserved for the contact data key and the remaining 128 characters are reserved for the contact data value. Unused bytes within these key and value string fields must be padded with NULL values (binary zero).

For example, the following diagram shows the layout of the character string used to pass the contact data key/value pair **PIN/1234** into a custom function:

Char Position	1-2	3-5	6-34	35-38	39-162
Char	01	PIN	null	1234	null

The output string passed back to OpenScape Contact Center from the custom function is formatted using the same rules. The number of key/value pairs passed within the input parameter and the output parameter may differ. The following diagram shows the layout of a character string used to return contact data from a custom function. The contact data input above has been updated to include an address, **Address/2211 High Street**, possibly obtained by a database query.

Char Position	1-2	3-5	6-34	35-38	39-162	163-169	170-194	195-210	211-322
Char	02	PIN	null	1234	null	Address	null	2211 High Street	null

Constraints

When writing a custom function, observe the following constraints:

- Ensure that the function called from the Custom Function component, and any functions it calls in turn, are threadsafe. These functions must be reentrant and multiprocessor-safe.
- During execution of the custom function, memory ownership remains with the Routing Server. Custom functions should not perform memory allocations or reallocations for the input nor the output strings nor delete them.

Runtime restrictions

After the input parameters are packaged, the custom function is called. During this time, workflow execution for the contact is halted. The COM module or DLL function must finish execution within five seconds.

When a custom function completes successfully, workflow execution resumes at the component that follows the Custom Function component. To indicate successful execution, a custom function must return one of the following return codes:

- For DLLs, 0
- For COM modules, a value that can be validated with the SUCCEEDED macro

Working with workflows

Routing strategy workflow considerations

In addition to the return code and time limit restrictions imposed by OpenScape Contact Center, runtime errors in the custom function code can result in exceptions. If an exception is raised during the execution of the custom function, OpenScape Contact Center terminates workflow processing.

If the function does not successfully complete within five seconds, returns a return code other than those described above, or otherwise throws an exception, the next action will depend on the type of workflow that called the custom function:

- If a routing strategy workflow called the custom function, the contact is enqueued to the error queue specified for that routing strategy or to the global error queue specified for the associated media if no routing strategy error queue is specified.
- If a queue processing workflow called the custom function, the queue processing workflow terminates. For calls, the contact returns to default communication platform treatment. For other contact types, the workflow simply terminates and the contact remains enqueued. For all media, OpenScape Contact Center will continue to try to match the contact to a user.

NOTE: When a custom function fails, an error code and description are displayed in the System Monitor application.

Sample DLL source code

The following is an example of the source code for a custom function called within a DLL.

```
CustomFunctionExampleDLL.cpp : Defines the entry point for the DLL
application.
//

#include <stdlib.h>
#include "stdafx.h"

BOOL APIENTRY DllMain( HANDLE hModule,
                      DWORD  ul_reason_for_call,
                      LPVOID lpReserved
                      )
{
    return TRUE;
}
extern "C"
{
    __declspec(dllexport) long CustomFunctionExample(const char * dataIn, char
* dataOut)
    {
        // Determine number of input parameters
        char numParametersAsString[3] = {dataIn[0], dataIn[1], '\0'};
        const unsigned int numParameters = atoi(numParametersAsString);

        const unsigned int HEADER_SIZE = 2;
        const unsigned int KEY_SIZE = 32;
    }
}
```

```
const unsigned int VALUE_SIZE = 128;

// Read each input parameter
for (unsigned int i = 0; i < numParameters; i++)
{
    char key[KEY_SIZE] = {0};
    char value[VALUE_SIZE] = {0};

    const unsigned int keyIndex = HEADER_SIZE + i * (KEY_SIZE +
VALUE_SIZE);
    const unsigned int valueIndex = keyIndex + KEY_SIZE;

    memcpy(key, dataIn + keyIndex, sizeof(key));
    memcpy(value, dataIn + valueIndex, sizeof(value));
}

// Return a single output parameter
dataOut[0] = '0';
dataOut[1] = '1';

char outputKey[KEY_SIZE] = {'O', 'U', 'T', '_', 'K', 'E', 'Y', '\0'};
char outputValue[VALUE_SIZE] = {'O', 'U', 'T', '_', 'V', 'A', 'L', 'U',
'E', '\0'};

memcpy(dataOut + HEADER_SIZE, outputKey, sizeof(outputKey));
memcpy(dataOut + HEADER_SIZE + KEY_SIZE, outputValue,
sizeof(outputValue));

return 0;
}
```

9.4 Configuring a routing strategy workflow

A routing strategy workflow is typically used to route a contact to a queue, but the contact can also be routed to a user or disconnected or discarded. For more information, see [Section 9.2, “About routing strategy workflows”, on page 184](#).

NOTE: To create or change a routing strategy workflow, you must have Full or Modify access, respectively, for the associated Manager permission.

If you are configuring a voice routing strategy workflow, you must configure the .wav files that you want to use before you begin (see [Section 12.3.3, “Configuring a .wav file”, on page 285](#)).

NOTE: You cannot create a routing strategy workflow diagram that connects back to itself. A routing strategy workflow diagram must end with a termination component.

Working with workflows

Configuring a routing strategy workflow

To configure a routing strategy workflow:

1. On the **File** menu, point to **New**, then **Design Center**, then select the media type, and then click **Routing Strategy Workflow**.
2. On the **General** tab, under **Workflow**, do the following:
 - In the **Name** box, type a unique name for the routing strategy workflow. The name appears on the tab in the Design Editor when you open the workflow diagram.
 - In the **Description** box, type a description for the routing strategy workflow. The description should include the purpose of the workflow.
3. To configure override settings for the workflow, click the **Override** tab, and then do the following:
 - For a voice routing strategy workflow, configure the Call Director override settings for the workflow, if required. See [Section 9.4.1, "Overriding the default Call Director settings"](#), on page 211.
 - Configure the error queue override settings for the workflow, if required. See [Section 9.4.2, "Overriding the default error queue settings"](#), on page 212.
4. Click the **Reports** tab.
5. Under **Include**, select the reports that you want to display data about this routing strategy workflow. The list only contains the reports you own, or reports that are owned by users you can monitor.
6. Click **OK**. The application saves the new workflow and gives it a status of **Incomplete**.
7. In the right pane, double-click the new workflow. A workflow diagram appears in the **Design Editor** with a **Start** component.
8. Create the components for the routing strategy workflow diagram, as required.
9. Add components to the workflow diagram.
10. Connect the components.
11. On the **File** menu, click **Save**.

9.4.1 Overriding the default Call Director settings

You configure the default Call Director settings in the Options dialog box (see [Section 12.4, “Configuring the Call Director options”, on page 288](#)). When you configure a routing strategy workflow (see [Section 9.4, “Configuring a routing strategy workflow”, on page 209](#)) or a queue processing workflow (see [Section 9.7, “Configuring a queue processing workflow”, on page 217](#)), you can override the default settings.

Before you begin, the .wav files that you want to use must be configured and installed on the main server machine (see [Section 12.3.3, “Configuring a .wav file”, on page 285](#)).

To override the Call Director settings:

1. In the **Voice Routing Strategy** dialog box or **Voice Queue Processing** dialog box, click the **Override** tab.
2. Under **Override Call Director Settings**, do any or all of the following, if required:
 - To override the selected language for spoken messages, select the **Language** check box, then click **Standard** and select the language you want to use from the list. The list contains the languages supported by the voice processor.

NOTE: The **Custom locale ID** should be used only by your service representative. The use of a language other than one of those provided in the Standard list requires additional firmware for the voice processor.

- To override the .wav file that plays when an error occurs, select the **Error message file name** check box, and then select a different .wav file from the list.

NOTE: If you are connected to a production database, you can click  to play the .wav file. You cannot play .wav files when you are connected to a design database.

- To override the .wav file that plays if there is no caller response, select **No response file name** check box, and then select the .wav file from the list.

Working with workflows

About queue processing workflows

- To override the .wav file that plays if there is an invalid caller response, select the **Invalid response file name** check box, and then select the .wav file from the list.
 - To override the queue that the call is forwarded to when the caller presses the Operator key, select the **Operator queue** check box, and then select a different voice queue from the list.
 - To override the .wav file that plays when the caller is transferred to the operator, select the **Operator transfer file name** check box, and then select a different .wav file from the list.
3. If you are finished working with this workflow, click **OK**.

9.4.2 Overriding the default error queue settings

You configure the default error queue settings in the Options dialog box for each media type. When you configure a routing strategy workflow (see [Section 9.4, "Configuring a routing strategy workflow", on page 209](#)), you can override the default error queue settings.

To override the error queue settings:

1. In the **Routing Strategy** dialog box, click the **Override** tab.
2. Under **Override Error Queue**, do the following:
 - To override the queue where contacts are placed when an error is encountered in the routing strategy workflow, select the **Error queue** check box, and then select a different queue from the list.
 - To override the default description of the error queue, select the **Error Description** check box, and then type a different error queue description in the box.
3. If you are finished working with this workflow, click **OK**.

9.5 About queue processing workflows

A queue processing workflow determines what happens to a contact while it is waiting in queue. A queue processing workflow dictates:

- For calls, what a caller hears and what actions a caller can take.
- For e-mail messages, what automated actions are applied to the e-mail message, for example, auto-acknowledgments and auto-responses.

- For Web collaboration contacts, what standard messages are sent to the customer's session window and what URLs to which their browser is directed.

A queue processing workflow works in parallel with the system's attempts to route the contact and will affect the routing only if the workflow enqueues the contact to a different queue, transfers, discards, or disconnects the contact. When Call Director is enabled, a queue processing workflow can also be used to play messages for calls.

In general, in a queue processing workflow, you can perform any of the functions that you can use in a routing strategy workflow.

For each media type available in the contact center, OpenScape Contact Center provides a default queue processing workflow. You can make a copy of the default workflow and use it as the starting point for creating a new queue processing workflow, or you can create a new one.

NOTE: When the system is configured for high availability (warm standby), the execution of a queue processing workflow can be impacted by a failover. This is because some decisions that are made in a queue processing workflow are based on statistics that may have different values after a failover. For more details on the high availability (warm standby) feature, see [Chapter 18, "Working with the high availability \(warm standby\) feature"](#).

9.6 Queue processing workflow considerations

The following topics introduce the most common uses and aspects of queue processing workflows, and explain the differences between queue processing workflows and routing strategy workflows.

9.6.1 Looping in a queue processing workflow

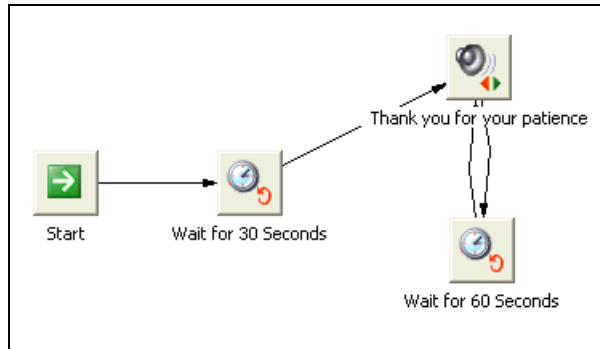
A workflow can contain loops: one or more components can be executed repeatedly. To create a loop, you create a link that runs back to a component that has already executed.

NOTE: Looping in routing strategy workflows is not recommended since it can lengthen the time required to enqueue, route, discard, or disconnect an incoming contact.

Working with workflows

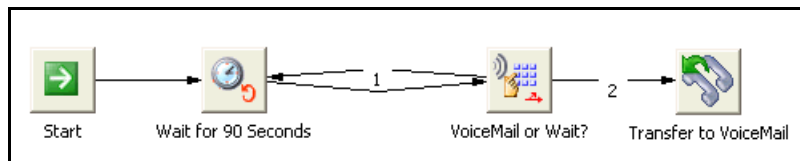
Queue processing workflow considerations

In a simple voice scenario, a queue processing workflow could start with a 30 second wait, then enter a loop: play a message thanking the customer for their patience, wait 60 seconds then start the loop again.

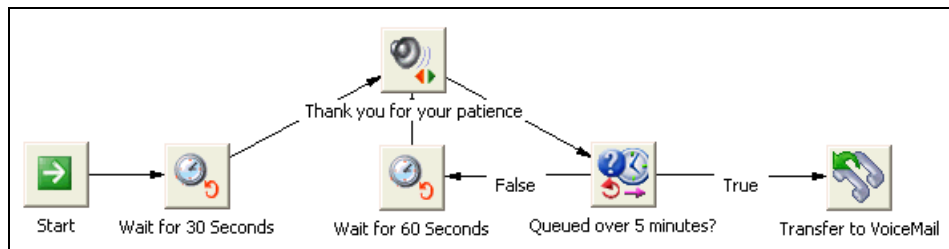


In this example, **Wait for 60 Seconds** and **Wait for 30 Seconds** are Wait Interval components. A Wait Interval component pauses for a specified period of time, before the next component in the sequence executes. During this time, a voice caller would experience default communication platform treatment, typically music-on-hold. Wait Interval components can be used only in queue processing workflows. They cannot be used in routing strategy workflows.

You might not want a loop to run indefinitely. If you are using Call Director, you could start a voice queue processing workflow with a 90 second wait interval and then use a Menu Prompt component to offer the choice to continue waiting or leave a voice mail message.



You can also perform a test while within the loop to see if a specified time has elapsed, or if the loop has executed a specified number of times. You can then exit the loop based on the results of the test. The following diagram shows a workflow that tests whether a call has been enqueued for five minutes and if so, transfers the caller to a voice mail pilot number.



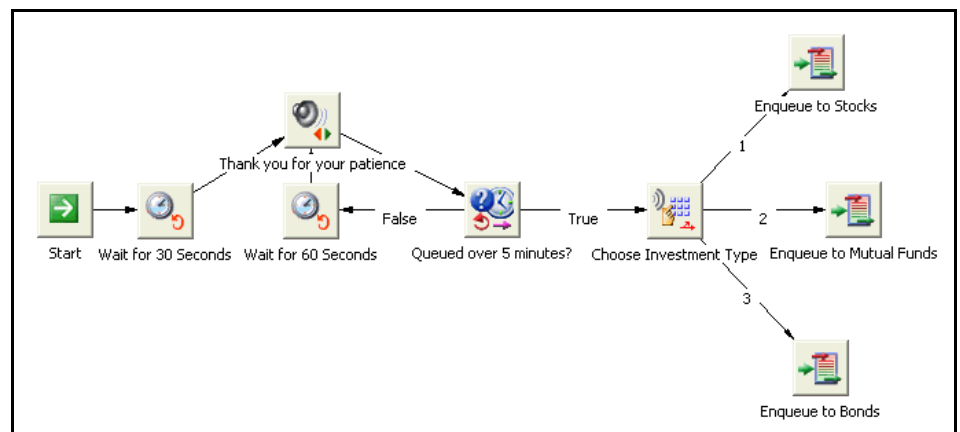
Queued over 5 minutes? is a Workflow Decision component. Each time through the loop, the next component to execute after the Workflow Decision component will depend on whether the test yields a true or false result.

9.6.2 Exiting a queue processing workflow

A queue processing workflow executes in parallel with the OpenScape Contact Center system's attempts to route the contact to a user. There are a number of ways that a queue processing workflow can terminate. The workflow will terminate when OpenScape Contact Center successfully routes the contact to a user based on the primary and overflow groups configured for the queue. The workflow can also include component types that terminate the workflow. Like a routing strategy workflow, a queue processing workflow can disconnect, discard, transfer, or enqueue the contact to a different queue.

NOTE: A voice queue processing workflow will terminate if the caller abandons the call.

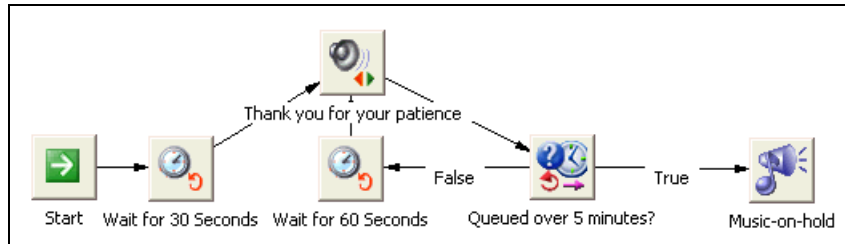
The following diagram shows an example of a voice queue processing workflow that lets a caller choose a different queue after a five-minute wait in queue.



Working with workflows

Queue processing workflow considerations

You can also terminate execution of a voice queue processing workflow by transferring the contact to default communication platform contact treatment, typically music-on-hold. For example, if a caller has been hearing a recorded message for a specified length of time, you may want to have the caller switched to music-on-hold.



In this example, **Music-on-hold** is a Default Treatment component. After a Default Treatment component executes, the queue will continue to attempt to find a user to handle the contact. The caller will experience default communication platform treatment until OpenScape Contact Center successfully routes the contact to a user or the caller abandons the contact.

IMPORTANT: Exercise caution when initially enqueueing a contact or requeueing a contact to a queue for which a queue processing workflow will be executed. Similarly, exercise caution when transferring a contact to a number that could result in a routing strategy workflow executing.

Always keep in mind that performance and customer satisfaction can be impacted by situations such as:

- A queue processing workflow requeueing a contact to the queue to which it is already assigned, resulting in the same workflow executing again.
- A queue processing workflow associated with Queue A requeueing a contact to Queue B, whose associated queue processing workflow requeues the contact back to Queue A.
- A routing strategy workflow transferring a contact to the main OpenScape Contact Center pilot number, resulting in the same workflow executing repeatedly.

9.7 Configuring a queue processing workflow

A queue processing workflow determines what happens to a contact while it is waiting in queue. For more information, see [Section 9.5, "About queue processing workflows"](#), on page 212.

NOTE: To create or change a queue processing workflow, you must have Full or Modify access, respectively, for the associated Manager permission.

If you are configuring a voice queue processing workflow, you must configure the .wav files that you want to use in the workflow before you begin (see [Section 12.3.3, "Configuring a .wav file"](#), on page 285).

You can create a looping queue processing workflow where a particular component is repeated until the contact is handled by a user. Use a Workflow Decision component to set a condition for the repeated components. For details, see [Section 9.6.1, "Looping in a queue processing workflow"](#), on page 213.

To create a queue processing workflow:

1. On the **File** menu, point to **New**, then **Design Center**, then select the media type, and then click **Queue Processing Workflow**.
2. Under **Workflow**, do the following:
 - In the **Name** box, type a unique name for the queue processing workflow. The name appears on the tab in the Design Editor when you open the workflow diagram.
 - In the **Description** box, type a description for the queue processing workflow. The description should include the purpose of the workflow.
3. For a voice queue processing workflow only, click the **Override** tab and configure the Call Director override settings for the workflow, if required. See [Section 9.4.1, "Overriding the default Call Director settings"](#), on page 211.
4. Click **OK**. The application saves the new workflow and gives it a status of **Incomplete**.
5. In the right pane, double-click the new workflow. A workflow diagram appears in the **Design Editor** with a **Start** component.
6. Create the components for the queue processing workflow, as required.
7. Add components to the workflow diagram.

Working with workflows

Linking workflows

8. Connect the components.
9. On the **File** menu, click **Save**.

9.8 Linking workflows

Within a workflow, you can use a Link component to pass execution to another workflow. There are two ways that this can be useful:

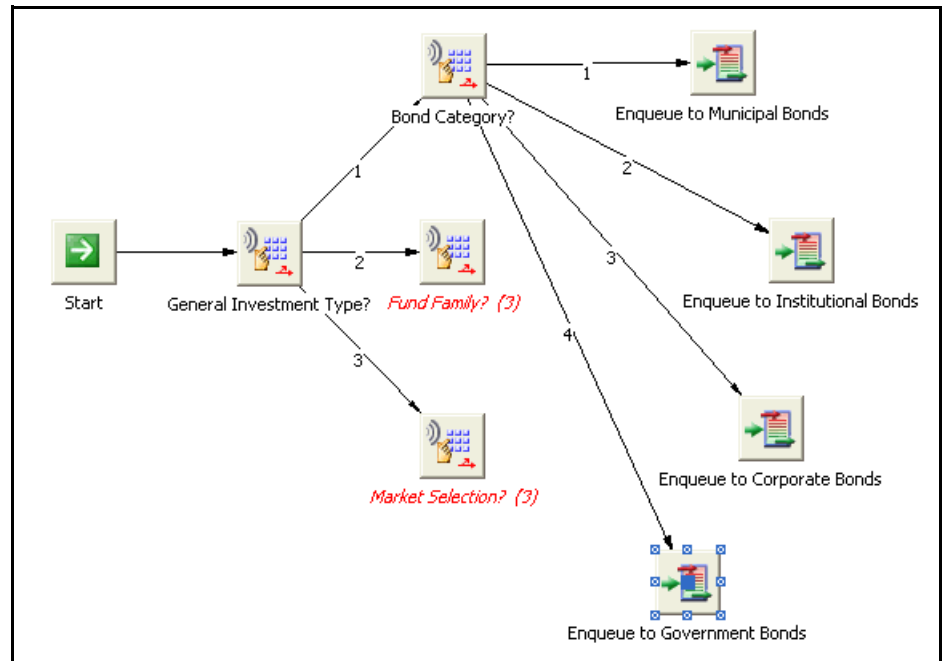
- You can break your workflows into manageable pieces, creating a hierarchy with a main workflow that calls one or more other workflows.
- You can eliminate redundant functionality by creating a single subflow that is linked to, from a number of locations.

There is no practical limit on the level of linking you can use. A workflow called by another workflow can in turn, call a third workflow, and so on. However, the set of workflows must terminate with a valid End component.

Lastly, you can link only to a workflow of the same type. For example, a routing strategy workflow can link only to another routing strategy workflow; it cannot link to a queue processing workflow.

9.8.1 Simplifying workflows

The following diagram shows a partially complete voice routing strategy workflow. This work-in-progress is a candidate for a workflow that should be broken into a number of smaller pieces.

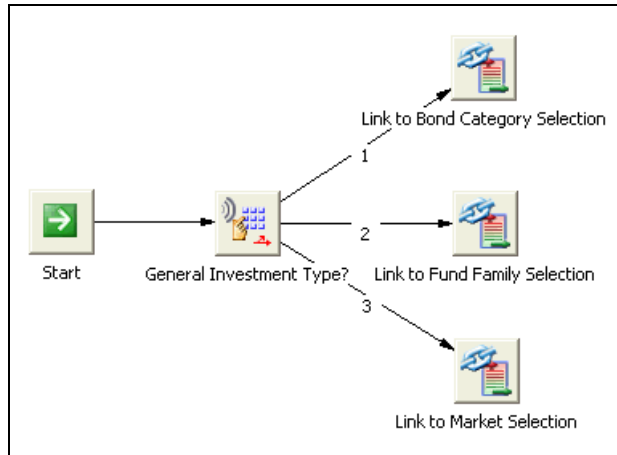


The first menu prompt asks the user to choose a general investment service. A second menu prompt then asks the user to make a more specific choice. If the caller first chooses bonds, the caller is then asked to choose from a bond category (municipal, institutional, corporate, or government bonds). Similarly, if the caller initially chooses mutual funds, the caller might then be asked to choose a specific fund family (money market, growth, balanced, or specialty). On completion, this workflow would be cluttered, making it difficult to maintain. This and other complex workflow situations can be helped through the use of linking.

Working with workflows

Linking workflows

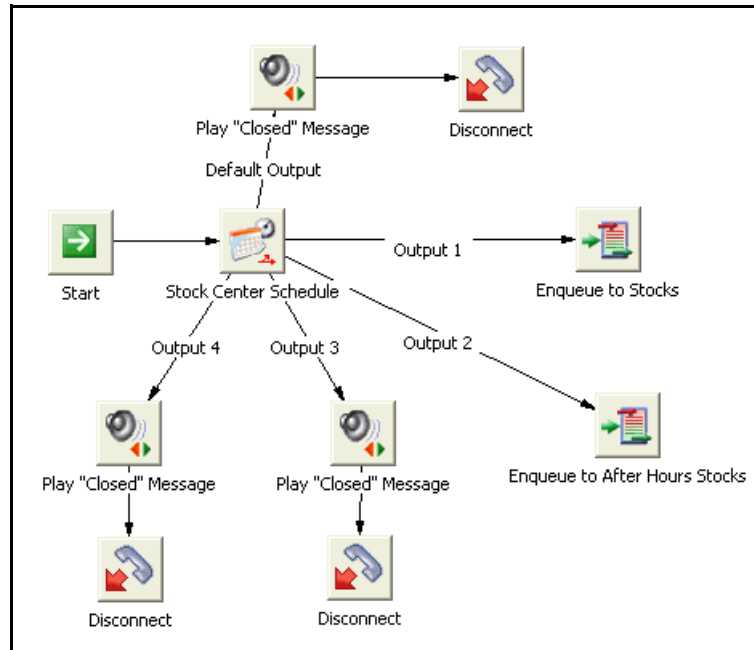
You could create a separate workflow for each branch that occurs after the user chooses their basic investment service. You can then modify the workflow shown above to link to the three new workflows.



Link to Bond Selection, Link to Fund Family Selection, and Link to Market Selection are Link to Routing Strategy components. Link to Routing Strategy components exit the current workflow and pass execution to another routing strategy workflow.

9.8.2 Eliminating redundant functionality

Linking is also useful if you have identical functionality used in several workflows or used in several branches of the same workflow. To take a simple example, three of the schedule results in the following workflow have identical subsequent processing: play a message and then disconnect.



You could create a new workflow that contains the play message and disconnect functionality and then modify the original workflow to link to the new workflow after the three relevant schedule choices.

9.9 Activating a workflow

While you can create several workflows for a given media, only one workflow per media can be active at an OpenScape Contact Center site.

The default routing strategy workflow is specified in the Options dialog box. For details, see the following topics:

- [Section 11.5.1, "Configuring the default voice routing strategy, queue, and time-out extension", on page 268](#)
- [Section 14.3.1, "Configuring the default e-mail routing strategy, queue, and addresses", on page 326](#)
- [Section 15.6.1, "Configuring the default Web collaboration routing strategy, queue, and time-out URL", on page 351](#)

Working with workflows

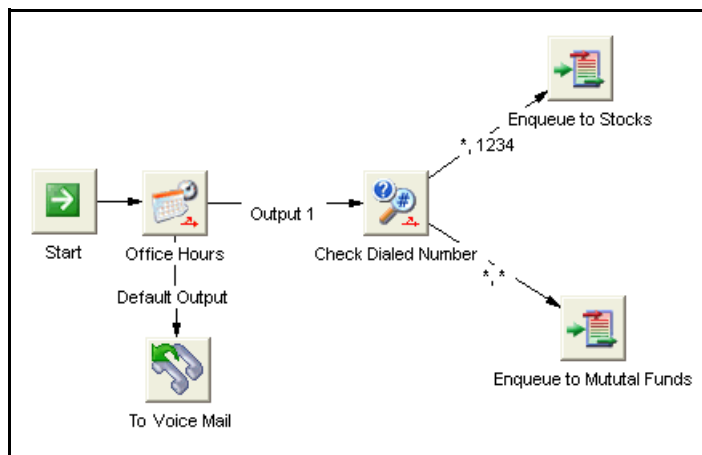
An exercise in creating a workflow

The default queue processing workflow is specified in the queue definition. For details, see [Section 10.3.1, "Configuring the general queue information"](#), on page 241.

9.10 An exercise in creating a workflow

The following sections make up an exercise you can walk through to get familiar with creating workflows. This is intended for practise purposes only, and the resulting workflow should not be used.

You will create the following voice routing strategy workflow:



This workflow executes as follows:

1. If a contact arrives outside normal business hours, it is routed to voice mail.
2. If the contact arrives within normal business hours:
 - If the contact comes in on the dialed number associated with stocks inquiries, it is routed to a Stocks queue to wait for a user to handle the contact.
 - Otherwise, it is routed to the Mutual Funds queue.

9.10.1 Creating the routing strategy workflow

The first step in setting up a working a workflow is to create the workflow and define its properties.

To create a routing strategy workflow:

1. In the **Design Center**, click the  Voice tab.
2. Under **Designs**, click **Routing Strategy Workflows** to display the existing voice routing strategy workflows.
3. On the **File** menu, point to **New**, then **Design Center**, then **Voice**, and then click **Routing Strategy Workflow**.
4. In the **Name** box, type **Small Branch Contacts**.
5. In the **Description** box, type a description for the workflow.

NOTE: The **Override** tab can be used to override certain default settings. For the purpose of this exercise, you can ignore the overrides.

6. Click **OK**. The new routing strategy workflow is added to the list.

9.10.2 Accessing the Design Editor

OpenScape Contact Center has an editor dedicated to creating and maintaining routing strategy workflows and queue processing workflows.

To open the Design Editor:

- Double-click the routing strategy workflow you just created. The Design Editor opens your routing strategy workflow. It has a single component, **Start**, which indicates the start of processing for an incoming contact.

9.10.3 Adding a Schedule component

The first step in processing a contact is to verify that the contact arrived during working hours. A Schedule component uses the current date and time to determine how to handle the contact. While there are a variety of options in creating Schedule components, this one will simply test whether a contact has arrived between the hours of 9 A.M. and 5 P.M., Monday through Friday.

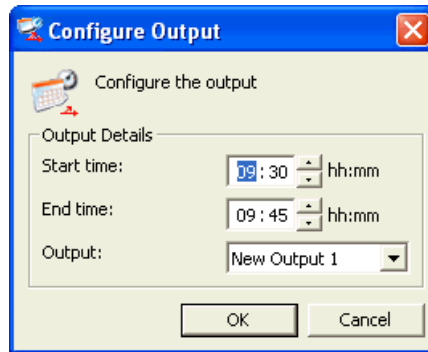
To add a Schedule component:

1. In the **Design Editor**, under **Components**, expand the **Decision** folder, and then expand the **Schedules** folder.
2. On the **File** menu, point to **New Component**, then **Decision**, and then click **Schedules**.

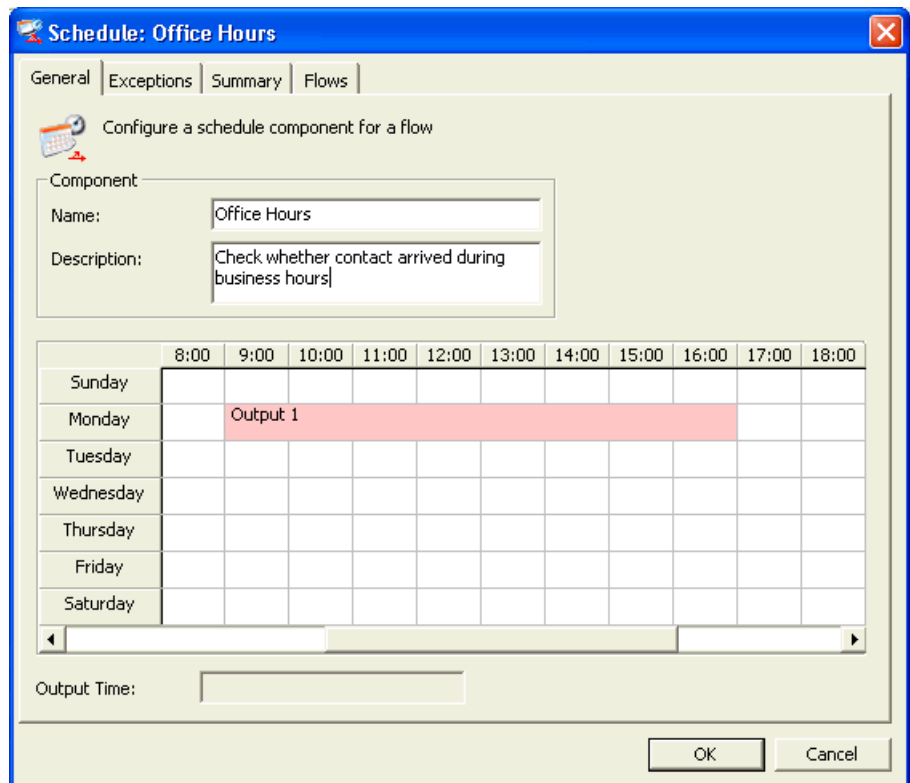
Working with workflows

An exercise in creating a workflow

3. In the **Name** box, type **Office Hours**. The component name must be unique.
4. In the **Description** box, type a description for the component.
5. In the calendar grid, double-click the Monday/9:00 cell.



6. In the **Configure Output** dialog box, do the following:
 - In the **Start time box**, type or select **9:00**.
 - In the **End time box**, type or select **17:00**.
 - Click **OK**.



7. Right-click the area you just defined, point to **Copy**, and then click **Tuesday**.
8. Repeat step 7 for **Wednesday**, **Thursday**, and **Friday**.
9. Click **OK**. The new component is added under **Schedules**.
10. Drag the new component to a location about one inch to the right of the **Start** component and horizontally aligned with the **Start** component.

NOTE: When you add a component to a workflow, the label includes a number in brackets. This is the number of connections to other components that this component will need. You will connect components in a later step.

9.10.4 Adding a Transfer component

For this scenario, when a contact arrives outside normal hours, it should be forwarded to a voice mail extension so that the caller can leave a message. A Transfer component can perform this action.

To add a Transfer component:

1. In the **Design Editor**, right-click below the **Office Hours** component, point to **Add New Component**, then **Routing**, and then click **Transfer**. A **Voice Transfer** dialog box appears.
2. In the **Name** box, type **To Voice Mail**.
3. In the **Description** box, type a description for the component.
4. In the **Transfer** box, type an arbitrary extension number, such as **1111**. For this exercise, assume that this is a valid voice mail extension.
5. Click **OK**. Your workflow should now look like this:



Start (1)



Office Hours (3)



To Voice Mail (1)

9.10.5 Adding a Source/Destination Decision component

For this scenario, there are two dialed numbers, one intended for queries on stocks and the other intended for queries on mutual funds. If a contact arrives during normal business hours, you should direct the contact to a Stocks queue or Mutual Funds queue based on the dialed number.

You can check for the dialed number using a Source/Destination Decision component. In this case you will be interested in the destination only.

To add a Source/Destination Decision component:

1. Right-click to the right of the **Office Hours** component, point to **Add New Component**, then **Decision**, and then click **Source/Destination Decisions**.
2. In the **Name** box, type **Check Dialed Number**.
3. In the **Description** box, type a description for the component.

4. Under **Configuration**, add the source and destination pairs as follows:
 - a) A default source/destination pair (*/*) is provided in the table.
 - b) In the **Source** column, below the default pair, type an asterisk (*) to indicate any combination of numbers. See the *Manager Help* for more information about using asterisks in the source and destination numbers, and the order of consideration for source and destination numbers.

Source	Destination
*	*

- c) In the **Destination** column, type **1234**. For now you can assume that 1234 is associated with the dialed number for stocks inquiries. Since there are only two dialed numbers associated with this contact center, you need to perform a single test only. If the test for 1234 passes, you can enqueue to the Stocks queue. If the test fails, you can enqueue the contact to the Mutual Funds queue.
5. Click **OK**.

9.10.6 Connecting the components

While additional components will be added to this workflow, you now have enough components to begin linking components. This will dictate the order in which the components execute. A component has at least one input connection, and has none, one, or more output connections.

Working with workflows

An exercise in creating a workflow

To create a line that connects two components:

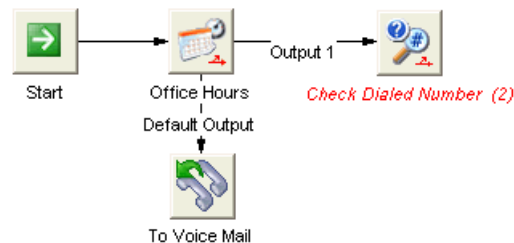
1. Select the **Start** component.



2. To create the first link, click the center of the **Start** component (indicated by a small square) and drag a link to the **Office Hours** component. Note that in the **Start** component label, the required links indicator (**1**) is no longer showing. Likewise, the required links indicator for the **Office Hours** component has dropped from **3** to **2**, indicating that two links are still required before that component is fully configured.



3. Select the **Office Hours** component. In Abschnitt 9.10.3 auf Seite 9-223, you created a subset of the calendar for Monday through Friday between the hours of 9:00 and 17:00. That subset was labeled **Output 1**. The two remaining links from the **Office Hours** component will be:
 - **Output1** corresponding to the subset of the calendar you created.
 - **Default** corresponding to all other times and days.
4. Click the center square of the **Office Hours** component, and drag a link to the **To Voice Mail** component.
5. Again, select the **Office Hours** component. Click the center square of the **Office Hours** component, and drag a link to the **Check Dialed Number** component. This is as far as you can proceed with linking components for now. Your workflow should look like this:



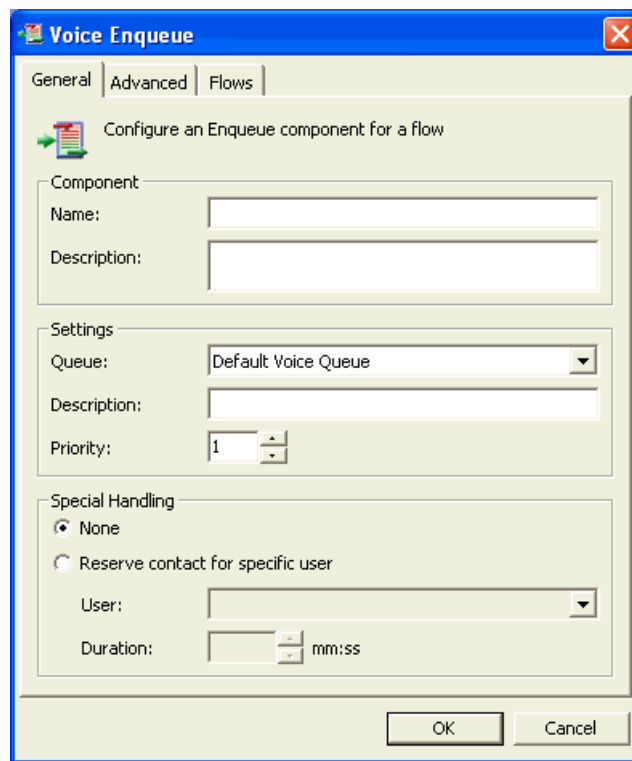
The remaining tasks are to create and link the components that determine the next action taken based on the results of the test performed by the **Check Dialed Number** component.

9.10.7 Adding the Enqueue components

An Enqueue component routes a contact to a queue where it will wait for an eligible user to become available to handle the contact. The queue is configured to maximize the chances of the contact being handled by a user highly qualified in the area of expertise for which this queue was set up.

To add the Enqueue components:

1. Right-click above and to the right of the **Check Dialed Number** component, point to **Add New Component**, then **Routing**, and then click **Enqueue**.

The image shows a 'Voice Enqueue' configuration dialog box with a blue title bar and a close button. It has three tabs: 'General', 'Advanced', and 'Flows'. The 'General' tab is selected. Inside the dialog, there is a section titled 'Configure an Enqueue component for a flow' with a small icon. Below this, there are three main sections: 'Component', 'Settings', and 'Special Handling'. The 'Component' section has 'Name:' and 'Description:' text boxes. The 'Settings' section has a 'Queue:' dropdown menu (currently showing 'Default Voice Queue'), a 'Description:' text box, and a 'Priority:' spinner box (currently showing '1'). The 'Special Handling' section has two radio buttons: 'None' (which is selected) and 'Reserve contact for specific user'. If 'Reserve contact for specific user' were selected, there would be 'User:' and 'Duration:' fields. At the bottom right are 'OK' and 'Cancel' buttons.

2. In the **Name** box, type **Enqueue to Stocks**.
3. In the **Description** box, type a description for the component.
4. In the **Queue** box, select any available queue. If you were creating a working workflow, you would have a Stocks queue defined. Since this is just a practice session, you can pick any defined queue to complete the Enqueue component definition.
5. Click **OK**.
6. Right-click the new **Enqueue to Stocks** component and select **Create Copy**. A new Enqueue component definition opens, with the same values as the **Enqueue to Stocks** component.

Working with workflows

Other component type functions

7. Change the value in the **Name** box to **Enqueue to Mutual Funds**.
8. Click **OK**.
9. Drag the new Enqueue component so that it is below and to the right of the **Check Dialed Number** component.
10. Using the principles you learned in Abschnitt 9.10.6 auf Seite 9-227, do the following:
 - Create a link from the **Check Dialed Number** component to the **Enqueue to Mutual Funds** component.
 - Create a link from the **Check Dialed Number** component to the **Enqueue to Stocks** component.
11. On the **File** menu, click **Save** to save the workflow.
12. On the **File** menu, click **Close** to close the Design Editor.

9.11 Other component type functions

In this chapter, you have received an introduction to some of the component types you can use in work flows. There are many other component types you can use. For details on these component types, see the *Manager Help*.

10 Working with queues and aggregates

This chapter provides information on working with queues. It provides conceptual information on how queues operate, information on how to develop a queue setup strategy, and details on how to work with queue definitions.

10.1 About queues

A queue is a logical holding area for contacts waiting to be routed to a specific user. While a contact is in queue, OpenScape Contact Center executes a number of steps to try to match the contact to a specific user.

The way in which the queue steps are configured depends on the type of routing: group-based or skills-based. For details, see [Section 8.1, "About group-based routing"](#), on page 157, or [Section 8.2, "About skills-based routing"](#), on page 160.

NOTE: For an introduction to queue processing, see [Section 2.1.3, "Queue processing"](#), on page 15.

10.2 Queue setup considerations

An OpenScape Contact Center configuration should show a strong correlation between the queues you set up and the groups you have designated as the first-line choices in answering contacts, or, if you are using skills-based routing, the skill combinations you use to build virtual groups.

Working backwards, there is an implied reliance on the information you collect and the decisions you make in your routing strategy workflow. Your setup will dictate who will answer the contact, how long the caller will wait, and the options a caller has while waiting.

The remaining topics in this section discuss aspects you should consider when setting up queues.

NOTE: When planning your queue setup, you should also consider the group setup if you are using group-based routing, or the virtual group setup if you are using skills-based routing. For details, see [Chapter 8, "Routing"](#).

10.2.1 Initial contact processing

A routing strategy workflow collects information on a contact and based on that information, makes a decision as to how that contact is to be routed. Initial processing of contacts arriving in the contact center should have a strong influence in your queue setup. During initial setup or planned reconfiguration, queue setup and routing strategy workflow planning should be considered simultaneously.

For example, consider a voice media in which you may have several logical candidates for areas of specialization, but are servicing only a single, dialed number. In that case, you could not route calls to a queue using a method as simple as use of a Source/Destination Decision workflow component in a routing strategy workflow. If, in addition, you are not using Call Director or an IVR, it would be difficult to have a contact routed to one of several specialized queues without operator intervention.

If you have already made decisions that influence initial processing of contacts arriving in your contact center, your queue setup should be made within the constraints of those decisions.

10.2.2 Scheduling

When planning your queue setup, you need to consider any differences in routing required to accommodate the schedules you are working with. [Section 9.3.3, "Scheduling information", on page 190](#), introduces OpenScape Contact Center schedules.

Under some circumstances, schedules will have no effect on your queue setup, for example, you may have the same number and types of users working for all shifts. For more information on shifts, see [Section 20.7.5, "Configuring the shifts", on page 437](#).

However, you may require different routing during evening coverage. For example, with a smaller contact volume after normal business hours, you may have a smaller staff working. Instead of three

dedicated queues for Stocks, Mutual Funds, and Bonds, a single After Hours Investments queue and a staff with more generalized skills may provide more efficient contact handling.

10.2.3 Skills versus virtual groups

[Section 9.3, "Routing strategy workflow considerations", on page 186](#) introduced the decisions you can make and the information you can collect in gathering contact requirements. For contact requirements that consist of individual skills, in general, there will be a one-to-one correspondence between skills and queues. However, if your contact requirements combine skills, your queue setup will more closely reflect the skill combinations you use in building virtual groups.

NOTE: For background information on skills and virtual groups, see [Section 8.2, "About skills-based routing", on page 160](#).

First, consider a contact center that offers services and advice in the areas of Mutual Funds, Stocks, and Bonds. Customers might dial a different number for each service, for example, or dial a single number and then be prompted to choose a service. In the absence of any additional contact requirements, the skills set up for this scenario would be:

- Mutual funds
- Stocks
- Bonds

This would also be the obvious choice of queues for this simple setup.

On the other hand, consider a contact center that offers Mutual Funds, Stocks, and Bonds services in both English and German. The most efficient virtual group setup would be skill level variations on the following skill combinations:

- Mutual funds/English
- Mutual funds/German
- Stocks/English
- Stocks/German
- Bonds/English
- Bonds/German

Working with queues and aggregates

Queue setup considerations

A queue setup based on the same combinations ensures that the contact will be handled by the most qualified user. The first three queue steps for the Mutual Funds/German queue might be:

- "Mutual Funds",9 AND "German",6
- "Mutual Funds",7 AND "German",7
- "Mutual Funds",5 AND "German",5

Subsequent steps might allow a user with the Stock skill and a high skill level in German handle the contact.

An incoming contact with requirements for the Mutual Funds service in German is more likely to be handled by a user proficient in both Mutual Funds and German if directed to the Mutual Funds/German queue.

NOTE: The skills and virtual groups strategies are not mutually exclusive. A single contact center, based on contact requirements, could use both strategies effectively.

10.2.4 Staffing, contact volume, and queue time

A key factor in finalizing your queue setup is to verify that the staffing capacity meets or exceeds contact volume. In general, when staffing capacity meets or exceeds contact volume, caller wait time is minimal.

For example, consider a situation in which you have the following specializations:

- Skates
- Skis
- Hiking boots
- Tennis shoes
- Running shoes
- Walking shoes

A virtual group setup geared to these areas will be efficient given the following sample assumptions and statistics:

- **Contact volume** – Contacts relating to sporting footwear average 350 per hour.

- **Contact distribution** – Incoming contacts are evenly distributed across the six areas of expertise.
- **Group staffing** – Each of the six specializations has 10 ten specialists, giving a total of 60 users.
- **Contact handling time** – It takes a user about seven minutes to handle a contact, and an additional three minutes to do wrap-up work, giving a total of 10 minutes per contact.

Since a user can handle six contacts per hour, and there are 60 users, the expected contact handling capacity for this queue setup is 360 contacts per hour. Since the staffing level (360 calls per hour) exceeds the expected contact volume (350 calls per hour), barring other considerations, this configuration might be efficient.

Stated from a slightly different perspective:

- With just under 60 skis-related contacts arriving per hour, on average a contact will arrive once per minute.
- An individual user can handle six contacts per hour and can therefore be expected to become available every 10 minutes (600 seconds). With a pool of 10 experts in any one area of specialization, a user can be expected to become available once per minute.

With one contact arriving per minute and one user becoming available per minute, caller wait time is effectively zero. This implies that for any queue, the vast majority of contacts will be handled by a user who is a specialist in the area associated with the queue. Contacts directed to a particular area of specialization are almost always handled by a specialist in that area.

There are situations, however, where you may want to go to a less specialized or more backup-oriented queue setup.

10.2.4.1 Selecting a more backup-oriented queue setup

A backup-oriented queue setup still relies on specialists but also relies on users with general skills in more than one area of specialty.

The following table shows an example of a backup-oriented queue setup.

Queue	First Step	Second Step
Skates	Skates	Sporting Footwear Backup

Table 5 A backup-oriented queue setup

Working with queues and aggregates

Queue setup considerations

Queue	First Step	Second Step
Skis	Skis	Sporting Footwear Backup
Hiking boots	Hiking Boots	Sporting Footwear Backup
Tennis shoes	Tennis shoes	Sporting Footwear Backup
Running shoes	Running shoes	Sporting Footwear Backup
Walking shoes	Walking shoes	Sporting Footwear Backup

Table 5 A backup-oriented queue setup

You may prefer this type of queue/group setup if any of the following conditions apply:

- There is insufficient overlap of knowledge or responsibilities across the areas of specialization. Skate specialists, for example, are not qualified to handle contacts in other areas.
- There are not enough specialists available to handle the contact volume. This may be a temporary situation. For example, if staffing in a particular specialty is geared toward contact volume outside peak hours, staffing in that specialization would not be able to handle peak hour traffic.
- A low contact volume/staffing requirement in combination with lengthy contact handling and wrap-up times can increase actual queue time for individual contacts. For example, if you have two specialists in a particular area, handling and wrap-up time is 30 minutes per contact, and average contact volume is four contacts per hour, then on average that staffing level meets the expected contact volume. However, for contacts arriving when the two users are handling contacts, queue time can be lengthy.

10.2.4.2 Selecting a less specialized queue setup

The following table shows an example of a less specialized queue setup.

Queue	First Step	Second Step
Summer Sporting Footwear	Summer Sporting Footwear	Sporting Footwear Backup
Winter Sporting Footwear	Winter Sporting Footwear	Sporting Footwear Backup

Table 6 A less specialized queue setup

There are a number of reasons you may choose a less specialized queue setup, for example:

- You cannot easily route to a large set of specializations due to initial contact processing constraints. For example, in a voice media scenario, if you are supporting fewer dialed numbers than specialization area candidates, or if you are not using Call Director or an IVR to prompt customers for information used to route the contact, you may be obliged to use a less-specialized queue setup. For more information, see [Section 10.2.1, “Initial contact processing”, on page 232](#).
- Contact volume in particular areas of specialization may not justify specific queues and groups set up to handle those areas of specialization. For example, low contact traffic in an area of specialization might result in an unacceptably high percentage of idle time for users in that specialization.
- Contact volume in general may not warrant specialization. For example, assuming that wait time is zero when one contact arrives per minute and one user becomes available per minute is valid only with a statistically significant sample size of users and arriving contacts.

NOTE: These considerations are also influenced by the service level intervals you set up for each queue. For more information, see [Section 10.2.5, “Step intervals”, on page 237](#).

In most cases, administrators will return to their original configuration to perform fine tuning. You can use the Manager application’s reporting feature to inspect historical performance statistics and to monitor resources in real time. For more information, see [Section , “Reporting”](#).

10.2.5 Step intervals

One important aspect to consider when configuring step intervals is the maximum amount of time that you want contacts to spend in queue, called the service level. You can define a service level for the system in general or at the level of individual queues. Certain reports can be used to evaluate how well the contact center adheres to this target. If a queue is not adhering to the target, you can modify the step intervals in that queue. You should also consider balancing the queue time with the importance of matching the contact to the appropriate group of users.

10.2.5.1 Calculating step intervals for group-based routing

There is no specific formula for calculating ideal overflow group intervals. However, you can compare strategies used in two situations to come up with a strategy for your contact center:

- Overflow group intervals for a smaller contact center with less specialized groups.
- Overflow group intervals for a larger contact center with more specialized groups.

In a smaller contact center, while you may have dedicated experts in particular product areas such as skis, skates, and hiking boots, factors such as wait time, staffing and contact volume may dictate a less specialized queue setup. The following table shows an example.

Queue	Primary	Overflow	Time-out
SummerSporting Footwear	Summer Sporting Footwear (9 users)	Sporting Footwear Backup (20 users)	Voice mail, 300 seconds
Winter Sporting Footwear	Winter Sporting Footwear (9 users)	Sporting Footwear Backup (20 users)	Voice mail, 300 seconds

Table 7 A less specialized queue setup example

With a single overflow group for the queue, only one overflow group interval has to be provided. In a voice media scenario for example, if your target maximum queue time is 60 seconds, you could simply wait until the queue time approaches the target maximum queue time before allowing a contact to overflow. For example, based on the group sizes shown in the table, you could specify an overflow interval of 50 seconds for the Winter Sporting Footwear queue. For contacts arriving in that queue, OpenScape Contact Center would attempt to route that contact to one of the nine users in the Winter Sporting Footwear group. After 50 seconds the contact would overflow to the Sporting Footwear Backup group, adding a pool of 20 eligible users. In most cases, this would virtually ensure that a contact is answered within the target maximum queue time of 60 seconds.

In a contact center with a more specialized queue/group setup, if knowledge, specialization, or responsibilities overlap among your groups, you have additional options. Consider the following queue/group setup.

Queue	PrimaryGroup	Overflow Groups	Time-out
Skis	Skis (10 users)	Skates (10 users) Hiking boots (10 users)	Voice mail, 300 seconds
Skates	Skates	Skis, Hiking boots	Voice mail, 300 seconds
Hiking boots	Hiking boots	Skis, Skates	Voice mail, 300 seconds

Table 8 A more specialized queue setup example

In this case, you may want to rank the suitability of users to handle skis-related contacts as follows:

- Skis group – perfect match
- Skates group – good match
- Hiking boots group – acceptable match

As opposed to considering only the target maximum queue time, this queue/group setup lets you balance queue time with the suitability of the match to answer the contact. For example, while your target maximum queue time may be 60 seconds, you may decide that after 30 seconds, contacts to the Skis queue can overflow to the Skates group since a good match to the contact outweighs the probability of spending more time in queue. This would double the pool of eligible users from 10 to 20 after 30 seconds. Similarly, after 45 seconds you may want to overflow to the Hiking boots group, to bring the total number of eligible users to 30. Keep in mind that overflowing to a group that is another queue's primary group can impact the service level for the second queue.

10.2.5.2 Calculating step intervals for skills-based routing

If you are working with skills-based routing, the considerations in calculating queue step intervals can be generalized from those mentioned in [Section 10.2.5, "Step intervals", on page 237](#).

- If your strategy is to always hold the contact for the ideally qualified user, you can hold a contact in the first step until the target maximum queue time is about to expire. You can then overflow to a virtual group that relaxes the skill level requirement significantly in a final step aimed at maximizing the number of eligible users.

- If you want to balance wait time against having the contact handled by the best qualified user, you can use several queue steps, each relaxing the skill level to increase the pool of eligible users. At each step, the interval time and relaxed skill levels reflect a new calculation of the importance of the two factors

10.3 Configuring a queue

You can configure a queue for each media type available in your contact center. There are various items that you should consider when deciding how to configure a queue. For details, see the *Manager Administration Guide*.

NOTE: To create or change a queue, you must have Full or Modify access, respectively, for the associated Manager permission.

Overview

The following is an overview of the steps required to configure all the properties in a queue:

1. Configure the general queue information – see [Section 10.3.1, “Configuring the general queue information”](#), on page 241.
2. Configure the queue steps – if you are using group-based routing, see [Section 10.3.2, “Configuring the queue steps”](#), on page 244; if you are using skills-based routing, see [Section 10.3.3, “Configuring the queue steps for skills-based routing”](#), on page 247.
3. Configure the queue overrides – if you are using group-based routing, see [Section 10.3.4, “Configuring the queue overrides”](#), on page 249; if you are using skills-based routing, see [Section 10.3.5, “Configuring the queue overrides for skills-based routing”](#), on page 251.
4. For a voice queue, configure the networking settings (available only if your contact center is licensed for networking) – see [Section 10.3.6, “Configuring the voice queue networking settings”](#), on page 253.
5. Select the queue Wrap-up reasons – see [Section 10.3.7, “Selecting the queue Wrap-up reasons”](#), on page 254.
6. Select the queue aggregates – see [Section 10.3.8, “Selecting the queue aggregates”](#), on page 254.
7. Select the queue reports – see [Section 10.3.9, “Selecting the queue reports”](#), on page 255.

8. For a Web collaboration queue, select the messages – see [Section 10.3.10, “Selecting the Web collaboration queue messages”](#), on page 256.
9. For a Web collaboration queue, select the URLs – see [Section 10.3.11, “Selecting the Web collaboration queue URLs”](#), on page 256.

10.3.1 Configuring the general queue information

You can specify general information about the queue such as the name, description, and queue processing workflow to be used. You must complete this step when configuring a new queue.

To configure the general voice queue information:

1. On the **File** menu, point to **New**, then **Design Center**, then select the required media type, and then click **Queue**.
2. On the **General** tab, under **Queue**, do the following:
 - In the **Name** box, type a unique name for the queue.
 - In the **Description** box, type a description for the queue. The description should indicate the type of contacts for which this queue should be used.
3. For all queues except callback queues, under **Queue Processing**, in the **Workflow** list, select a queue processing workflow (see [Section 9.5, “About queue processing workflows”](#), on page 212). If you do not select a queue processing workflow, only the routing strategy workflow will be used to route contacts. You can select the default queue processing workflow, or you can create a queue processing workflow and assign it to this queue.
4. Under **Supplemental Information**, in the **Address** box, type the location of the document that you want to be displayed on the user's machine when the contact is directed from the queue to the user. You can click  to locate the document. For more information, see [Section 10.3.1.1, “About the supplemental information feature”](#), on page 243.

Working with queues and aggregates

Configuring a queue

5. For a voice queue, you can have the system create a callback when a call is abandoned (available only if the contact center is licensed for callbacks). Under **Callback Creation**, select the **Create callback on call abandon** check box and then select the callback queue from the **Queue** list.

NOTE: If the **Create callback on call abandon** option is enabled for a queue and a call in the associated queue is abandoned by a caller, the system checks the callback schedule to verify that a callback can be handled within the next 24 hours. If a callback is created, it remains active for 24 hours after the call was abandoned and is then deleted by the system.

6. Under **Site-Level Statistics**, the **Include this queue when calculating site-level statistics** option (available only if the contact center is licensed for networking) is selected by default. If you do not want to include the queue in the site-level statistic calculations, clear this check box.

NOTE: The queue does not need to be networked for it to be included in the site-level statistic calculations.

7. If you are finished working with this queue definition, click **OK**.

10.3.1.1 About the supplemental information feature

You can configure a queue (see [Section 10.3, “Configuring a queue”, on page 240](#)) so that when a contact is directed from that queue to a user, a document specified by a supplemental information address opens on the user’s computer. The address can be any document specifier for which the Windows operating system on the client machine recognizes as having a default, associated application.

Examples of how you might use this feature are:

- Opening a spreadsheet of prices or useful support information for products associated with the queue.
- Opening a browser on a telephone directory-based Web site that displays the customer name and address, based on the source associated with the contact.
- Displaying the history of a contact by issuing a customer database query using information identifying the customer, collected during execution of a routing strategy workflow.

NOTE: In Agent Portal Web, due to Web browsers security restrictions, the supplemental information feature is limited (for example, files cannot be opened or executed in the local machine when configured in the supplemental information field).

The supplemental information address can include one or more variables that will be substituted with contact data, the contact source, or the contact destination, when the contact is enqueued. This allows you to configure the address to open documents specifically pertaining to the customer or nature of the contact. Valid variables you can include in the supplemental information address are listed in the following table.

Variable	Description
~CDK~	Where CDK is the key component of a contact data key/value pair created during execution of the routing strategy workflow. When the contact is enqueued, the variable will be substituted with the value component of the key/value pair.
~SOURCE~	When the contact is enqueued, the variable will be substituted with the source associated with the contact.
~DESTINATION~	When the contact is enqueued, the variable will be substituted with the destination associated with the contact.

Table 9 Supplemental information address variables

Working with queues and aggregates

Configuring a queue

Variable	Description
~CONTACTID~	When the contact is enqueued, the variable will be substituted with the identifier, generated by OpenScape Contact Center, that uniquely identifies the contact.

Table 9 Supplemental information address variables

Any contact data that is to be used as a variable in a supplemental information address must be set in the active routing strategy for the site. For example, consider a Web-enabled customer database system in which users can view key customer record data and contact history, given an account number in a browser. On incoming contacts, a voice routing strategy workflow could prompt a customer for their account number and then store the results as a contact data value associated with the contact data key **ACCT_NUM**.



To make use of that information, the definition of the queue to which the contact is directed includes a supplemental information address of the relevant URL, including the **ACCT_NUM** contact data key.

`http://www.cust.com/accountinfo?account=~ACCT_NUM~`

If the customer enters 123456 as their account number, the supplemental information address resolves to:

`http://www.cust.com/accountinfo?account=123456`

10.3.2 Configuring the queue steps

NOTE: This topic describes how to configure the queue steps for group-based routing. If your contact center uses skills-based routing, see [Section 10.3.3, "Configuring the queue steps for skills-based routing"](#), on page 247.

Queues define the steps that a contact moves through. You can configure steps for one primary group and a maximum of 10 overflow groups. The primary group is defined as the first group of users to which the incoming contact is queued. It should be the group of users who are most familiar with the requirements of the contact. An overflow group is an additional group to which the contact is also

assigned when the previous step time expires. By adding overflow groups to the queue, more users become eligible to handle the contact as it waits in queue.

You can add each group only once to a queue. For more information on groups, see [Section 8.1, "About group-based routing"](#), on page 157.

To configure the queue steps:

1. In the **Design Center**, click the tab for the media type you want to open.
2. Under **Resources**, click **Queues**, then, in the right pane, double-click the queue you want to configure.
3. Click the **Steps** tab.
4. Under **Sequence**, do the following:
 - a) In the **Primary** row under **Group**, click the cell and select a primary group from the list. When you select a primary group, a new overflow row is added to the table.
 - b) In the **Primary** row under **Step Time**, double-click the cell and type a time for the contact to wait in queue for a user in the primary group to handle the contact.
 - c) In the **Overflow** row under **Group**, click the cell and select an overflow group name from the list. When you select an overflow group, a new overflow row is added to the table.
 - d) In the first **Overflow** row under **Step Time**, double-click the cell and type a time for the contact to wait in queue while assigned to this step.
 - e) Repeat steps (c) and (d) for each overflow group you want to create. You can configure a maximum of 10 overflow groups.

NOTE: For voice and Web collaboration queues, if there are no logged-on users in the current step, the step will be skipped and queue step execution will proceed to the next step that has logged-on users. Since the overflow mechanism is additive, the pool of users in the current step includes all the users from the overflow group specified in the current step, plus all the users from the groups specified in the previous steps. For callback and e-mail queues, contacts always wait for the specified step time, even when no eligible users are logged on.

Working with queues and aggregates

Configuring a queue

5. Under **In last step**, select how the queue handles the last step:
 - To allow the contact to time out, select **Wait for the specified step time**.
 - To have the contact continue waiting, select **Wait forever** (this is the default). In this case, you can select the **Time out when no eligible user is logged on** check box to select that limitation.

IMPORTANT: For voice and Web collaboration queues, if a contact arrives at the last step in a queue with no time-out defined and no eligible users logged on, the contact will remain at the last step indefinitely. For callback and e-mail queues, if you allow the contact to time out, the system will delete the contact when it exceeds the specified time for the last step.

6. For a voice queue, if you selected **Wait for specified step time** in step 4 above, you must specify the time-out extension:
 - To select the default time-out extension, select **Global time-out extension**. For more information, see [Section 11.5.1, "Configuring the default voice routing strategy, queue, and time-out extension"](#), on page 268.
 - To specify a time-out extension, select **Extension** and then type the extension number.
7. For a Web collaboration queue, if you selected **Wait for the specified step time** in step 4 above, you must specify the time-out URL:
 - To select the default time-out URL, select **Global time-out URL**. For more information, see [Section 15.6.1, "Configuring the default Web collaboration routing strategy, queue, and time-out URL"](#), on page 351.
 - To specify a time-out URL, select **URL** and then type the URL you want to use. You can click  to launch a Web browser and test the URL or select another URL.
8. If you are finished working with this queue definition, click **OK**.

10.3.3 Configuring the queue steps for skills-based routing

Queues define the steps that a contact moves through. There should be a strong correlation between queues and the skill combinations that you use to build virtual groups. The first step in the queue should specify the virtual group of users that is best suited to handle the contact. In subsequent steps, you can specify virtual groups that have a more relaxed set of skills, which will expand the pool of users eligible to handle the contact. But this is just one approach. For more information, see [Section 10.2, "Queue setup considerations", on page 231](#).

You can use each virtual group only once in a queue. For more information on virtual groups, see [Section 8.2.3, "About virtual groups", on page 162](#).

You can configure a maximum of 25 steps for a voice queue.

To configure the queue steps:

1. In the **Design Center**, click the tab for the media type you want to open.
2. Under **Resources**, click **Queues**, then, in the right pane, double-click the queue you want to configure.
3. Click the **Steps** tab.
4. Under **Sequence**, do the following:
 - a) In **Step 1** row under **Virtual Group**, click the cell and select a virtual group from the list. When you select a virtual group, a new row is added to the table.
 - b) In **Step 1** row under **Priority Increment**, click the cell and type a value between 0 and 100. This value is added to the contact's current priority when the contact enters the queue step. Negative values are not allowed. If the value is 0, the contact priority is not changed when the contact enters the queue step. If you enter a value that causes the contact priority to exceed 100, the system automatically adjusts the contact priority to 100.
 - c) In **Step 1** row under **Step Time**, the default is Forever because this is the only step defined so far (and therefore the last step). To specify a step time, first under **In last step**, select **Wait for the specified step time**. Now you can enter a Step Time. Double-click the cell and type a time for the contact to wait in queue for a user in the virtual group to handle the contact.

Working with queues and aggregates

Configuring a queue

- d) In **Step 1** row under **Protected Skill**, click the cell and select a skill from the list. Use this parameter to avoid that a high priority skill has no free agents, when the agents are allocated to multiple skills and these agents are assigned to contacts, which are routed due to other skills.
- e) In **Step 1** row under **Threshold**, define the minimum available agents for the Protected Skill before assigning an agent to a contact, which is routed due to match with other skills.
- f) Repeat steps (a) - (e) for each Step you want to configure. You can configure a maximum of 25 Steps.

NOTE: For voice and Web collaboration queues, if there are no logged-on users in the current step, the step will be skipped and queue step execution will proceed to the next step that has logged-on users. For callback and e-mail queues, contacts always wait for the specified step time, even when no eligible users are logged on.

5. Under **In last step**, select how the queue handles the last step:
 - If you want the contact to time out, click **Wait for the specified step time**.
 - If you want the contact to continue waiting, click **Wait forever** (this is the default). In this case, you can select the **Time out when no eligible user is logged on** check box to select that limitation.

IMPORTANT: For voice and Web collaboration queues, if a contact arrives at the last step in a queue with no time-out defined and no eligible users logged on, the contact will remain at the last step indefinitely. For callback and e-mail queues, if you allow the contact to time out, the system will delete the contact when it exceeds the specified time for the last step.

6. For a voice queue, and you selected **Wait for specified step time** in step 4 above, you must specify the time-out extension:
 - To select the default time-out extension, select **Global time-out extension**. For more information, see [Section 11.5.1, "Configuring the default voice routing strategy, queue, and time-out extension"](#), on page 268.
 - To specify a time-out extension, select **Extension** and then type the extension number.

7. For a Web collaboration queue, and you selected **Wait for the specified step time** in step 4 above, you must specify the time-out URL:
 - To select the default time-out URL, select **Global time-out URL**. For information, see [Section 15.6.1, "Configuring the default Web collaboration routing strategy, queue, and time-out URL"](#), on page 351.
 - To specify a time-out URL, select **URL** and then type the URL you want to use. You can click  to launch a Web browser and test the URL or select another URL.
8. If you are finished working with this queue definition, click **OK**.

10.3.4 Configuring the queue overrides

NOTE: This topic describes how to configure queue overrides for group-based routing. If your contact center uses skills-based routing, see [Section 10.3.5, "Configuring the queue overrides for skills-based routing"](#), on page 251.

You can configure a queue to override certain default settings, if required. You can:

- Override the default service level interval. For details on the default service level interval, see [Section 20.7.1, "Configuring the service level interval"](#), on page 430.
- For an e-mail queue, override the default e-mail message settings. For details on the default e-mail message settings, see [Section 14.3.4, "Configuring the e-mail message settings"](#), on page 330.
- For a callback queue, configure the maximum number of times that a callback associated with this queue can be retried. Also, if the system is connected to an OpenScape Voice, OpenScape 4000, or HiPath 4000 communication platform, you can override the default caller ID settings. For details on the default caller ID settings, see [Section 13.3.1, "Configuring the general callback settings"](#), on page 301.

To configure the queue overrides:

1. In the **Design Center**, click the tab for the media type you want to open.
2. Under **Resources**, click **Queues**, then, in the right pane, double-click the queue you want to configure.

Working with queues and aggregates

Configuring a queue

3. Click the **Override** tab.
4. For any type of queue, you can override the default service level interval. Under **Override System Settings**, select the **Service level interval** check box, and then type or select the service level interval for this queue.
5. For an e-mail queue, you can override the default message settings. Under **Override System Settings**, do the following:
 - Select the **Prolog template** check box, and then select the Prolog template that you want to use for this queue from the list.
 - Select the **Signature template** check box, and then select the Signature template that you want to use for this queue from the list.
 - Select the **Original message label** check box, and then type the text that you want to appear above the original e-mail message when the user replies to an e-mail message, for example, **Original Message:**.
 - Select the **Conversation ID label** check box, and then type the text that you want to appear in front of the Conversation ID when the user replies to an e-mail message. The Conversation ID is an identifier inserted by the OpenScape Contact Center E-mail Server to identify the message thread.
 - Select the **Reply prefix** check box, and then type the text that you want to appear at the beginning of the Subject line when the user replies to an e-mail, for example, **Re:**.
6. For a callback queue, if the system is connected to an OpenScape Voice, OpenScape 4000, or HiPath 4000 communication platform, you can override the default caller ID settings. Under **Override System Settings**, do the following:
 - Select the **Caller name** check box, and then type the name that is presented to the called party when a callback is initiated from this queue.
 - Select the **Caller telephone number** check box, and then type the telephone number that the called party can use to contact the calling party who initiated the callback from this queue.

NOTE: If you specify the **Caller telephone number** but leave the **Caller name** blank, no name will be presented even if a default Caller name has been specified in the Callback options.

7. For a callback queue, under **Retry**, in the **Maximum number of retries** box, type or select the maximum number of times that the system can reschedule a callback associated with this queue.
8. If you are finished working with this queue definition, click **OK**.

10.3.5 Configuring the queue overrides for skills- based routing

You can configure a queue to override certain default settings, if required. You can:

- Override the default service level interval. For details on the default service level interval, see [Section 20.7.1, "Configuring the service level interval"](#), on page 430.
- For an e-mail queue, override the default e-mail message settings. For details on the default e-mail message settings, see [Section 14.3.4, "Configuring the e-mail message settings"](#), on page 330.
- For a callback queue, configure the maximum number of times that a callback associated with this queue can be retried. Also, if the system is connected to an OpenScape Voice, OpenScape 4000, or HiPath 4000 communication platform, you can override the default caller ID settings. For details on the default caller ID settings, see [Section 13.3.1, "Configuring the general callback settings"](#), on page 301.
- For skills-based routing, enable performance routing. When performance routing is enabled, the step times defined for the queue will be reduced if certain performance thresholds are exceeded. The calculation for the reduced step times is the threshold value divided by the actual value, multiplied by the step time. For example, if the threshold value is 5, the actual value is 6, and the step time is 1 hour, the reduced step time would be 50 minutes. The minimum reduced step time is one tenth of the original step time.
- Override the default setting for the importance of queue time. For details on this setting, see [Section 8.4.5, "Configuring the skill scoring"](#), on page 174.

To configure the queue overrides:

1. In the **Design Center**, click the tab for the media type you want to open.
2. Under **Resources**, click **Queues**, then, in the right pane, double-click the queue you want to configure.

Working with queues and aggregates

Configuring a queue

3. Click the **Override** tab.
4. For any type of queue, you can override the default service level interval. Under **Override System Settings**, select the **Service level interval** check box, and then type or select the service level interval for this queue.
5. For an e-mail queue, you can override the default message settings. Under **Override System Settings**, do the following:
 - Select the **Prolog template** check box, and then select the Prolog template that you want to use for this queue from the list.
 - Select the **Signature template** check box, and then select the Signature template that you want to use for this queue from the list.
 - Select the **Original message label** check box, and then type the text that you want to appear above the original e-mail message when the user replies to an e-mail message, for example, **Original Message:**.
 - Select the **Conversation ID label** check box, and then type the text that you want to appear in front of the Conversation ID when the user replies to an e-mail message. The Conversation ID is an identifier inserted by the OpenScape Contact Center E-mail Server to identify the message thread.
 - Select the **Reply prefix** check box, and then type the text that you want to appear at the beginning of the Subject line when the user replies to an e-mail, for example, **Re:**.
6. For a callback queue, if the system is connected to an OpenScape Voice, OpenScape 4000, or HiPath 4000 communication platform, you can override the default caller ID settings. Under **Override System Settings**, do the following:
 - Select the **Caller name** check box, and then type the name that is presented to the called party when a callback is initiated from this queue.
 - Select the **Caller telephone number** check box, and then type the telephone number that the called party can use to contact the calling party who initiated the callback from this queue.

NOTE: If you specify the **Caller telephone number** but leave the **Caller name** blank, no name will be presented even if a default Caller name has been specified in the Callback options.

7. For a callback queue, under **Retry**, in the **Maximum number of retries** box, type or select the maximum number of times that the system can reschedule a callback associated with this queue.
8. To turn on performance routing for the queue, under **Performance Routing**, do the following:
 - a) Select the **Enable** check box.
 - b) In the **Select statistic** list, select the performance statistic the calculations for reduced step times are based on.
 - c) In the **Threshold value** box, type or select the threshold for the selected performance statistic.
9. To override the default setting for the Queue time slider, under **Importance of Queue Time**, select the **Queue time** check box, and then set the slider to the importance level you want to use for this queue.
10. If you are finished working with this queue definition, click **OK**.

10.3.6 Configuring the voice queue networking settings

If your contact center is licensed for networking (see [Chapter 16, "Working with networking"](#)), you can configure the networking settings for a voice queue.

You can configure the queue to override the default networking acceptance settings, if required. For details on the default acceptance settings, see [Section 16.8.2, "Configuring the networking acceptance settings"](#), on page 375.

To configure the voice networking settings:

1. In the **Design Center**, click the  Voice tab.
2. Under **Resources**, click **Queues**, then, in the right pane, double-click the queue you want to configure.
3. Click the **Networking** tab.
4. To make the queue eligible to accept networked contacts, under **Acceptance**, select the **Accept networked contacts** check box. There must be an identically named queue at one or more of the other networked sites for contacts to be routed to this queue.

Working with queues and aggregates

Configuring a queue

5. To override the default networking acceptance settings, select the **Override system acceptance settings** check box, and then configure the performance acceptance criteria. Click **Add**, or select a criterion in the list and click **Edit**.
6. To enable the queue to distribute networked contacts, under **Distribution**, select the **Distribute networked contacts** check box and then select the voice networking workflow that you want to use to distribute the contacts instead of the default networking workflow specified in the Options dialog box (see [Section 16.8.1, "Configuring the general networking settings"](#), on page 374).
7. If you are finished working with this queue definition, click **OK**.

10.3.7 Selecting the queue Wrap-up reasons

The Manager application allows you to associate Wrap-up reasons with a queue.

To configure the **Wrap-up reasons** for the queue:

1. In the **Design Center**, click the tab for the media type that you want to open.
2. Under **Resources**, click **Queues**, then, in the right pane, double-click the queue that you want to configure.
3. Click the **Wrap-up reasons** tab.
4. Under **Wrap-up reasons**, select the check box for each Wrap-up reason that you want to associate with this queue. For more information, see [Section 5.2.4, "Configuring a Wrap-up reason"](#), on page 68.
5. If you are finished working with this queue definition, click **OK**.

10.3.8 Selecting the queue aggregates

You can select the aggregates to which a queue belongs. For more information on aggregates, see [Section 10.4, "About aggregates"](#), on page 257.

NOTE: You must create an aggregate before you can select it in a queue (see [Section 10.5, "Configuring an aggregate"](#), on page 257).

To select the queue aggregates:

1. In the **Design Center**, click the tab for the media type you want to open.
2. Under **Resources**, click **Queues**, then, in the right pane, double-click the queue you want to edit.
3. Click the **Aggregates** tab.
4. Under **Content**, select the check box for each aggregate in which to include this queue.
5. If you are finished working with this queue definition, click **OK**.

10.3.9 Selecting the queue reports

You can select the reports that will display information about the queue that you are configuring.

You can also configure the queue to override the global queue report intervals, if required. For details on the global queue report intervals, see [Section 7.13.1, "Configuring the global queue report intervals"](#), on page 151.

To select the queue reports:

1. In the **Design Center**, click the tab for the media type you want to open.
2. Under **Resources**, click **Queues**, then, in the right pane, double-click the queue you want to edit.
3. Click the **Reports** tab.
4. Under **Include this queue in these reports**, select the check box for each report that you want to display data about this queue. The list contains only the reports you own, or reports that are owned by users you can monitor.
5. To override the global queue report intervals, under **Interval**, select the **Override system settings** check box, and then do the following:
 - In the **To** column for **Interval 1**, double-click the time and type the end time. The start of Interval 2 is updated to reflect the number you just typed.
 - In the **To** column for each other interval, double-click the time and type the end time. The end time for the last interval is always **Forever**.

6. If you are finished working with this queue definition, click **OK**.

10.3.10 Selecting the Web collaboration queue messages

You can associate selected Web collaboration standard messages (see [Section 15.5.2, "Configuring a Web collaboration standard message", on page 346](#)) with a queue. If you do not associate a standard message with a queue, the standard message will be considered generic and will be available to all queues.

To select the Web collaboration queue messages:

1. In the **Design Center**, click the  Web collaboration tab.
2. Under **Resources**, click **Queues**, then, in the right pane, double-click the queue you want to edit.
3. Click the **Messages** tab.
4. Under **Include**, select the check box for each standard message that you want to associate with this queue.
5. If you are finished working with this queue definition, click **OK**.

10.3.11 Selecting the Web collaboration queue URLs

You can associate selected Web collaboration URLs (see [Section 15.5.3, "Configuring a Web collaboration URL", on page 347](#)) with a queue. If you do not associate a URL with a queue, the URL will be considered generic and will be available to all queues.

To select the Web collaboration queue URLs:

1. In the **Design Center**, click the  Web collaboration tab.
2. Under **Resources**, click **Queues**, then, in the right pane, double-click the queue you want to edit.
3. Click the **URLs** tab.
4. Under **Include**, select the check box for each URL that you want to associate with this queue.
5. If you are finished working with this queue definition, click **OK**.

10.4 About aggregates

An aggregate is a logical grouping of queues used for reporting purposes. Supervisors can view state information on aggregates in real-time reports or statistical summaries for aggregates in historical reports.

For example, you might be using the following queues:

- Mutual Funds-English
- Mutual Funds-German
- Stocks-English
- Stocks-German
- Bonds-English
- Bonds-German

If you were interested in viewing the performance of all experts in the area of Mutual Funds, you could group the Mutual Funds-English and Mutual Funds-German into a single Mutual Funds aggregate, and generate reports on that aggregate. Likewise, you could group the three English skill queues and group the three German queues to compare and contrast the handling for contacts with the respective language contact requirement.

10.5 Configuring an aggregate

You can use aggregates to monitor similarly routed contacts, even if different queues are used.

NOTE: To create or change an aggregate, you must have Full or Modify access, respectively, for the associated Manager permission.

To configure an aggregate:

1. On the **File** menu, point to **New**, then **Design Center**, then select the media type, and then click **Aggregate**.
2. On the **General** tab, under **Aggregate**, do the following:
 - In the **Name** box, type a unique name for the aggregate.
 - In the **Description** box, type a description for the aggregate.
3. Click the **Queues** tab.

Working with queues and aggregates

Configuring an aggregate

4. Under **Include**, select the check box for each queue that you want to include in the aggregate.
5. Click the **Reports** tab.
6. Under **Include this aggregate in these reports**, select the check box for each report that you want to display data about this aggregate. The list contains only the reports you own, or reports that are owned by users you can monitor.
7. Click **OK**.

11 Working with voice resources

This chapter provides information on OpenScape Contact Center voice support. It introduces the interaction between the OpenScape Contact Center system and supported communication platforms, and provides instructions on voice-related tasks.

NOTE: For information on Call Director resources in the Telephony Center, see [Chapter 12, "Working with Call Director"](#). For information on IVR resources in the Telephony Center, contact your service representative.

11.1 Supported communication platforms

OpenScape Contact Center supports the following communication platforms:

- OpenScape Voice V7, V8 and V9
- HiPath 4000 V6 and OpenScape 4000 V7 and V8
- OpenScape Business V2

In working with a communication platform to manage contacts, the system's key responsibilities are calculating and delivering call routing directives, collecting statistics, and managing user interaction and component interaction with the communication platform. The platform is still responsible for initial call processing, fundamental operations such as transfers and holds, and other basic voice tasks.

You configure the communication platform settings in the Options dialog box. For details, see [Section 11.5.3, "Configuring the communication platform settings"](#), on page 271.

11.2 Basic interaction with the communication platform

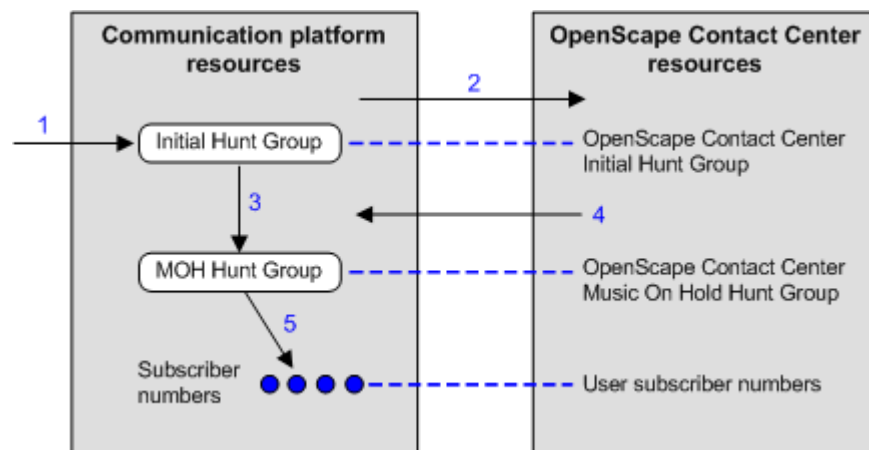
This section provides a basic introduction to the OpenScape Contact Center interaction with the communication platform resources. You should be familiar with the communication platform resources as they pertain to your OpenScape Contact Center configuration before working with the Telephony Center.

NOTE: This section assumes that you have a basic understanding of communication platform components and their functions, and common terminology.

The resources on the communication platform required for OpenScape Contact Center operation are set up during installation and configuration, prior to Manager application configuration. For information on configuring the OpenScape Contact Center equivalents, see the *Manager Help*.

11.2.1 Interaction with OpenScape Voice resources

The following diagram provides a simple introduction to OpenScape Contact Center interaction with OpenScape Voice communication platform resources. It shows the key communication platform resources monitored by OpenScape Contact Center, shows the OpenScape Contact Center configuration equivalents, and describes the interactions using an example of initial call processing.



The numbered steps are:

1. Each dialed number serviced by the contact center, is associated with a dedicated Initial Hunt Group. Incoming calls on those dialed numbers are held in that hunt group.
2. Details of the call are passed to OpenScape Contact Center and a routing strategy workflow executes to determine the routing of the call.
3. If the call results in the call being enqueued to an OpenScape Contact Center queue, on the communication platform, the call is moved from the Initial Hunt Group to an associated Music On Hold Hunt Group. Queue processing treatments such as music-on-hold and announcements can be applied in a Music On Hold Hunt Group.
4. Based on its queue/workflow setup, OpenScape Contact Center finds the best available user to handle the call.
5. Based on the subscriber number to which the user is logged on, OpenScape Contact Center directs the communication platform to route the call to that subscriber number.

NOTE: Backup routing is handled by changing the Initial Hunt Group from Manual mode to Circular mode when OpenScape Contact Center is not operating.

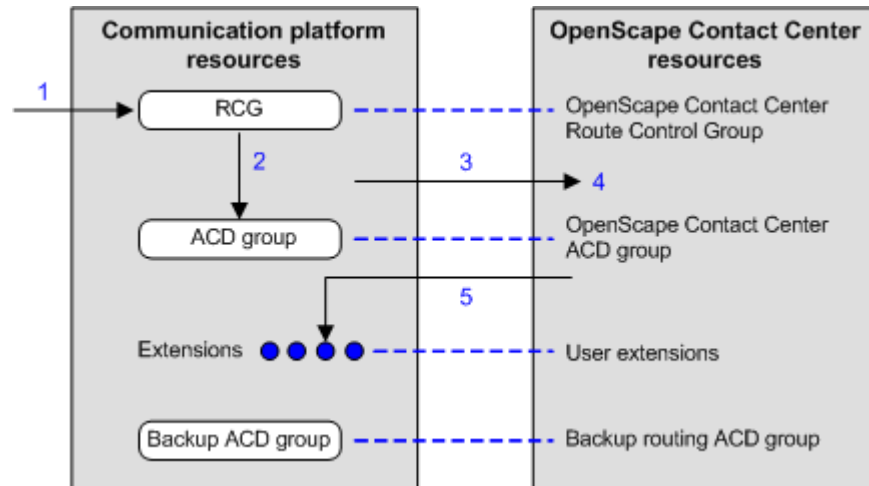
11.2.2 Interaction with OpenScape 4000 or HiPath 4000 resources

The following diagram provides a simple introduction to OpenScape Contact Center interaction with OpenScape 4000 or HiPath 4000 communication platform resources. It shows the key communication

Working with voice resources

Basic interaction with the communication platform

platform resources monitored by OpenScape Contact Center, shows the OpenScape Contact Center configuration equivalents, and describes the interactions using an example of initial call processing.



The numbered steps are:

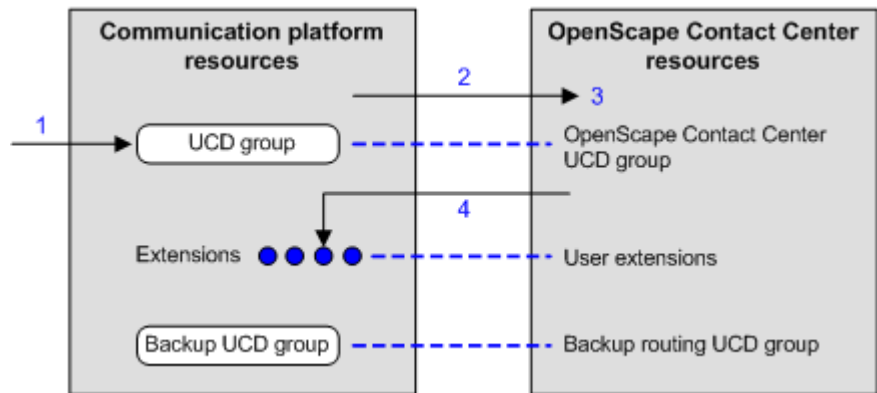
1. Each dialed number serviced by the contact center is associated with a dedicated Route Control Group. Incoming calls on those dialed numbers are processed according to routing directives for the Route Control Group.
2. Based on preconfigured Shift Set and ART settings, the Route Control Group associates the call with a dedicated ACD group. The ACD group set up for OpenScape Contact Center processing is configured with no users.

NOTE: If the Route Control Group detects that OpenScape Contact Center is not operational, it routes the call to an ACD group dedicated to backup routing.

3. The call is held on the communication platform while the platform notifies OpenScape Contact Center of the call.
4. Based on its queue/workflow setup, OpenScape Contact Center finds the best available user to handle the call.
5. Based on the extension to which the user is logged on, OpenScape Contact Center directs the communication platform to route the call to that extension.

11.2.3 Interaction with OpenScape Business resources

The following diagram provides a simple introduction to OpenScape Contact Center interaction with OpenScape Business communication platform resources. It shows the key communication platform resources monitored by OpenScape Contact Center, shows the OpenScape Contact Center configuration equivalents, and describes the interactions using an example of initial call processing.



The numbered steps are:

1. A CDL associates dialed numbers serviced by the contact center, with a dedicated UCD group.
2. The call is held on the communication platform while the platform notifies OpenScape Contact Center of the call.
3. Based on its queue/workflow setup, OpenScape Contact Center finds the best available user to handle the call.
4. Based on the extension to which the user is logged on, OpenScape Contact Center directs the communication platform to route the call to that extension.

11.3 Communication platform resources

To route telephone calls and gather statistics, OpenScape Contact Center monitors a set of key resources on the communication platform. Using the Manager application, you must configure a matching definition within OpenScape Contact Center for each resource on the communication platform.

NOTE: For details on how to configure the matching resource definitions, see the *Manager Help*.

The following table shows the resources configured in OpenScape Contact Center for each communication platform. The communication platform resources marked with an “S” in the table can be synchronized with the platform to share configuration information. For more information, see [Section 11.4, “About Config Sync”, on page 265](#).

NOTE: When the system is connected to an OpenScape 4000 or HiPath 4000 communication platform, the Config Sync feature is not supported.

Resource	OpenScape Voice	OpenScape 4000 or HiPath 4000	OpenScape Business
User IDs		S	S
Extensions		S	S
UserSubscriberNumbers	S		
Route Control Groups		S	
UCD Groups			S
Hunt Groups	S		
ACD Groups		S	
ACD Queues			
Trunk Groups		S	
Queue Targets	✓		
Requeue Targets		✓	✓
NetworkTransitNumbers	✓	✓	✓
IVR Transit Numbers	✓	✓	

Table 10 Key communication platform resources

11.4 About Config Sync

The Config Sync (configuration synchronization) feature monitors key contact center communication platform resources and synchronizes the OpenScape Contact Center definitions with the definitions on the communication platform. When a configuration change is detected, Config Sync immediately provides the OpenScape Contact Center system with the details of the change, thus reducing configuration errors, manual entry, and duplicate administration. For a list of communication platform resources that can be monitored, see [Section 11.3, "Communication platform resources", on page 264](#).

Config Sync monitors and synchronizes communication platform resources only within specified resource domain ranges. This allows you to set up the Config Sync feature to focus on dedicated contact center resources, such as an agent's extension, and ignore nonessential resources, such as the extension at the reception desk. For example, in a small contact center, you might set up Config Sync to monitor extensions in the range 121 through 140. When a new extension in that range is created on the communication platform, an equivalent extension definition is created in OpenScape Contact Center.

Synchronization is driven by the OpenScape Contact Center Config Sync Server. When the Config Sync Server starts or when you explicitly synchronize resources, the Config Sync Server synchronizes the OpenScape Contact Center definitions with those on the communication platform. For details on how to enable the Config Sync feature, see [Section 11.5.4, "Configuring the Config Sync settings", on page 277](#).

Config Sync treats changes to user IDs and other resources differently. For details, see [Section 11.4.1, "Config Sync treatment of user IDs", on page 266](#), and [Section 11.4.2, "Config Sync treatment of other resources", on page 267](#).

NOTE: When the system is connected to an OpenScape 4000 or HiPath 4000 communication platform, the Config Sync feature is not supported.

11.4.1 Config Sync treatment of user IDs

The following table lists the actions taken when the Config Sync Server detects changes to user IDs that fall within a defined Config Sync domain range.

ConfigSyncServerdetects...	Action taken...
A user was added to the communication platform that does not exist in OpenScape Contact Center	Config Sync creates a new basic definition for the user in OpenScape Contact Center (user ID, user name, and backup group) and sets the resource state to Incomplete . For details on completing the definitions, see Section 11.4.1.1, "Completing a user definition created by Config Sync", on page 266 .
A user was added to OpenScape Contact Center that does not exist on the communication platform	Config Sync sets the OpenScape Contact Center definition state to Communication Platform Synchronization Error .
A user was deleted from the communication platform but still exists in OpenScape Contact Center	If the user has permission to handle calls only, Config Sync sets the OpenScape Contact Center definition state to Inactive . If the user has permission to log on to other media, then voice is disabled for the user.
A user was deleted from OpenScape Contact Center but still exists on the communication platform	Config Sync sets the OpenScape Contact Center definition state to OpenScape Contact Center Synchronization Error .

Table 11 Config Sync actions on changes to user IDs

11.4.1.1 Completing a user definition created by Config Sync

When the Config Sync Server detects a new user definition on the communication platform, with an ID that falls within one of the defined Config Sync domain ranges, it creates a minimal user definition in OpenScape Contact Center. The user definition consists of the following:

- User ID
- User name
- Backup group

Before a user can become fully functional, you must complete the properties in the user definition. One way to check for incomplete user definitions is to check the Administration Center for users in **Incomplete** state. This is often an indication that the user definition has been recently created.

To complete a user definition created by Config Sync:

1. In the **Administration Center**, under **General**, click **Users**, then, in the right pane, double-click the user you want to complete.
2. Complete the remaining user properties, as required (see [Section 4.1, “Configuring a user”, on page 31](#)).

11.4.2 Config Sync treatment of other resources

The following table lists the actions taken when the Config Sync Server detects changes to resources other than user IDs (such as extensions and queue targets) whose identifiers fall within a defined Config Sync domain range.

Config Sync Server detects...	Action taken...
A resource was added to the communication platform that does not exist in OpenScape Contact Center	Config Sync creates a new OpenScape Contact Center definition for the resource, gives it the name of the domain range, and sets the resource state to Active .
A resource was added to OpenScape Contact Center that does not exist on the communication platform	Config Sync sets the OpenScape Contact Center definition state to Communication Platform Synchronization Error .
A resource was deleted from the communication platform but still exists in OpenScape Contact Center	Config Sync deletes the OpenScape Contact Center definition of the resource.
A resource was deleted from OpenScape Contact Center but still exists on the communication platform	Config Sync sets the OpenScape Contact Center definition state to OpenScape Contact Center Synchronization Error .

Table 12 Config Sync actions on changes to other resources

11.5 Configuring the voice options

Use the voice options to configure the default settings for the voice feature. For details, see the following topics:

- [Section 11.5.1, “Configuring the default voice routing strategy, queue, and time-out extension”, on page 268](#)
- [Section 11.5.2, “Configuring the voice error queue settings”, on page 269](#)
- [Section 11.5.3, “Configuring the communication platform settings”, on page 271](#)

- [Section 11.5.4, “Configuring the Config Sync settings”, on page 277](#)
- [Section 11.5.5, “Configuring the VoiceXML settings”, on page 278](#)

NOTE: To configure any of the voice options, you must have Full or Modify access for the associated Manager permission.

11.5.1 Configuring the default voice routing strategy, queue, and time-out extension

You must specify the following defaults for the voice feature:

- **Default routing strategy workflow** – The routing strategy workflow that is initially used to route all calls in the contact center. You can configure the default routing strategy workflow to link to other routing strategy workflows, if required.
- **Default queue** – The queue that you want to use as the default option for the no match found (*) entry in a Destination Table component.

Time-out extension – The extension to which a call will be routed provided that a time-out is specified when you configure a queue. In general, the time-out extension should be used to move the call outside the OpenScape Contact Center system. The time-out extension should *not* be configured to reference the following, depending on the type of communication platform you are using:

- OpenScape Voice – A pilot number for an OpenScape Contact Center Music On Hold Hunt Group.
- OpenScape 4000 or HiPath 4000 – A pilot number for an OpenScape Contact Center Route Control Group.
- OpenScape Business – A CDL call number for an OpenScape Contact Center UCD group.

Before configuring these settings, be sure to create the routing strategy workflow (see [Section 9.4, “Configuring a routing strategy workflow”, on page 209](#)) and the queue (see [Section 10.3, “Configuring a queue”, on page 240](#)) that you want to use as the default.

NOTE: In a multitenant environment, only a business unit administrator can configure the default voice routing strategy, queue, and time-out extension. For details, see [Section 19.3, “Administrator roles in a multitenant environment”, on page 392](#).

To configure the default voice routing strategy and queue:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Voice**.
3. On the **General** tab, under **Default**, do the following:
 - In the **Routing strategy** list, select the voice routing strategy you want to use to initially route all calls.
 - In the **Queue** list, select the voice queue that you want to use as the default option for the no match found (*) entry in a Destination Table component.
 - In the **Time-out extension** box, type the extension that you want to use as the default time-out extension. The time-out extension is the extension to which a call will be routed provided that a time-out is specified when you configure a queue.
4. Click **OK**.

11.5.2 Configuring the voice error queue settings

The error queue is the queue to which calls are routed in the case of recoverable system errors. Recoverable system errors are errors generated by the OpenScape Contact Center servers that cannot be handled by the **Exit on error** option provided in some of the workflow components. If the system detects a recoverable system error in a routing strategy workflow, the call is routed to the error queue where it can then be routed to an appropriate user.

In the case of a critical error, such as a system outage while the call is being handled on a voice processor extension, the system will transfer the call to the error transfer number. The error transfer number does not serve the same purpose as the time-out extension associated with a queue. The error transfer number can be one of the following numbers, depending on the type of communication platform to which the system is connected:

- OpenScape Voice – The pilot number for an OpenScape Contact Center Music On Hold Hunt Group.
- OpenScape 4000 or HiPath 4000 – The pilot number for an OpenScape Contact Center Route Control Group.

Working with voice resources

Configuring the voice options

- OpenScape Business – The CDL call number for an OpenScape Contact Center UCD group.

NOTE: If a system outage occurs where the system can no longer process the call, the communication platform can then invoke backup routing. On an OpenScape Voice, OpenScape 4000, or HiPath 4000 communication platform, when the system transitions out of backup routing, all recovered calls are placed in the error queue with a priority of 50.

NOTE: In a multitenant environment, only a business unit administrator can configure the voice error queue settings. For details, see [Section 19.3, “Administrator roles in a multitenant environment”, on page 392](#). Also, the voice processor or processors are shared between business units. So in the case of a critical error, calls will be transferred to a single error transfer number, that is, the transfer number associated with the error business unit. For details on the error business unit, see [Section 19.6, “Configuring the error business unit”, on page 400](#).

To configure the voice error queue:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Voice**.
3. On the **General** tab, under **Error**, do the following:
 - In the **Queue** list, select the queue to which contacts are directed in the case of recoverable errors.
 - In the **Description** box, type a description for the error queue.
 - In the **Transfer number** list, select the number to which contacts are directed in the case of critical errors.
4. Click **OK**.

11.5.3 Configuring the communication platform settings

When you installed the OpenScape Contact Center software, you selected the communication platform to which the system is connected.

IMPORTANT: Changing the communication platform type after initial system setup can adversely affect the operation of the system. Contact your service representative if you plan to change your communication platform. You might not have the necessary software on the server machine to work with a different communication platform. In most cases, you should change the communication platform type only when you are connected to a design database for configuration purposes. When you are connected to the production database, changing the communication platform type will require that you restart the OpenScape Contact Center service on the main server machine.

You can configure the settings for the selected communication platform, including:

- The settings used to determine if OpenScape Contact Center is functioning properly or needs to use backup routing (required only for OpenScape 4000 or HiPath 4000).
- The setting of the OpenScape Contact Center Ring No Answer feature.
- The CSTA server settings for the communication platform interface module.

11.5.3.1 Configuring an OpenScape Voice communication platform

This section describes how to configure an OpenScape Voice communication platform.

IMPORTANT: When you are connected to the production database, if you change the CSTA Signaling Manager settings, you will be required to restart the T-Server on the OpenScape Contact Center main server machine.

NOTE: In a multitenant environment, only a system administrator can configure the communication platform settings, except for the OpenScape Contact Center Ring No Answer feature, which can only be configured by a business unit administrator. For details, see [Section 19.3, "Administrator roles in a multitenant environment"](#), on page 392.

NOTE: If the system is configured for high availability (warm standby), and you make any changes to the OpenScape Voice communication platform settings, the changes are not replicated on the backup server machine. Therefore, you must make the same changes separately on the backup server machine. In this case, when you log on to the Manager application, you must connect to the physical backup server machine in the format *portnumber@servername*.

To configure an OpenScape Voice communication platform:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Voice**.
3. Click the **Communication Platform** tab.
4. Under **Communication Platform Settings**, do the following:
 - In the **Node distribution** list, select the subnet deployment.
 - **Common subnet** – Indicates that the nodes reside on a common subnet.
 - **Separate subnets** – Indicates that the nodes reside on separate subnets.

- To enable the OpenScape Contact Center Ring No Answer feature, select the **Enable Ring No Answer** check box.

NOTE: When the system is connected to an OpenScape Voice V7 R1 or V8 communication platform, you must select the **Enable Ring No Answer** check box for the system to be able to recall unanswered calls when users are using a preferred device other than the desk telephone.

5. Under **CSTA Signaling Manager Settings**, do the following:

- If you selected **Common subnet** in step 4:
 - In the **IP Address** box, type the IP address of the CSTA Signaling Manager service.
 - In the **Port number** box, type the port number of the CSTA Signaling Manager service.
- If you selected **Separate subnets** in step 4:
 - In the **Service name** box, type the name of the CSTA Signaling Manager service.
 - In the **Domain name** box, type the fully qualified domain name of the CSTA Signaling Manager service.

NOTE: When the system is configured for high availability (warm standby), the configuration of the Service name and Domain name must be the same on the primary and backup server machines.

- In the **Port number** box, type the port number of the CSTA Signaling Manager service.

6. Click **OK**.

11.5.3.2 Configuring an OpenScape 4000 or HiPath 4000 communication platform

This section describes how to configure an OpenScape 4000 or HiPath 4000 communication platform.

IMPORTANT: When you are connected to the production database, if you change the CSTA server settings, you will be required to restart the T-Server on the OpenScape Contact Center main server machine.

NOTE: In a multitenant environment, only a system administrator can configure the communication platform settings, except for the OpenScape Contact Center Ring No Answer feature, which can only be configured by a business unit administrator. For details, see [Section 19.3, “Administrator roles in a multitenant environment”, on page 392](#).

To configure an OpenScape 4000 or HiPath 4000 communication platform:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Voice**.
3. Click the **Communication Platform** tab.
4. Under **Communication Platform Settings**, do the following:
 - When the system is configured for high availability (warm standby) and is connected to an OpenScape 4000 or HiPath 4000 communication platform, in the **Operating mode** list, select the operating mode. Your choices are: **Simplex** or **Duplex**.
 - When the system is configured for high availability (warm standby), in the **Deployment model** list, select the deployment model. Your choices are: **Stand-alone** or **Access Point Emergency**.
 - In the **Heartbeat application name** box, the default name is OSCC. You need to change the default name only if you are connecting more than one main server machine to a single OpenScape 4000 or HiPath 4000 communication platform. In

this case, the heartbeat application name is required to uniquely identify this server machine. The name you enter here must match the application name configured for the server in the CSTA settings loaded on the communication platform.

NOTE: When the system is configured for high availability (warm standby), the heartbeat application name must be the same on the primary and backup server machines.

- In the **Fallback number** box, type the default ACD number where all calls are directed if the communication platform detects a problem with the OpenScape Contact Center heartbeat.
 - In the **Pulse interval** box, type the interval, in seconds, between heartbeat pulses sent from OpenScape Contact Center to the communication platform. The default value is 15 seconds.
 - To enable the OpenScape Contact Center Ring No Answer feature, select the **Enable Ring No Answer** check box.
5. When the system is connected to an OpenScape 4000 or HiPath 4000 communication platform, depending on the configuration of the high availability (warm standby) feature, do one of the following:
- If the system is not configured for high availability (warm standby), under **CSTA Server Settings**:
 - In the **Host name** box, type the host name of the communication platform.
 - In the **Port number** box, type the port number for CSTA on the communication platform.
 - If the system is configured for high availability (warm standby) and the selected deployment model is **Stand-alone**, under **CSTA Server Settings**:
 - In the **Host name** box, type the host name of the communication platform.
 - In the **Port number** box, type the port number for CSTA on the communication platform. Ensure that you enter a different port number on the primary and backup server machines.
 - If the system is configured for high availability (warm standby) and the selected deployment model is **Access Point Emergency**:

Working with voice resources

Configuring the voice options

- Under **Main CSTA Settings**, in the **Host name** box, type the host name of the communication platform.
- Under **Main CSTA Settings**, in the **Port number** box, type the port number for CSTA on the communication platform. Ensure that you enter a different port number on the primary and backup server machines.
- Under **Access Point Emergency CSTA Settings**, in the **Host name** box, type the host name of the Access Point Emergency unit.
- Under **Access Point Emergency CSTA Settings**, in the **Port number** box, type the port number of the Access Point Emergency unit. Ensure that you enter a different port number on the primary and backup server machines.

6. Click **OK**.

11.5.3.3 Configuring an OpenScape Business communication platform

This section describes how to configure an OpenScape Business communication platform.

IMPORTANT: When you are connected to the production database, if you change the CSTA server settings, you will be required to restart the T-Server on the OpenScape Contact Center main server machine.

To configure an OpenScape Business:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Voice**.
3. Click the **Communication Platform** tab.
4. To enable the OpenScape Contact Center Ring No Answer feature, select the **Enable Ring No Answer** check box.
5. Under **CSTA Server Settings**, do the following:
 - In the **Host name** box, type the host name of the server machine where the CSTA server resides.
 - In the **Port number** box, type the port number of the CSTA server.
6. Click **OK**.

11.5.4 Configuring the Config Sync settings

You can enable the Config Sync feature (see [Section 11.4, “About Config Sync”, on page 265](#)) and configure various settings related to the feature, such as when synchronization occurs.

NOTE: When the system is connected to an OpenScape 4000 or HiPath 4000 communication platform, the Config Sync feature is not supported.

NOTE: In a multitenant environment, only a system administrator can configure the Config Sync settings. For details, see [Section 19.3, “Administrator roles in a multitenant environment”, on page 392](#).

To configure the Config Sync settings:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Voice**.
3. Click the **Config Sync** tab.
4. To enable the synchronization settings, under **Config Sync**, select the **Enable** check box.
5. Under **Communication Platform Access** (not available on OpenScape Voice), configure the following items that enable the Config Sync Server to access the communication platform and potentially make changes to communication platform resources:
 - a) In the **IP address** box, type the IP address of the communication platform. If the system is connected to an OpenScape 4000 or HiPath 4000 communication platform, this is the IP address of the communication platform on the customer LAN.
 - b) In the **Port number** box, type the appropriate port number of the communication platform. If the system is connected to an OpenScape 4000 or HiPath 4000 communication platform, this is the port number on the OpenScape Contact Center system to which the communication platform connects.
 - c) In the **Logon name** box, type the user name needed to log on to the communication platform.

Working with voice resources

Configuring the voice options

- d) In the **Password** box, type the password needed to log on to the communication platform.
 - e) In the **Confirm password** box, retype the password to confirm that you entered it correctly.
 - f) In the **Lock level** box, type or select the access level to the communication platform. You can enter a value from 1 to 15.
6. Under **Range Allocation**, in the **Automatic creation size** box, type the size of the automatically defined resource domain range. If you create a resource in OpenScape Contact Center that is outside the Config Sync resource domain range, you are prompted to add it to the domain range. The value in this box defines the increment that is used. You can enter a value from 1 to 1000. The default value is 1.
7. Under **Synchronization**, select the **At data maintenance time** check box to automatically synchronize the communication platform and OpenScape Contact Center resources after data maintenance is performed, normally about 20 minutes after the data maintenance time.

NOTE: If you have the required administrator permission, you can click **Synchronize now** to manually synchronize the communication platform and OpenScape Contact Center resources, but this should be done only during periods of low contact volume.

11.5.5 Configuring the VoiceXML settings

You can enable the VoiceXML feature and configure the port number that the Web Interaction Server uses to communicate with the corporate Web server for VoiceXML integration.

For more information on the VoiceXML feature, see the *VoiceXML Integration Guide*.

NOTE: When you are connected to the production database, if you change the port number, you will be required to restart the Web Interaction Server on the main server machine.

NOTE: In a multitenant environment, only a system administrator can configure the VoiceXML settings. For details, see [Section 19.3, “Administrator roles in a multitenant environment”](#), on page 392.

To configure the VoiceXML settings:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Voice**.
3. Click the **VoiceXML** tab.
4. To enable the VoiceXML feature, under **VoiceXML**, select the **Enable** check box.
5. Under **Port Settings**, in the **Port number** list, select the port that the Web Interaction Server uses to communicate with the corporate Web server to support VoiceXML. You can select an unsecured or a secured (TLS-enabled) port. For more information, see [Section 20.3.3, “Configuring the Web server settings”](#), on page 412.
6. Click **OK**.

Working with voice resources

Configuring the voice options

12 Working with Call Director

This chapter introduces Call Director and provides instructions on working with configurable Call Director resources in the Manager application

Call Director is a licensed voice feature that allows you to play messages and interact with the caller. A message (.wav file) can greet the caller, provide a menu prompt, gather numerical data, or play a performance level statistic. For example, you can prompt the caller to "Press 1 for Service, or press 2 for Sales".

Call Director components can help you match callers to the best available user in routing strategy and queue processing workflows. You must use third-party applications to create .wav files for use with the Call Director components. For details, see [Section 12.3.3, "Configuring a .wav file", on page 285](#).

12.1 Communication platform and voice processor interaction

When the system is licensed for Call Director, a voice processor is used to play announcements and interactive recordings, and collect digits input by a caller. The system supports the following voice processor: OpenScape Contact Media Service - multiple voice processors can be configured

When a workflow component invokes a Call Director function, the call is routed to an extension dedicated to Call Director services.

NOTE: The OpenScape Voice communication platform uses the term subscriber number instead of extension.

NOTE: When a call is routed to an interactive Call Director extension, the caller might hear a short ring before the voice processor answers the call.

In the Telephony Center, each Call Director extension associates a voice processor extension (or channel) with a communication platform extension dedicated to interactive messages. For announcements (OpenScape Business only), the Call Director extension also associates the voice processor extension with a communication platform Device ID.

Working with Call Director

Call Director workflow components

The number of extensions required is a function of capacity and depends on the site. For more information, contact your service representative.



Ensure that you complete the voice processor configuration before configuring the Call Director extensions. For details, see [Section 12.3.1, "Configuring a voice processor", on page 283](#). For information on how to configure Call Director extensions, see the *Manager Help*.

12.2 Call Director workflow components

The following workflow components directly invoke Call Director functionality:

- Menu Prompt components play an audible voice prompt to a caller and the routing of the contact or subsequent processing in the workflow can be based on the caller's response.
- Message components play an audible message to one specific contact.
- Performance Message components play an audible message followed by a queue statistic message, followed by a final message.
- Digit Collection components play an audible message, collect numeric information, such as an account number, from the caller, and store it in the Contact Data.
- Number Playback components play a number back to a call. The number can be configured as part of the component or retrieved from Contact Data.

For configuration details for these components, see the *Manager Help*.

12.3 Configuring the Call Director resources

Before you can use Call Director components in a workflow, you must:

- Configure the Call Director extensions or subscriber numbers – see the *Manager Help*.
- Configure the voice processors – see [Section 12.3.1, “Configuring a voice processor”, on page 283](#).
- Configure the .wav files that you want to use – see [Section 12.3.3, “Configuring a .wav file”, on page 285](#).

NOTE: Your initial Call Director configuration is typically set up by your service representative. For information on the setup tasks, see the *Communication Platform Integration Guide*.

12.3.1 Configuring a voice processor

If you are using Call Director, you must configure the voice processors to be used with the system. The system supports the following voice processor:

- OpenScape Contact Media Service - multiple voice processors can be configured

Working with Call Director

Configuring the Call Director resources

For more information on the OpenScape Contact Media Service, see the *OpenScape Contact Media Service Installation Guide*.

IMPORTANT: The system supports the use of only one Contact Media Service voice processor. When you are connected to the production database, ensure that you complete the voice processor configuration before configuring the Call Director extensions or subscriber numbers.

NOTE: When the system is configured for high availability (warm standby), redundant voice processors are required. For more information, see [Section 18.1, "Call Director configuration in a high availability \(warm standby\) environment"](#), on page 386.

NOTE: In a multitenant environment, only a system administrator can configure a voice processor. For details, see [Section 19.3, "Administrator roles in a multitenant environment"](#), on page 392.

To configure a voice processor:

1. On the **File** menu, point to **New**, then **Telephony Center**, and then click **Voice Processor**.
2. Under **Voice Processor**, do the following:
 - In the **Name** box, type the name of the voice processor.
 - In the **Description** box, type a description for the voice processor.
 - In the **Host name** box, type the host name or IP address of the host machine where the voice processor is located.
 - In the **Port number** box, type the port number that the voice processor uses for CTI communication. If the system is using multiple OpenScape Contact Media Service voice processors, you can configure the same port number for each voice processor. Default: 6027
 - If the system is using multiple distributed voice processors, in the **Voice processor region** list, select the region with which you want to associate the voice processor. The voice processor region that you want to use must already be configured. For details, see [Section 12.3.2, "Configuring a voice processor region"](#), on page 285. The option to use distributed voice processors is configured in the Call Director general options. For details, see [Section 12.4.1, "Configuring the Call Director general options"](#), on page 289.

- In the **Password** box, type the password for the user account that is used to establish a connection with the voice processor for CTI communication. Default: Un1Fy
3. Click **OK**.

12.3.2 Configuring a voice processor region

When the system is using multiple OpenScape Contact Media Service voice processors, you can choose to distribute the voice processors to different regions. This allows you to route calls to voice processor extensions in different regions. In this case, you must configure the regions that you want to use.

NOTE: The option to use distributed voice processors is configured in the Call Director options. For details, see [Section 12.4.1, “Configuring the Call Director general options”](#), on page 289.

To configure a voice processor region:

1. On the **File** menu, point to **New**, then **Telephony Center**, and then click **Voice Processor Region**.
2. On the **General** tab, under **Voice Processor Region**, do the following:
 - In the **Name** box, type a name for the voice processor region.
 - In the **Description** box, type a description for the voice processor region.
3. Click the **Voice Processors** tab.
4. Under **Include**, select the check box for each voice processor that you want to associate with this voice processor region.

12.3.3 Configuring a .wav file

If the Call Director feature is enabled, you must configure a resource for each sound (.wav) file that you want to use in Call Director workflow components and other settings related to Call Director.

NOTE: To create or change a .wav file, you must have Full or Modify access, respectively, for the **WAV files** Manager permission.

Working with Call Director

Configuring the Call Director resources

You can upload a .wav file from the main server machine or from a client machine. The uploaded .wav files are stored in the WaveFiles folder on the main server machine. The file path names are not stored in the resource. The system looks in the designated WaveFiles folder for the .wav files.

NOTE: When the system is configured for high availability (warm standby), the .wav files are not replicated on the backup server machine. You must manually copy the .wav files to the WaveFiles folder on the backup server machine and ensure that the .wav files on the primary and backup server machines remain synchronized. For more information, see [Section 18.1, "Call Director configuration in a high availability \(warm standby\) environment"](#), on page 386.

The .wav files must meet specific requirements (see [Section 12.3.3.1, "Call Director .wav file requirements"](#), on page 287). The .wav files must be created using third-party software and hardware. We do not provide the software or hardware required to create .wav files.

To configure a .wav file:

1. On the **File** menu, point to **New**, then **Design Center**, then **Voice**, and then click **WAV File**.
2. On the **General** tab, under **File**, do the following:
 - In the **Name** box, type the name of the .wav file. You can browse to select and upload the .wav file to the WaveFiles folder.

NOTE: When the system is configured for high availability (warm standby), to select the .wav file, the Manager application must be connected to the physical server machine in the format *portnumber@servername*.

NOTE: If you are connected to a production database, you can click  to play the .wav file. You cannot play .wav files when you are connected to a design database.

NOTE: If you are connected to a production database, you can click  to download the .wav file. You cannot download .wav files when you are connected to a design database.

- In the **Description** box, type a description for the .wav file. Use the description to specify what information is presented in the .wav file.

The **Installed** check box is a read-only item used when you are connected to a production database to indicate whether or not the .wav file is installed in the WaveFiles folder. If the system cannot find the .wav file, the **Installed** check box is cleared. This check box is always cleared when you are connected to a design database. You can save the .wav file definition even though the system cannot find the .wav file.

NOTE: When the system is configured for high availability (warm standby), the Installed check box works only when the Manager application is connected to the physical server machine in the format *portnumber@servername*.

3. Click the **Security** tab. This tab is available only if the enhanced security option is enabled. For details, see [Section 20.3.4, “Configuring the enhanced security option”](#), on page 414.
4. Under **Users**, select the check box for each user who you want to be able to modify this .wav file. The list contains only the users who have Full or Modify access to the **WAV files** Manager permission.
5. Click **OK**.

12.3.3.1 Call Director .wav file requirements

When creating a .wav file, you must ensure that it meets the following requirements.

The maximum metallic signal power averaged over any 3-second interval in the 200-3995 Hz voice band does not exceed the following ANSI/TIA-986-A signal power limitation requirements mandated by the FCC:

- The analog CO/DID trunk and OPS line interfaces do not exceed -9 dBm
- The 2-wire and 4-wire lossless tie trunk type interfaces do not exceed -15 dBm
- The digital T1 and ISDN PRI/BRI interfaces do not exceed - 12 dBm

Working with Call Director

Configuring the Call Director options

The name of the .wav file contains only alphanumeric and underscore characters (A-Z, a-z, 0-9 and "_"), has a .wav extension, and is less than or equal to 25 characters, excluding the extension and path information. For example, the following are valid .wav file names:

- First_Message.wav
- Next_Msg1.wav
- Next_Msg2.wav
- 1203_Entry.wav
- 1stError_File.wav

12.4 Configuring the Call Director options

You can configure the various default options for the Call Director feature. For details, see the following topics:

- [Section 12.4.1, "Configuring the Call Director general options", on page 289](#)
- [Section 12.4.2, "Configuring the Call Director destination table", on page 292](#)
- [Section 12.4.3, "Configuring the Call Director default navigation", on page 293](#)
- [Section 12.4.4, "Configuring the Call Director responses", on page 295](#)

NOTE: To configure any of the Call Director options, you must have Full or Modify access for the associated Manager permission.

NOTE: You can override some of these default options when you configure a workflow. For details, see [Section 9.4.1, "Overriding the default Call Director settings", on page 211.](#)

12.4.1 Configuring the Call Director general options

You can configure various general options for Call Director, such as the extension allocation and standard language.

NOTE: In a multitenant environment, only a system administrator can configure the extension allocation and language options, and only a business unit administrator can configure the error message file. For details, see [Section 19.3, "Administrator roles in a multitenant environment"](#), on page 392.

Before you begin, the .wav files that you want to use must be configured and installed on the main server machine (see [Section 12.3.3, "Configuring a .wav file"](#), on page 285).

To configure the Call Director general options:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Call Director**.
3. Under **Extension Allocation**, double-click the number in the **Interactive (%)** column and the **Routing Strategy** row, and then type the percentage of all available interactive extensions that you want to reserve for playing interactive messages in a routing strategy workflow.

The application automatically updates the **Queue Processing** row so that the Total equals 100. For examples, see [Section 12.4.1.1, "Extension allocation ratio examples"](#), on page 291. On an OpenScape Business communication platform, you can configure the percentage of available announcement extensions in the same way.

4. Under **Language**, click **Standard** and select the language you want to use for spoken messages from the list. The list contains the languages supported by the voice processor.

In order to use another language than one of the standard languages:

1. Click **Custom locale ID**
2. Enter an appropriate value, for example 1043 for "Dutch - Netherlands".
3. For a custom language you need to record the .wav files by yourself or obtain them from a 3rd party. These are system .wav files, used in Number Playbacks and Performance Messages, for example announcing the wait time in a queue.

Working with Call Director

Configuring the Call Director options

4. Store these .wav files on the OSCC server in the folder

`%HPPCDIR%\SystemVoice\<<custom locale id>\Unisex`

equivalent to the standard languages, where `<custom locale id>` is the value associated with the custom language.

NOTE: When using a custom language, all played .wav files are taken from the *Unisex* folder, as opposed to the standard languages. For the standard languages the .wav files are taken from both the *Male* and *Female* folders, depending on grammatical context.

5. Under **Outage Threshold**, in the **Extensions out of service** box, type or select the percentage of Call Director extensions or subscriber numbers that must be out of service before the Call Director Server becomes nonoperational. The default value is 75%.
6. Under **Error**, in the **Message file name** list, select the .wav file that plays if an error occurs. This error message will be played if the connectivity between Call Director and the voice processor is lost. This same message will be played if the Call Director Server encounters an error in workflow, unless you override this error message in a specific workflow diagram (see [Section 9.4.1, "Overriding the default Call Director settings", on page 211](#)).

NOTE: If you are connected to a production database, you can click  to play the .wav file. You cannot play .wav files when you are connected to a design database.

7. Click **OK**.

12.4.1.1 Extension allocation ratio examples

When you configure the Call Director general options, under **Extension Allocation**, you specify the percentage of interactive extensions (and announcement extensions on the OpenScape Business), that you want to reserve for routing strategy workflows and queue processing workflows. For details on how to configure the general options, [Section 12.4.1, "Configuring the Call Director general options"](#), on page 289.

If a fraction of an extension remains after the ratio is applied, the fraction is assigned to the routing strategy workflows. For example, assume you have 10 extensions. Some examples of how the extensions would be allocated are shown in the following table.

Extension allocation		Actual number of extensions reserved	
Routing strategy	Queue processing	For routing strategy workflows	For queue processing workflows
50%	50%	5	5
1%	99%	1	9
55%	45%	6	4
99%	1%	10	0

Table 13 Extension allocation examples

NOTE: In the event that a Call Director extension is deleted, the system might automatically reallocate extensions to either routing strategy workflows or queue processing workflows based on the configured extension allocation.

12.4.2 Configuring the Call Director destination table

When the system is using multiple distributed OpenScape Contact Media Service voice processors, you must configure the Call Director destination table. The destination table is used to route a contact to a particular voice processor region based on the dialed destination number.

Before you begin, the voice processor regions that you want to use must already be configured. For details, see [Section 12.3.2, "Configuring a voice processor region"](#), on page 285.

NOTE: The option to use distributed voice processors is configured in the Call Director options. For details, see ["Configuring the Call Director general options"](#).

NOTE: In a multitenant environment, only a system administrator can configure the Call Director destination table. For details, see [Section 19.3, "Administrator roles in a multitenant environment"](#), on page 392.

To configure the Call Director destination table:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Call Director**.
3. Click the **Destination** tab.
4. Under **Destinations**, add a destination entry to the table as follows:
 - In the **Destination** column, type a valid destination. A single asterisk (*) can be used as a wildcard to substitute one or more numbers in a destination. The asterisk alone can be used to represent all destinations, or you can use an asterisk at the start or end of a destination to represent one or more numbers. You cannot use more than one asterisk in a single destination, or in the middle of a destination. For example, the destination numbers *123, 123*, and * are valid. *567* and 56*7 are not valid.
 - In the **Voice Processor Region** column, click the cell, and then select the preferred voice processor region from which a voice processor extension will be allocated.

- In the **Routing Strategy** column, click the cell, and then select **Yes** or **No** from the list. This option indicates whether the system will try to use other voice processor regions if no idle routing strategy extensions are found on all the voice processors belonging to the preferred voice processor region.
 - In the **Queue Processing** column, click the cell, and then select **Yes** or **No** from the list. This option indicates whether the system will try to use other voice processor regions if no idle queue processing extensions are found on all the voice processors belonging to the preferred voice processor region.
5. Repeat step 4 for every destination that you want to enter.
 6. Click **Sort** to put the destinations in the order in which they are processed by the system.
 7. Click **OK**.

12.4.3 Configuring the Call Director default navigation

You can configure the navigation keys that can be used globally for Call Director components in workflows. A navigation key is a digit on the telephone that a caller can enter to move from one Call Director component in a workflow to another. You can choose a subset of these keys for each Call Director component that you configure.

Before you begin, the .wav files that you want to use must be configured and installed on the main server machine (see [Section 12.3.3, "Configuring a .wav file", on page 285](#)).

NOTE: In a multitenant environment, only a business unit administrator can configure the default navigation. For details, see [Section 19.3, "Administrator roles in a multitenant environment", on page 392](#).

To configure the Call Director default navigation:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Call Director**.
3. Click the **Interaction** tab.

Working with Call Director

Configuring the Call Director options

4. Under **Default Navigation**, select the check box for each function that you want to make available to a caller. If you want to change the key assigned to the function, click the cell in the **Key** column and select the key from the list. You can choose from the following functions:

- **Operator** – Enables the caller to transfer to the Operator.
- **Return to Root Step** – Enables the caller to return to the first interactive component in the routing strategy workflow or queue processing workflow.
- **Repeat** – Enables the caller to repeat the current component.
- **Previous** – Enables the caller to return to the previous interactive component. If a caller is at the first component, the component action is repeated.
- **Help** – Enables the caller to listen to a .wav file containing help for the routing strategy workflow or queue processing workflow.

IMPORTANT: If the same key is used for Help and another function, the Help will always take precedence over the other function. We recommend that you always use the asterisk (*) key to provide Help for the Call Director feature.

5. If you selected the **Operator** function, do the following:
 - In the **Operator Queue** list, click the queue that the call is forwarded to when the caller presses the Operator key.
 - In the **Operator transfer file** list, click the .wav file that plays when the caller is transferred to the operator.

NOTE: If you are connected to a production database, you can click  to play the .wav file. You cannot play .wav files when you are connected to a design database.

6. If you selected the **Help** function, in the **Help file name** list, click the .wav file that plays when the caller accesses the help.
7. Click **OK**.

12.4.4 Configuring the Call Director responses

You can configure the Call Director responses that are used when a caller gives no response, or an invalid response, to a Call Director component in a routing strategy workflow or queue processing workflow.

Before you begin, the .wav files that you want to use must be configured and installed on the main server machine (see [Section 12.3.3, "Configuring a .wav file", on page 285](#)).

NOTE: In a multitenant environment, only a system administrator can configure the Call Director responses. For details, see [Section 19.3, "Administrator roles in a multitenant environment", on page 392](#).

To configure the Call Director responses:

1. On the **Tools** menu, click **Options**.
 2. In the left pane, under **System Settings**, click **Call Director**.
 3. Click the **Interaction** tab.
 4. Under **Response Attempts**, in the **Maximum number** box, type or select the maximum number of times the system will accept no response from a caller before transferring the call to the error queue. You can specify a number between 1 and 9.
 5. Under **No Response**, do the following:
 - In the **Maximum time** box, type or select the maximum amount of time, in seconds, that the system will wait for input from a caller before determining there is no response. You can specify a value between 1 and 60 seconds.
 - In the **Message file name** list, select the .wav file that plays when the caller does not respond within the specified amount of time. You can override this .wav file in a specific workflow diagram (see [Section 9.4.1, "Overriding the default Call Director settings", on page 211](#)).
-
- NOTE:** If you are connected to a production database, you can click  to play the .wav file. You cannot play .wav files when you are connected to a design database.
-
6. Under **Invalid Response**, in the **Message file name** list, select the .wav file that plays when the caller presses an incorrect telephone button. You can override this .wav file in a specific

Working with Call Director

Configuring the Call Director options

workflow diagram (see [Section 9.4.1, “Overriding the default Call Director settings”](#), on page 211).

7. Click **OK**.

13 Working with the callback feature

This chapter introduces the callback feature and provides instructions on working with configurable callback options in the Manager application.

The callback feature is a licensed feature that allows you to provide users and customers with the ability to generate callbacks. A callback is a request for a return call that is usually based on a customer's previous interaction with the contact center.

A callback can be generated in the following ways:

- A callback request is generated as part of the workflow using a Create Callback component. For details on the Create Callback component, see the *Manager Help*.
- A voice queue can be configured so that a callback is created automatically when a customer abandons a call. For details, see [Section 10.3.1, "Configuring the general queue information", on page 241](#). This method of callback generation assumes that you have ANI numbers coming into the communication platform.

NOTE: Support is provided for additional ways of creating callbacks programmatically, for example, by having an IVR gather contact information to generate a callback. Contact your service representative for details.

- A customer generates a callback request from a Web page. For details, see [Section 13.3.3, "Configuring the Web callback settings", on page 305](#).
- OpenScape Contact Center automatically imports a list of callbacks to be scheduled. For details, see [Section 13.5, "Importing callbacks from an outbound list", on page 308](#).

NOTE: We recommend that you configure callback-specific agents in a separate ACD group, UCD group, hunt group, or ACD queue on the communication platform (depending on the type of platform) to prevent unwanted backup routing.

To handle callbacks, you must set up callback-specific queues.

13.1 Callback processing

Regardless of how it is created, each callback gets scheduled for a specific time interval on a specific day. At the scheduled time, the callback is enqueued to a callback queue. The callback queue to which the callback is directed depends on how the callback was created:

- For callbacks created during the processing of a routing strategy or queue processing workflow, the queue is specified in the Create Callback component.
- For voice queues configured to create a callback when a customer abandons a call, the voice queue also specifies the target callback queue.
- For callbacks created from a Web page, a set of HTML template pages are provided that let you specify the target callback queue among other things.

NOTE: For information on configuring a callback queue, see [Section 10.3, “Configuring a queue”, on page 240](#).

The queue step execution attempts to find a user who is able to handle the callback. When an eligible and available user is found, the callback is assigned to that user. A screen pop with details on the callback is presented to the user.

With respect to the callback settings and options configured using the Manager application, the key aspects of user options are:

- If the user does not have permission to preview the contact to view more details, the basic contact details will be displayed for a configurable interval and then the call to the customer will be automatically initiated.
- If the user has permission to preview the contact, the user can accept or delete the contact. If the user does not accept or delete the contact within a configurable interval, the callback will be queued.
 - If the user deletes the callback, a site-defined Delete reason must be provided. This completes processing of the callback.
 - If the user accepts the callback and the call cannot be completed, the user can schedule a retry either immediately or at a later time. The number of retries that can be attempted is configurable, and each time the user requests a retry, a site-defined Retry reason must be provided.

- If the user accepts the callback and the call to the customer is established successfully, the user can handle the contact in the same way that any other call is handled. When the user disconnects, the user must indicate that the callback was handled successfully or schedule a retry.

13.2 Configuring the callback resources

You must configure various resources that impact the callback feature.

NOTE: Your initial callback configuration is typically set up by your service representative. For information on the setup tasks, see the *Communication Platform Integration Guide*.

13.2.1 Configuring a Retry reason

A Retry reason is an explanation that a user can select when a callback is unsuccessful and must be retried. Retry reasons are commonly used to indicate conditions such as no answer or busy line.

The Manager application provides a set of predefined Retry reasons. You cannot delete or rename these Retry reasons, although you can modify their descriptions.

NOTE: To create or change a Retry reason, you must have Full or Modify access, respectively, for the **Retry reasons** Manager permission.

To configure a Retry reason:

1. On the **File** menu, point to **New**, then **Design Center**, then **Callback**, and then click **Retry Reason**.
2. In the **Name** box, type a unique name for the Retry reason.
3. In the **Description** box, type a description for the Retry reason.
4. In the **Retry Interval** box, type the number of hours and minutes after which the system will retry the callback.
5. Click **OK**.

13.2.2 Configuring a Delete reason

A Delete reason is an explanation that a user can select when deleting a callback. Delete reasons are commonly used to indicate conditions such as the user recognizing an invalid telephone number.

The Manager application provides a set of predefined Delete reasons. You cannot delete or rename these Delete reasons, although you can modify their descriptions.

NOTE: To create or change a Delete reason, you must have Full or Modify access, respectively, for the **Delete reasons** Manager permission.

To configure a Delete reason:

1. On the **File** menu, point to **New**, then **Design Center**, then **Callback**, and then click **Delete Reason**.
2. In the **Name** box, type a unique name for the Delete reason.
3. In the **Description** box, type a description for the Delete reason.
4. Click **OK**.

13.2.3 Configuring an excluded number

You can configure a list of telephone numbers that are excluded from callbacks. For example, you should exclude emergency numbers, such as the numbers for ambulance and police.

NOTE: To create or change an excluded number, you must have Full or Modify access, respectively, for the **Excluded numbers** Manager permission.

NOTE: In a multitenant environment, only a system administrator can configure an excluded number. For details, see [Section 19.3, "Administrator roles in a multitenant environment"](#), on page 392.

To configure an excluded number:

1. On the **File** menu, point to **New**, then **Design Center**, then **Callback**, and then click **Excluded Number**.
2. In the **Name** box, type a unique name for the excluded number.
3. In the **Telephone number** box, type the telephone number you want to exclude from callbacks. 
4. Click **OK**.

13.3 Configuring the callback options

Use the callback options to configure the default settings for the callback feature. For details, see the following topics:

- [Section 13.3.1, “Configuring the general callback settings”, on page 301](#)
- [Section 13.3.2, “Configuring the callback routing schedule”, on page 304](#)
- [Section 13.3.3, “Configuring the Web callback settings”, on page 305](#)
- [Section 13.3.4, “Configuring the outbound options”, on page 306](#)

NOTE: To configure any of the callback options, you must have Full or Modify access for the associated Manager permission.

13.3.1 Configuring the general callback settings

You can configure various general options for callbacks, such as the automatic dial delay, and the options that affect the automatic generation of a callback when a customer abandons a call. For information on configuring a voice queue to automatically create a callback on abandon, see [Section 10.3.1, “Configuring the general](#)

Working with the callback feature

Configuring the callback options

[queue information”, on page 241.](#)

NOTE: In a multitenant environment, only a system administrator can configure the general callback settings, except for the Caller ID settings, which can only be configured by a business unit administrator. For details, see [Section 19.3, “Administrator roles in a multitenant environment”, on page 392.](#)

To configure the general callback settings:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Callback**.
3. On the **General** tab, under **Callback Settings**, do the following:
 - In the **Automatic dial delay**, type or select the amount of time the system waits after offering a callback to a user who does not have permission to preview contacts, before automatically dialing the callback. This gives the user some time to review the callback information. The maximum delay is 60 seconds.
 - In the **Maximum time to enter result** box, type or select the amount of time the user has after disconnecting a callback to indicate that the callback was successful or to schedule a retry, before the user is placed in Unavailable routing state.
 - To translate the number to be called based on your TAPI configuration, select the **Format Callback Number** check box. Some communication platforms can be configured to provide dialable calling numbers so that no translation is required. In this case, you would clear the check box to use the calling number directly, without translation. If you do not have TAPI configured, selecting this check box does not have any effect.
4. Under **Caller ID** (available only when connected to an OpenScape Voice, OpenScape 4000, or HiPath 4000), do the following:
 - In the **Caller name** box, type the name that is presented to the called party when a callback is initiated.

- In the **Caller telephone number** box, type the telephone number that the called party can use to contact the calling party who initiated the callback.

NOTE: You can specify the **Caller telephone number** only and leave the **Caller name** blank. However, if you specify the **Caller name**, you must also specify the **Caller telephone number**.

NOTE: If the propagation of the caller name or caller telephone number is blocked by the telecommunications provider, the information will not be displayed to the customer.

5. Under **Create Callback on Abandon**, do the following:

- In the **Abandon Threshold** box, type or select the minimum amount of time that a call must be in queue before being abandoned, for a callback to be created.
- In the **Default Priority** box, type or select the default priority of the callback that is created. You can specify a value between 1 and 100, where 100 is the highest priority.

NOTE: If the **Create callback on call abandon** option is enabled for a queue and a call in the associated queue is abandoned by a caller, the system checks the callback schedule to verify that a callback can be handled within the next 24 hours. If a callback is created, it remains active for 24 hours after the call was abandoned and is then deleted by the system.

6. Under **Duplicate Entries**, select the **Prevent duplicate callback** check box if you want the system to allow only one callback entry with the same destination telephone number and queue.

NOTE: If the **Prevent duplicate callback** option is enabled, the Callback Server still creates an exit point for the Create Callback component when a duplicate callback is encountered.

7. Under **Schedule**, configure the callback schedule (see [Section 13.3.2, "Configuring the callback routing schedule", on page 304](#)).
8. Click **OK**.

13.3.2 Configuring the callback routing schedule

The callback routing schedule restricts the hours of operation during which a callback can be scheduled within the contact center. You can configure the default callback routing schedule, as well as exceptions to the default schedule.

NOTE: In a multitenant environment, only a system administrator can configure the callback routing schedule. For details, see [Section 19.3, "Administrator roles in a multitenant environment"](#), on page 392.

To configure the callback routing schedule:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Callback**.
3. On the **General** tab, under **Schedule**, click **Edit Schedule**.
4. In the **Callback Routing Schedule** dialog box, double-click the day you want to configure, and then edit the active time range for the day.

NOTE: You can also drag the start or end point of an active range to change the range.

5. Optionally, click the **Exceptions** tab to create an exception to the default schedule. An exception overrides the schedule for the entire day.
 - a) On the calendar, click the day for which you want to schedule an exception, for example, a national holiday. The Default row shows the default schedule for that day.
 - b) Select the **Override** check box.
 - c) In the **Override** row, double-click a cell, and then edit the active time range for the override schedule. Click **OK**.

6. Use the **Summary** tab to view the schedule by status or by day of the week.
 - To see the days and times when the schedule is active or inactive, expand **By Status**, and then click **Active** or **Inactive**, respectively.
 - To see the schedule for that day, expand **By Day**, and then click the day of the week.
7. Click **OK**.

13.3.3 Configuring the Web callback settings

Your company can provide a Web interface where customers can request information or support. These customer requests can be used by OpenScape Contact Center to generate callbacks.

This section describes how to enable the Web interface and configure the port that the Web Interaction Server uses to communicate with the corporate Web server.

IMPORTANT: When you are connected to the production database, if you change the port number, you will be required to restart the Web Interaction Server on the main server machine.

NOTE: In a multitenant environment, only a system administrator can configure the Web callback settings. For details, see [Section 19.3, "Administrator roles in a multitenant environment"](#), on page 392.

To configure the Web callback settings:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Callback**.
3. Click the **Web Callback** tab.
4. To enable the generation of callbacks via the Web interface, under **Web Callback**, select the **Enable** check box.
5. Under **Port Settings**, in the **Port number** list, select the port number that the Web Interaction Server uses to communicate with the corporate Web server for Web callback requests. You can select an unsecured or a secured (TLS-enabled) port. For more information, see [Section 20.3.3, "Configuring the Web server settings"](#), on page 412.

Working with the callback feature

Configuring the callback options

6. Click **OK**.

13.3.4 Configuring the outbound options

If the contact center is licensed for the outbound feature (the callback feature must also be licensed), you can configure the system to automatically import a text file that contains a list of customer callbacks to be scheduled. For details, see [Section 13.5, "Importing callbacks from an outbound list"](#), on page 308.

NOTE: In a multitenant environment, only a system administrator can configure the outbound options. For details, see [Section 19.3, "Administrator roles in a multitenant environment"](#), on page 392.

To configure the outbound feature:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Callback**.
3. Click the **Outbound** tab.
4. To enable the outbound feature, under **Automatic Import of Outbound List**, select the **Enable** check box.
5. In the **Outbound path** box, type the location of the outbound list in one of the following formats:
 - If the outbound list resides on the main server machine, type the full path to the folder containing the outbound list.
 - If the outbound list resides on a remote machine, type a fully qualified network identifier in the form `\\machine_name\folder_share_name`. In this case, you must enable access to the remote machine. For details, see the *Manager Help*.
6. In the **File name** box, type the name of the outbound list including a valid extension, for example, **outbound.txt**.
7. To validate the path and file name, click **Test**. The application will display a message indicating one of the following three conditions:
 - The outbound list exists in the specified location and is readable.
 - The outbound list cannot be found in the specified location.

- The location specified for the outbound list does not exist or is not readable.

NOTE: If you do not click **Test**, the path and file name will be validated when you click **OK**.

8. Click **OK**.

13.4 Generating a Scheduled Callback List

You can generate a list of callbacks that are scheduled to be queued in the future and have not yet been queued or routed. The list can be generated for specific callback types and queues.

NOTE: To generate a Scheduled Callback List, you must have the **Scheduled callback list** Manager permission.

To generate a Scheduled Callback List:

1. To access the **Scheduled Callback List** dialog box, do one of the following:
 - On the **Actions** menu, click **Scheduled Callback List**.
 - On the **View** menu, point to **Activity Reports**, and then click **Scheduled Callback List**.
2. Under **Criteria**, do the following:
 - In the **Origin Type** box, select where the callbacks you want to report on originated from. You can select one of the options in the list or **All**.
 - In the **Start** area, select the start date and time for the interval the report is to cover. The time is specified using a 24-hour clock.
 - In the **End** area, select the end date and time of the interval.
3. Under **Queues**, select the queues for which you want to see the scheduled callbacks.
4. On the **Actions** menu, click **Find Now**.

13.5 Importing callbacks from an outbound list

Outbound is a licensed feature that is supported only when the OpenScape Contact Center system is licensed to handle callbacks.

The outbound feature allows you to configure the system to automatically import a text file (called an outbound list) that contains a list of customer callbacks to be scheduled. When this feature is enabled, the OpenScape Contact Center system scans a folder every five minutes, looking for a specified file. When the system finds the file, it automatically imports the file, schedules the callbacks, and then renames the file based on its time stamp.

While the default scanning frequency is once every five minutes, if the file contains more than three hundred callbacks, the next scan will be delayed one second for each additional callback record in the outbound list. For example, if the most recent outbound list contained 900 records, OpenScape Contact Center will not scan for an outbound list for the next 10 minutes (600 seconds).

The outbound list is normally generated by an external system, such as an SAP, although you can create a custom outbound list, if required. The outbound list must meet certain requirements. For details, see [Section 13.5.2, "Creating an outbound list", on page 309](#).

For reporting purposes, callbacks created in this way show Outbound as the origin type.

NOTE: When the system is configured for high availability (warm standby), and a failure occurs while the outbound list is being imported, the system might be able to restart the import after a failover, provided that the backup server machine can access the path to the outbound list (see [Section 13.3.4, "Configuring the outbound options", on page 306](#)). To ensure that duplicate callbacks are not created when this occurs, you should always select the **Prevent duplicate callback** check box (see [Section 13.3.1, "Configuring the general callback settings", on page 301](#)).

13.5.1 Outbound list error handling

During import, if OpenScape Contact Center encounters a record that is in error, no callback will be created for that record. The record is written to a file named *outbound.log*, where *outbound* is the name you specify as the name of the file containing the outbound list. For details on naming the outbound list, see [Section 13.3.4, "Configuring the outbound options", on page 306](#).

The error file is located in the same location as the file containing the outbound list. A message is logged in the System Monitor application indicating that an error was encountered during the import.

13.5.2 Creating an outbound list

You can create an outbound list manually using a word processor, or automatically, for example, by running a script against the results of a database query. In any case, the outbound list must meet the requirements provided in [Section 13.5.2.1, "Outbound list requirements", on page 310](#).

NOTE: If you are creating an outbound list using a word processor, we recommend that you use Microsoft Word because it will accept and save the required ASCII characters properly. For details, see [Section 13.5.2.4, "Special character treatment", on page 314](#).

The source of information that you use to create an outbound list depends on your purpose. If you are using the outbound feature to retry callbacks that have expired, the information used to create an outbound list is contained in the OpenScape Contact Center database. You could use one of the following methods to obtain the information used to create your outbound lists:

- Generate a Detailed Callback (Historical) Report, save it in text format, and then modify the text file.
- Connect to the OpenScape Contact Center database using an SQL client, access the reporting data, and generate a custom list of callbacks. The database tables can be accessed through standard database protocols supported by Informix. The results of the query can be formatted as an outbound list. For guidance in this area, contact your service representative.

Similarly, if OpenScape Contact Center is working in conjunction with an enterprise system such as a CRM product from SAP or Siebel, your purpose in generating an outbound list may be independent of OpenScape Contact Center operation. For example, you might be interested in contacting leads generated for a particular campaign. You might therefore be starting your outbound list from a results file generated by querying a third party database.

Working with the callback feature

Importing callbacks from an outbound list

13.5.2.1 Outbound list requirements

The outbound list is a text file that contains a list of callback records. The text file must meet the following requirements:

- It must contain one record per line, to a maximum of 24,000 lines. If the **Prevent duplicate callback** option is enabled, duplicate records are not allowed. For details on that option, see [Section 13.3.1, "Configuring the general callback settings", on page 301](#).
- The fields in each line must be separated by a | character. Each record must be terminated by a line terminator.
- Mandatory fields must not be empty.
- If a nonmandatory field is not included in the record, the | delimiter must be present anyway. For example, the Customer name, Description, Queue name portion of a record in which no description is to be provided, could be **Blair Parsons||Technical Support|**
- The schedule date and time must be specified in the local time of the OpenScape Contact Center server machine.
- Schedule times cannot overlap each other; however, they must overlap part of the callback schedule.
- Comment lines that begin with // will be ignored.

13.5.2.2 Outbound list callback record format

In general, each callback record in the outbound list does the following:

- Identifies the customer
- Provides details on how the callback is to be enqueued
- Lets you attach contact data to the callback
- Provides one or more schedules that specify when the callback is to be attempted

Each record in the list consists of a set of fields delimited by the | character. The following table provides details on the fields that make up a callback record.

Fieldname	Mandatory	Max. # of characters	Description
Customer name	Y	75	The name of the customer to contact.
Description	N	100	The callback caption.
Business unit name*	Y	32	The name of the business unit. *This field is required only in a multitenant environment. In a non-multitenant environment, this field is not supported and must not be present. See the examples provided in Section 13.5.2.3, "Callback record examples" , on page 313.
Queue name	Y	32	The name of the callback queue to which this contact is to be enqueued.
Priority	N	3	The initial priority, 1 to 100, of the contact. If not specified, the default callback priority will be used.
Contact data	N	1000	Contact data consisting of one or more key/value pairs. The general form is: <SEP1><key><SEP2><value><SEP1> <key><SEP2><value><SEP1> ... <SEP1><key><SEP2><value><SEP1> where: • <SEP1> is ASCII code 16, and is used to separate each key/value pair from the other key value pairs. • <SEP2> is ASCII code 15, and is used to separate the key component from the value component in a key/value pair. • <key> is the key component of a key/value pair (max. 32 characters). • <value> is the value component of a key/value pair (max. 128 characters). For an example, see Section 13.5.2.3, "Callback record examples" , on page 313. For information on how to encode ASCII codes 15 and 16, see Section 13.5.2.4, "Special character treatment" , on page 314.

Table 14 Format of callback records in an outbound list

Working with the callback feature

Importing callbacks from an outbound list

Fieldname	Mandatory	Max. # of characters	Description
Reserve user name	N	67	The name of the user for which to reserve the callback in the format <i>Lastname, Firstname</i> , for example, Smith, George . If the name specified is duplicated or not found in OpenScape Contact Center, this field will be ignored.
Reserve time	N	8	The time to reserve the contact, in <i>DD:HH:MM</i> format. If in error, the default reserve time (240 minutes) will be used.
Schedule 1 start date	Y	10	The start date, in local time, of the interval during which this callback will be attempted, in <i>YYYY/MM/DD</i> format.
Schedule 1 start time	Y	5	The start time, in local time, of the interval during which this callback will be attempted, in <i>HH:MM</i> 24-hour format.
Schedule 1 end date	Y	10	The end date, in local time, of the interval during which this callback will be attempted, in <i>YYYY/MM/DD</i> format.
Schedule 1 end time	Y	5	The end time, in local time, of the interval during which this callback will be attempted, in <i>HH:MM</i> 24-hour format.
Schedule 1 telephone number	Y	32	The telephone number to which this callback will be attempted. The format is: +CC (AC) SN--EXT where CC is the country code, AC is the area code, SN is the subscriber number, and EXT is an extension that must be dialed by a user. The +CC and --EXT components are optional. For examples of valid telephone numbers, see Section 13.5.2.3, "Callback record examples" , on page 313.
Schedule n start date	N	One or more additional schedules for the callback can be provided. For each additional schedule provided, the start date, start time, end date, end time, and telephone number components must be provided in the same format as specified for the Schedule 1 components.	
Schedule n start time	N		
Schedule n end date	N		
Schedule n end time	N		
Schedule n telephone number	N		

Table 14

Format of callback records in an outbound list

13.5.2.3 Callback record examples

The following callback record examples contain only mandatory fields. The optional Description, Priority, Contact Data, Reserve User Name, and Reserve Time fields are not included and a single schedule is provided.

Example – non-multitenant environment

```
Blair Parsons|Sporting Goods||||2008/04/26|18:00|2008/04/26|20:00|(902) 555-1212
```

```
Alastair Macdonald|Hardware||||2008/04/26|18:00|2008/04/26|20:00|(902) 555-1313
```

Example – multitenant environment

```
Blair Parsons|Business Unit 1|Sporting Goods||||2008/04/26|18:00|2008/04/26|20:00|(905) 555-1212
```

```
Alastair Macdonald|Business Unit 1|Hardware||||2008/04/26|18:00|2008/04/26|20:00|(902) 555-1313
```

The following is a contact data example of two key/value pairs in an outbound list callback record. The <ASCII 15> and <ASCII 16> placeholders are used to represent ASCII characters 15 and 16, respectively:

```
|<ASCII 16>ACCT_NUM<ASCII 15>123456<ASCII 16>BALANCE<ASCII 15>0.00<ASCII 16>|
```

The following are examples of valid formats for dialable numbers that can be included in the Schedule Telephone Number fields:

- + 1 (905) 6957900
- +1 (905)6957900
- + 1 (905) 695 7900
- + 1 (905) 695-7900
- (905)6957900
- (905) 6957900
- (905) 695 7900
- (905) 695-7900
- (89) 12345
- +49(89)12345

Working with the callback feature

Importing callbacks from an outbound list

13.5.2.4 Special character treatment

The [contact data](#) field in an outbound list callback record uses ASCII code 15 and ASCII code 16 characters as delimiters. For details, see [Section 13.5.2.2, “Outbound list callback record format”, on page 310](#).

NOTE: If you are creating an outbound list using a word processor, we recommend that you use Microsoft Word because it will accept and save the ASCII characters properly.

To type the special characters:

1. Ensure that the keyboard's **NUM LOCK** feature is enabled.
2. Type **ALT-015** or **ALT-016**, as required, using the keyboard's number pad.
3. When your outbound list is complete, save the document as plain text and when you are prompted for text encoding, accept the defaults.

13.5.3 Enabling the outbound feature

After you have established a plan for creating outbound lists, you must enable the outbound feature and specify the location of the outbound list. For details, see [Section 13.3.4, “Configuring the outbound options”, on page 306](#).

14 Working with the e-mail feature

This chapter introduces the e-mail feature and provides instructions on working with configurable e-mail resources in the Manager application.

The e-mail feature is a licensed feature that allows you to provide customers with the ability to request assistance from your contact center through e-mail messages. The customer submits a request to a particular e-mail address and the e-mail message is routed through your corporate e-mail server to the OpenScape Contact Center E-mail Server. All e-mail messages are stored in a single mailbox on the corporate e-mail server. You need to configure multiple e-mail destinations if you want to have multiple e-mail addresses for your contact center.

The OpenScape Contact Center E-mail Server and the corporate e-mail server communicate using IMAP4 (Internet Messaging Access Protocol). The OpenScape Contact Center applications and the corporate e-mail server also use IMAP4 to retrieve and process e-mail messages. Message attachments are retrieved using separate IMAP4 and MIME functions. Reply e-mail messages are sent to customers using an SMTP (Simple Message Transfer Protocol) interface.

NOTE: No virus protection is provided by the OpenScape Contact Center E-mail Server. Protection should be provided by the corporate e-mail server and the operating system.

Queues, a routing strategy workflow, and optionally queue processing workflows, must be created specifically for e-mail messages.

14.1 E-mail workflow considerations

Within OpenScape Contact Center, the routing of incoming e-mail messages is initiated with an e-mail routing strategy workflow (see [Section 9.4, "Configuring a routing strategy workflow", on page 209](#)). While e-mail workflows can make use of common workflow features, there are also a number of options available specifically for working with e-mail messages:

- E-mail messages can be categorized by the extraction of relevant keywords and phrases in the e-mail message. OpenScape Contact Center can then route the e-mail message to the appropriate queue based on the e-mail category. For more information, see [Section](#)

Working with the e-mail feature

E-mail workflow considerations

[14.1.1.1, "Working with categories", on page 316.](#)

- Other e-mail component types let you automate e-mail actions. Responses and acknowledgments can be generated and delivered while the e-mail message is being processed by the routing strategy workflow or is enqueued. For more information, see [Section 14.1.2, "Other e-mail workflow components", on page 318.](#)

Ultimately, an e-mail routing strategy workflow must direct the e-mail message as follows:

- Direct the e-mail message to a queue, to wait to be handled by a user.
- Discard the e-mail message, providing a site-defined discard reason (see [Section 14.2.2, "Configuring a Discard reason", on page 320.](#))
- Auto-respond to the e-mail message.

After an e-mail message is enqueued, it is the responsibility of the queue to find an available user who is eligible to handle the e-mail message.

E-mail messages will be automatically discarded by the OpenScape Contact Center E-mail Server under the following circumstances:

- The e-mail message does not contain a From address.
- The From address contains the text "postmaster" or "microsoftexchange".
- The To address does not contain an e-mail address that has been configured as a destination.

14.1.1 Working with categories

You can route an e-mail message, or base subsequent workflow processing, on the presence of keywords in the e-mail message. This is accomplished with two types of OpenScape Contact Center resources:

- **Categories** – A category consists of one or more keyword/ component pairs. For details on how to set up categories, see [Section 14.2.1, "Configuring an e-mail category", on page 319.](#)
- **Category Decision components** – A Category Decision component tests an e-mail message for a match against one or more category criteria and passes execution to the next component based on the first criteria match it finds. Each criterion is a logical

expression defining a condition based on categories that apply to the e-mail message. For details on how to configure Category Decision components, see the *Manager Help*.

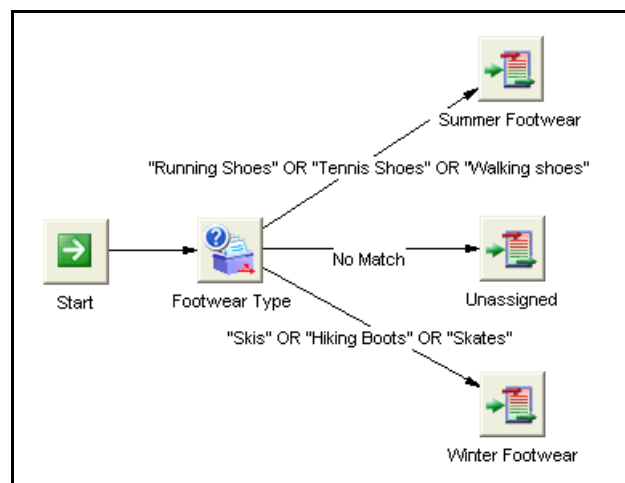
NOTE: You can use confidence levels to create more precise categorization. For details, see [Section 14.3.5, "Displaying the e-mail confidence levels"](#), on page 331.

For example, in a contact center that sells footwear, you may have queues specializing in winter and summer footwear. You could set up categories according to types of footwear you sell:

- Skis
- Skates
- Hiking boots
- Tennis shoes
- Running shoes
- Walking shoes

You could then use a Category Decision component to route e-mail messages as follows:

- If the e-mail message contains any of the keywords Skis, Skates, or Hiking boots, direct the contact to the Winter Sportswear queue.
- If the e-mail message contains any of the keywords Tennis shoes, Running shoes, or Walking shoes, direct the contact to the Summer Sportswear queue.
- Contacts for which no specific match was found could be directed to an **Unassigned** queue.



14.1.2 Other e-mail workflow components

In addition to the Category Decision component, the following e-mail components can also be used in e-mail workflows:

- **Auto-acknowledgment** – You can use an Auto-acknowledgment component to send an automatic reply to a customer's e-mail message using the contents of an Auto-acknowledgment template.
- **Auto-response** – You can use an Auto-response component to send an automatic reply to a customer's e-mail message using the contents of a Response template.
- **Auto-suggestion** – You can use an Auto-suggestion component to create a draft reply to a customer's e-mail message using the contents of a Response template.

NOTE: The Auto-suggestion feature automatically opens the reply screen to the e-mail message with a suggested template. Therefore the attachments are not presented in the e-mail context.

- **Discard** – You can use a Discard component to discard an e-mail message for a selected reason.
- **Reply Decision** – You can use a Reply Decision component to determine the routing of an e-mail message based on whether or not the e-mail message is a reply to an existing conversation.

Many of these components are built from site-defined templates. For more information, see [Section 14.2.3, "About e-mail templates", on page 321](#).

For details on how to configure these components, see the *Manager Help*.

14.2 Configuring the e-mail resources

You must configure various resources that impact the e-mail feature.

NOTE: Your initial e-mail configuration is typically set up by your service representative. For information on the setup tasks, see the *System Management Guide*.

14.2.1 Configuring an e-mail category

A category defines the keywords that OpenScape Contact Center searches for in an incoming e-mail message to help route the e-mail message to the appropriate queue. You can define a category to search for the keywords in the subject of the e-mail message, in the body, or both.

For example, you can configure two categories as follows:

- If the keyword “sales” is found in the subject or body, the e-mail message is associated with the sales category.
- If the keywords “support”, “service”, or “help” are found in the subject or body, the e-mail message is associated with the support category.

NOTE: To create or change an e-mail category, you must have Full or Modify access, respectively, for the **Categories** Manager permission.

You can use categories with Category Decision components in a workflow, as a step in routing an incoming e-mail message. For a detailed introduction to categories and the use of categories in workflows, see [Section 14.1.1, “Working with categories”, on page 316](#).

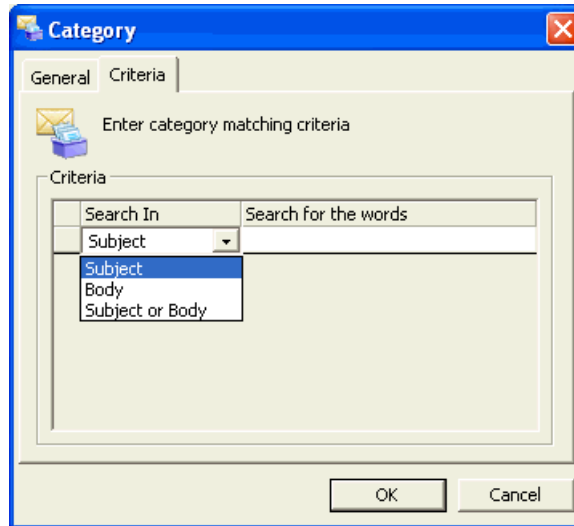
To configure a category:

1. On the **File** menu, point to **New**, then **Design Center**, then **E-mail**, and then click **Category**.
2. On the **General** tab, under **Details**, do the following:
 - In the **Name** box, type a unique name for the category.
 - In the **Description** box, type a description for the category.

Working with the e-mail feature

Configuring the e-mail resources

3. Click the **Criteria** tab.



4. For each keyword that you want to define, do the following:
 - In the **Search In** column, click the item and select the message location from the list. You can choose **Subject**, **Body**, or **Subject or Body**.
 - In the **Search for the words** column, type the keyword that you want to search for.
 - Press **TAB** or **ENTER** to create another entry.
5. Click **OK**.

14.2.2 Configuring a Discard reason

A Discard reason is an explanation that the users and workflows can specify when discarding an e-mail message.

The Manager application provides a set of predefined Discard reasons. You cannot delete or rename these Discard reasons, although you can modify their descriptions.

To configure a Discard reason:

1. On the **File** menu, point to **New**, then **Design Center**, then **E-mail**, and then click **Discard Reason**.
2. In the **Name** box, type a unique name for the Discard reason.
3. In the **Description** box, type a description for the Discard reason.
4. Click **OK**.

14.2.3 About e-mail templates

Workflow processing for e-mail messages can include automatic responses, as well as suggested drafts created automatically for subsequent processing. These are built, programmatically, using templates. Prolog and Signature templates can be assigned at the queue level (see [Section 10.3.4, “Configuring the queue overrides”, on page 249](#)).

You can configure the following five types of e-mail templates:

- **Prolog** – This type of template is inserted at the beginning of a reply e-mail message. For example, “Please do not remove the ticket number in the subject line above. The ticket number enables us to track responses that you send us in the context of your original message.”
- **Signature** – This type of template is inserted at the end of a reply e-mail message. For example:

Sales - My Company
sales@mycompany.com
Visit our Web site at www.mycompany.com
- **Response** – This type of template is selected when you configure an Auto-response or an Auto-suggestion component. It can be used in the following ways:
 - To send an automatic response to an e-mail message when the customer asks a simple question that can be answered automatically. For example, “Thank you for contacting mycompany.com. For information on how to order our products, visit [www.mycompany.com/products](#).”
 - To insert suggested text into a reply e-mail message when the customer asks a frequently asked question.

You must associate a Response template with one or more queues. When a user responds to an e-mail message routed by one of the associated queues, this template will be used to create the draft e-mail message. The E-mail Server creates the draft e-mail message based on the specified Response template; however, it uses the reply prefix, conversation ID label, and original message text label configured in the queue. If these items are not configured in the queue, the E-mail Server will use the default values configured at the system level.

- **Auto-acknowledgment** – This type of template is selected when you configure an Auto-acknowledgment component. It is used to send an automatic response to an e-mail message to let the customer know that their message has been received. For example “Thank you for contacting mycompany.com. A qualified agent is investigating your inquiry and will contact you shortly.”
- **New Message** – This type of template is inserted when a user creates a new e-mail message.

14.2.4 Configuring an e-mail template

There are five different types of e-mail templates that you can configure (see [Section 14.2.3, “About e-mail templates”, on page 321](#)). Some templates are used when users reply to e-mail messages, while others are used by the system to send automatic responses to e-mail messages.

NOTE: To create or change an e-mail template, you must have Full or Modify access, respectively, for the associated Manager permission.

E-mail templates can be created in both HTML and plain text. HTML format allows you to include special formatting, such as bold text, bulleted and numbered lists, pictures, and URLs. The system assigns a template to an incoming e-mail message based on the format of the original message. We therefore recommend that when you create a new template, you configure both the HTML and the plain text sections of the template.

E-mail templates have a maximum size of 500 KB.

To configure an e-mail template:

1. On the **File** menu, point to **New**, then **Design Center**, then **E-mail**, and then click one of the template types:
 - **Prologs**
 - **Signatures**
 - **Responses**
 - **Auto-acknowledgments**
 - **New Messages**

2. Under **Details**, do the following:
 - In the **Name** box, type a unique name for the template.
 - In the **Description** box, type a description for the template.
3. To create HTML content, in the **Message-HTML** box, do any of the following:
 - Type the required text. You can change the formatting of the text. For details, see the *Manager Help*.
 - Insert a URL. For details, see the *Manager Help*.
 - Insert a logo or picture. For details, see the *Manager Help*.
4. To create content in plain text format, in the **Message-Text** box, type a message.
5. For Response templates only, click the **Queues** tab, and then select the queues for which this Response template can be used. When a user responds to an e-mail message routed by one of the selected queues, this template can be selected to create the draft response text.
6. Click **OK**.

14.2.5 Configuring an e-mail destination

All e-mail messages are stored in a single mailbox on the corporate e-mail server. If you want to have more than one destination e-mail address for your contact center (such as, *sales@company.com* and *support@company.com*), you must configure the e-mail destinations you want to use.

NOTE: To create or change an e-mail destination, you must have Full or Modify access, respectively, for the associated Manager permission.

NOTE: In a multitenant environment, e-mail destinations are initially created by the system administrator and then configured by the business unit administrator. For details, see [Section 19.5.3, “Configuring an e-mail destination in a multitenant environment”](#), on page 398.

NOTE: You specify the default e-mail addresses in the Options dialog box. For details, see [Section 14.3.1, “Configuring the default e-mail routing strategy, queue, and addresses”](#), on page 326.

For each destination you create, you can specify whether the destination will be available for selection by a user when sending a new outgoing e-mail message. When this option is enabled, the destination appears in the From list of an outgoing e-mail message. You can also specify whether the destination is to be monitored so that you can gather statistics and report on the destination.

When you are modifying an existing e-mail destination, you can change only the name and description of the destination. You cannot change the actual destination. If you need to change the destination, you must delete the e-mail destination and create a new one.

To configure an e-mail destination:

1. On the **File** menu, point to **New**, then **Design Center**, then **E-mail**, and then click **Destination**.
2. On the **General** tab, under **Details**, do the following:
 - In the **Name** box, type a unique name for the destination.
 - In the **Description** box, type a description for the destination.
 - In the **E-mail address** box, type the destination e-mail address.

- In the **From text** box, type an alias for the destination e-mail address. This alias appears in the From box when a user replies to an e-mail message.
 - To gather statistics for this destination for reporting purposes, select the **Monitored** check box. When you select this option, the Reports tab becomes active.
3. If you selected the **Monitored** check box, click the **Reports** tab and select the check box for each report that you want to display data about this destination. The list contains only the reports you own, or reports that are owned by users you can monitor.
 4. Click **OK**.

14.2.6 Configuring a monitored source for e-mail

To gather statistics for a particular e-mail source, you must configure the source in OpenScape Contact Center so that it can be monitored.

NOTE: To create or change a monitored source for e-mail, you must have Full or Modify access, respectively, for the associated Manager permission.

NOTE: When you are modifying an existing monitored source, you can change only the name and description of the source. You cannot change the actual source. If you need to change the source, you must delete the monitored source and create a new one.

To configure a monitored source for e-mail:

1. On the **File** menu, point to **New**, then **Design Center**, then **E-mail**, and then click **Monitored Source**.
2. On the **General** tab, under **Details**, do the following:
 - In the **Name** box, type a unique name for the source.
 - In the **Description** box, type a description of the source.
 - In the **Source** box, type the e-mail address you want to monitor.
3. Click the **Reports** tab.

Working with the e-mail feature

Configuring the e-mail options

4. Under **Include this source in these reports**, select the check box for each report that you want to display data about this source. The list contains only the reports you own, or reports that are owned by users you can monitor.
5. Click **OK**.

14.3 Configuring the e-mail options

Use the e-mail options to configure the default settings for the e-mail feature. For details, see the following topics:

- [Section 14.3.1, "Configuring the default e-mail routing strategy, queue, and addresses", on page 326](#)
- [Section 14.3.2, "Configuring the e-mail error queue settings", on page 328](#)
- [Section 14.3.3, "Configuring the e-mail routing schedule", on page 328](#)
- [Section 14.3.4, "Configuring the e-mail message settings", on page 330](#)
- [Section 14.3.5, "Displaying the e-mail confidence levels", on page 331](#)

NOTE: To configure any of the e-mail options, you must have Full or Modify access for the associated Manager permission.

14.3.1 Configuring the default e-mail routing strategy, queue, and addresses

You must specify the following defaults for the e-mail feature:

- **Routing strategy workflow** – The routing strategy workflow that is initially used to route all e-mail messages in the contact center. You can configure the default routing strategy workflow to link to subsequent routing strategy workflows, if required.
- **Queue** – The queue that you want to use as the default option for the no match found (*) entry in a Destination Table component.
- **Incoming e-mail address** – The default e-mail destination for all incoming e-mail messages.

Before configuring these settings, be sure to create the routing strategy workflow (see [Section 9.4, "Configuring a routing strategy workflow", on page 209](#)), queue (see [Section 10.3, "Configuring a queue", on page 240](#)), and e-mail destinations (see [Section 14.2.5, "Configuring an e-mail destination", on page 324](#)) that you want to use as the defaults.

NOTE: In a multitenant environment, only a business unit administrator can configure the default e-mail routing strategy, queue, and addresses. For details, see [Section 19.3, "Administrator roles in a multitenant environment", on page 392](#).

To configure the default e-mail routing strategy, queue, and addresses:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **E-mail**.
3. On the **General** tab, under **Default**, do the following:
 - In the **Routing strategy** list, select the e-mail routing strategy you want to use to initially route all e-mail messages.
 - In the **Queue** list, select the e-mail queue that you want to use as the default option for the no match found (*) entry in a Destination Table component.
 - In the **Incoming e-mail address** list, select the e-mail destination that you want to use as the default e-mail address for all incoming e-mail messages.
 - In the **Outgoing e-mail address** list, select the e-mail destination that you want to use as the default e-mail address in the From list when a user creates an outgoing e-mail message. Only the e-mail destinations for which you have selected the **Available for outgoing** option are available in the list. If you select **<None>**, the user will be forced to select a From address before sending the e-mail message.
4. Click **OK**.

14.3.2 Configuring the e-mail error queue settings

The error queue is the queue to which e-mail messages are routed in the case of recoverable system errors. Recoverable system errors are errors generated by the OpenScape Contact Center servers that cannot be handled by the **Exit on error** option provided in some of the workflow components. If the system detects a recoverable system error in a routing strategy workflow, the e-mail message is routed to the error queue where it can then be routed to an appropriate user.

NOTE: In a multitenant environment, only a business unit administrator can configure the e-mail error queue settings. For details, see [Section 19.3, "Administrator roles in a multitenant environment"](#), on page 392.

To configure the e-mail error queue:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **E-mail**.
3. On the **General** tab, under **Error**, do the following:
 - In the **Queue** list, select the queue to which contacts are directed in the case of recoverable errors.
 - In the **Description** box, type a description for the error queue.
4. Click **OK**.

14.3.3 Configuring the e-mail routing schedule

The e-mail routing schedule restricts the hours of operation during which e-mail messages can be sent and received within the contact center. You can configure the default schedule, as well as exceptions to the default schedule.

NOTE: In a multitenant environment, only a system administrator can configure the e-mail routing schedule. For details, see [Section 19.3, "Administrator roles in a multitenant environment"](#), on page 392.

To configure the e-mail routing schedule:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **E-mail**.
3. On the **General** tab, under **Schedule**, click **Edit Schedule**.
4. In the **E-mail Routing Schedule** dialog box, double-click the day you want to configure, and then edit the active time range for the day.

NOTE: You can also drag the start or end point of an active range to change the range.

5. Optionally, click the **Exceptions** tab to create an exception to the default schedule. An exception overrides the schedule for the entire day.
 - a) On the calendar, click the day for which you want to schedule an exception, for example, a national holiday. The **Default** row shows the default schedule for that day.
 - b) Select the **Override** check box.
 - c) In the **Override** row, double-click a cell, edit the active time range for the override schedule, and then click **OK**.
6. Use the **Summary** tab to view the schedule by status or by day of the week.
 - To see the days and times when the schedule is active or inactive, expand **By Status**, and then click **Active** or **Inactive**, respectively.
 - To see the schedule for that day, expand **By Day**, and then click the day of the week.
 - To see the configured exceptions to the default schedule, click the **Exceptions** folder.
7. Click **OK**.

14.3.4 Configuring the e-mail message settings

You can configure the default prolog, signature, labels and so on, for e-mail messages.

Before you begin, you must create the Prolog and Signature templates that you want to use in your e-mail messages (see [Section 14.2.4, “Configuring an e-mail template”, on page 322](#)).

NOTE: In a multitenant environment, only a business unit administrator can configure the e-mail message settings, and only a system administrator can configure the deferred and consulted e-mail messages and attachments. For details, see [Section 19.3, “Administrator roles in a multitenant environment”, on page 392](#).

To configure the e-mail message settings:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **E-mail**.
3. Click the **Settings** tab.
4. Under **E-mail Message Settings**, do the following:
 - In the **Prolog** list, select the Prolog template that you want to use as the default prolog to an e-mail message.
 - In the **Signature** list, select the Signature template that you want to use as the default e-mail signature.
 - In the **Original message label** box, type the text that you want to appear above the original e-mail message when the user replies to an e-mail message, for example, **Original Message:**.
 - In the **Conversation ID label** box, type the text that you want to appear in front of the Conversation ID when the user replies to an e-mail message. The Conversation ID is an identifier inserted by the OpenScape Contact Center E-mail Server to identify the message thread.
 - In the **Reply prefix** box, type the text that you want to appear at the beginning of the Subject line when the user replies to an e-mail message, for example, **Re:**.

5. Under **Deferred E-mail Messages**, do the following:
 - In the **Maximum number** box, type or select the maximum number of e-mail messages that can be deferred by each user. This number can be exceeded when e-mail messages are automatically deferred by the system.
 - In the **Automatic defer time** box, type or select the amount of time in days, hours and minutes, after which an active e-mail message is automatically deferred. When an e-mail message is automatically deferred, the user is placed in Unavailable routing state and the draft response (if one exists) is automatically saved.
 - In the **Maximum defer time** box, type or select the maximum amount of time in days, hours and minutes, for which an e-mail message can be deferred. After this time has expired, the e-mail message is automatically requeued by the OpenScape Contact Center E-mail Server.
6. Under **Consulted E-mail Messages**, in the **Maximum consult time** box, type or select the maximum amount of time in days, hours and minutes, for which an e-mail message can be sent for external consultation. After this time has expired, the e-mail message is automatically requeued by the OpenScape Contact Center E-mail Server.

NOTE: When a user externally consults on an e-mail message, the reply is reserved for the user who initiated the consultation, and will be routed to that user ahead of all other contacts regardless of their priority in the queue.

IMPORTANT: Since the OpenScape Contact Center E-mail Server does not filter the e-mail messages for viruses, the corporate e-mail server should provide virus protection.

7. Click **OK**.

14.3.5 Displaying the e-mail confidence levels

You can choose to display confidence levels that are associated with e-mail categories. Confidence levels are used to express a level of certainty. They provide an additional and more precise means of categorizing e-mail messages for subsequent routing to the

Working with the e-mail feature

Configuring the e-mail options

appropriate queue. When you turn on confidence levels, you can specify a confidence level for each e-mail category that you use to configure an expression in a Category Decision component.

IMPORTANT: Displaying e-mail confidence levels is a one-way operation. The system cannot be converted back after it has been changed.

NOTE: In a multitenant environment, only a system administrator can configure the e-mail confidence levels. For details, see [Section 19.3, "Administrator roles in a multitenant environment"](#), on page 392.

The E-mail Server uses a default interface to categorize incoming e-mail messages. When displaying e-mail confidence levels, we recommend the use of a custom categorizer. The confidence levels returned by the default categorizer are simply occurrence ratios – they are not technically confidence levels. An occurrence ratio is calculated as the total number of occurrences in the e-mail message of any keywords defined for the category, divided by the total number of occurrences in the e-mail message of all keywords defined for any category. For example, if the sales category is found two times within an e-mail message, and three other categories are found within the e-mail message, the confidence level will be returned as 2/5 or 40%. For this reason, we recommend that you do not display confidence levels when using the default categorizer.

Custom categorizers are in the form of a .dll file.

NOTE: For more information in this area, contact your service representative.

To display confidence levels:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **E-mail**.
3. Click the **Advanced** tab.
4. Under **Confidence Levels**, click **Display Confidence Levels**.
5. In the **Enable Confidence Levels** dialog box, under **Do you want to show confidence levels?**, select **Yes**, and then click **OK**.
6. When the system prompts you to confirm that you want to enable confidence levels, click **Yes**. The system turns on confidence levels.

7. Under **Categorization**, select **Use custom categorizer**, and then specify the path and file name of the .dll file you want to use. You can click  to locate the file you want to use.
8. Click **OK**.

14.4 Conducting an e-mail history search

You can generate a list of e-mail messages that have been handled by the contact center over a specified time interval. You can search by e-mail message state, as well as by more specific parameters such as the Conversation ID, the handling user, the source or destination e-mail address, or the subject line. The resulting list allows you to open, view, and potentially resend the e-mail messages.

NOTE: To conduct an e-mail history search, you must have the **Perform e-mail history searches** Manager permission.

To conduct an e-mail history search:

1. On the **Actions** menu, click **E-mail History Search**.
2. Under **Date and Time**, do the following:
 - In the **Start** area, select the start date and time for the interval the search is to cover.
 - In the **End** area, select the end date and time of the interval.
3. Under **Status**, select the check box for each e-mail message state you want to search for.
4. Optionally, under **Advanced Parameters**, do the following for each parameter you want to use to refine your search:
5. Click a cell in the **Parameter** column and select one of the options from the list.
6. In the **Value** column, type or select the value that corresponds to the Parameter you selected. For example, if you select **Subject Line**, type the text that appears in the subject line of the e-mail messages you want to search for.

Working with the e-mail feature

Conducting an e-mail history search

7. On the **Actions** menu, click **Find Now**.

NOTE: Email History Search performs the search on the original emails and not on the whole conversation history (for example, Externally forwarded e-mails)

15 Working with the Web collaboration feature

This chapter introduces the Web collaboration feature and provides instructions on working with configurable Web collaboration resources in the Manager application

The Web collaboration feature is a licensed feature that allows customers to communicate with your contact center by sending text messages using a Web browser. The customer submits a request from a Web page on the corporate Web site. The request is assigned to a queue where it waits for an available user. A user responds by opening a Web collaboration session.

For businesses such as service bureaus and other dedicated contact centers, Web collaboration provides an alternative to voice and e-mail, that provides customers the opportunity to communicate with a contact center user in real-time. Other businesses can use Web collaboration as a form of support to the primary business. For example, a business with an emphasis on online sales could use Web collaboration as a live help option to let customers viewing Web pages interact with sales or support personnel.

You can configure OpenScape Contact Center to offer Web collaboration sessions in a number of different languages.

Queues, a routing strategy workflow, and optionally queue processing workflows, must be created specifically for Web collaboration.

15.1 Customer-side and user-side functionality

Customers request Web collaboration sessions using a control on a Web page set up specifically for this purpose. For example, the customer could click a button labeled **Click here to talk to sales**. You could also have the customer provide additional information, such as their account number, prior to requesting a session.

While the customer is waiting for a user to initiate the Web collaboration session, you can set up the Web collaboration feature to periodically push messages to the customer, such as **"An agent will be with you shortly"**. You can also push URLs to the customer's browser, to allow them to view content related to the nature of their request.

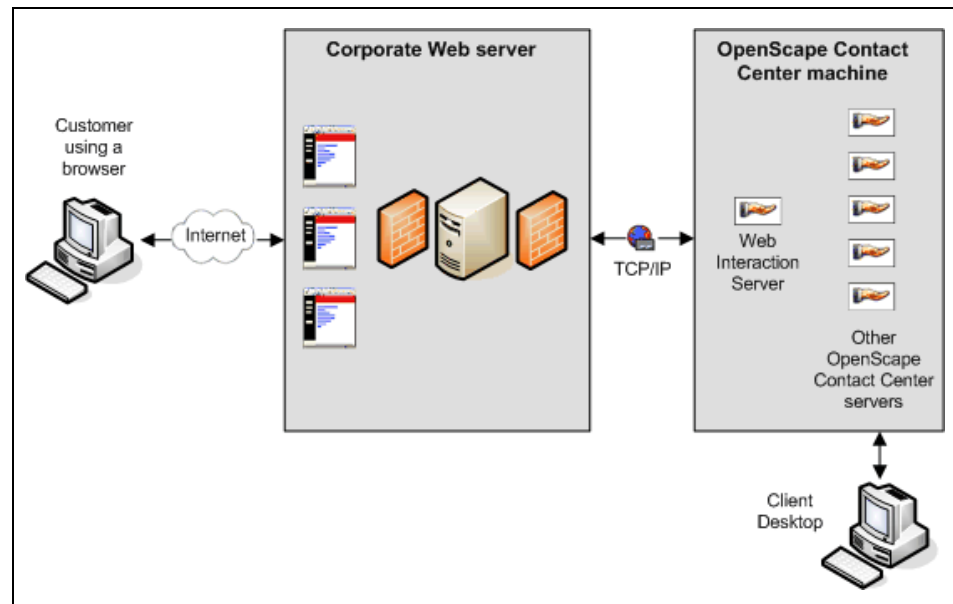
Working with the Web collaboration feature

Web collaboration component interaction

After the user initiates the Web collaboration session, the customer can interact with the user via an interface similar to popular chat applications.

15.2 Web collaboration component interaction

The following figure shows the component interactions in requesting, setting up, and conducting a Web collaboration session between a customer and a contact center user.



The Web front-end is a set of one or more HTML pages with links that initiate the Web collaboration session. OpenScape Contact Center is packaged with a set of sample Web pages and additional HTML samples that can be easily modified and incorporated into the customer's existing Web site. Also included is sample Javascript code that implements the Web collaboration session window. For details, see the *System Management Guide*.

A servlet provides the connection between the corporate Web server and OpenScape Contact Center, specifically with the Web Interaction Server. Transport Layer Security (TLS) security for this connection can be enabled or disabled using the Manager application (see [Section 15.6.4, "Configuring the Web server settings for Web collaboration"](#), on page 354).

15.3 Web collaboration sources and destinations

Unlike other media, Web collaboration sources and destinations are site-defined. They are specified in the Web page links used to initiate a Web collaboration request and are used in routing strategy and queue processing workflows in enqueueing contacts and for other purposes. Most commonly, they are set up as follows:

- **Sources** – Typically reserved to store customer-provided information such as a ticket number provided to the customer in a previous transaction or an account number.
- **Destinations** – Typically set up to identify the type of contact, or less directly, to identify the HTML component (Web page or specific control) from which a request was initiated. This could be a queue name, such as **Sales**, or identify the URL from which the request was issued, such as **www.company.com**.

The Web collaboration sources and destinations defined at your site should reflect factors such as:

- Relationship between queues and either sources, destinations, or source/ destination combinations. For an introduction to criteria to use in queue setup, see [Section 10.2, “Queue setup considerations”](#), on page 231.
- Importance of sources, destinations, and languages as the basis for routing in routing strategy workflows. For more information, see [Section 15.4, “Web collaboration workflow considerations”](#), on page 338.
- Organization of Web pages set up to provide Web collaboration access to customers. For more information, see the *System Management Guide*.
- Sources and destinations you want to report on. For details, see [Section 15.5.4, “Configuring a monitored source for Web collaboration”](#), on page 348 and [Section 15.5.5, “Configuring a monitored destination for Web collaboration”](#), on page 350.

15.4 Web collaboration workflow considerations

Incoming Web collaboration requests are initially processed by a routing strategy workflow. Web collaboration contacts are typically routed to a queue based on source, destination, or language preference, but other considerations such as database lookup, can be used as well. In addition, the Web collaboration feature offers component types that let you automate actions such as sending standard messages to the customer's session window and directing the customer's Web browser to specified URLs.

15.4.1 Web collaboration routing strategy workflows

A Web page link used to request a Web collaboration session, specifies three parameters available to a routing strategy workflow, that can be used in routing the contact:

- A site-defined destination
- A site defined source
- A language specifier

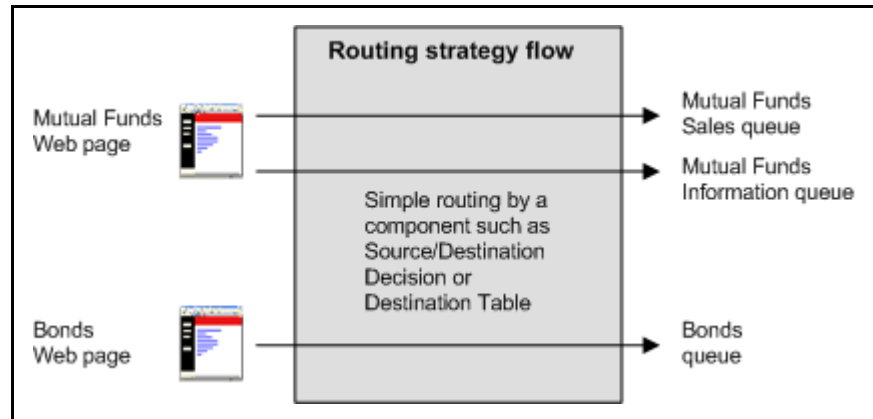
NOTE: For information on how to set up the Web page links that request Web collaboration sessions, see the *System Management Guide*.

In the simplest scenario, the active Web collaboration routing strategy workflow could direct the request to a queue based on the contact's destination. Since destinations are site-defined, your site destinations can be as direct as the name of the queue to which the associated

Working with the Web collaboration feature

Web collaboration workflow considerations

contacts are to be directed. Less directly, you might use the URL of the Web page or another indicator of the purpose of the contact as destinations at your site.



Similarly, sources for Web collaboration are site-defined. Most commonly, a source is set up to store customer-provided information. For example, you could have the customer provide an account number on the originating Web page. The link that passes the request to OpenScope Contact Center, passes the account number as a source parameter.

Account Number:

However, since there is no constraint on how you define sources, you can use the source parameter for other purposes. For example, if you do not need to use the source for customer-identifying or customer-provided information purposes, you could use the source to provide information that complements the destination. Before you decide to use sources in this way, however, you should consider the OpenScope Contact Center ability to report on and monitor sources.

NOTE: When a Web Collaboration session is initiated, OSCC uses the “Source” field to associate the Chat session with a specific customer. If the field is left empty, then 360 Customer View is not enabled for this specific session.

NOTE: For information on how to set up the Web page links that request Web collaboration sessions, see the *System Management Guide*.

Working with the Web collaboration feature

Web collaboration workflow considerations

You can also use the language specifier, accessed from contact data, in routing the contact.

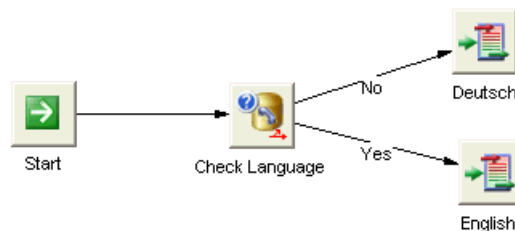
NOTE: For information on accessing contact data in a routing strategy workflow, see [Section 9.3.5, "Contact data", on page 193](#).

OpenScape Contact Center lets you build a complete set of resources used to offer Web collaboration sessions in several languages. This includes items such as boilerplate messages users can automatically send to customers, as well as standard session window content such as labels and notifications. To complement this, the value associated with the contact data key `___HPPC_` (3 leading underscores followed by HPPC and a trailing underscore), passed as a parameter from the Web page link, can be used to route the contact according to the language resources you have set up.

In a situation where language is the only consideration in routing a contact, you could offer the choice of languages on the Web page where Web collaboration sessions are requested.



A routing strategy that could direct the session request to a user who speaks the chosen language could be as simple as follows:



NOTE: For details on how to set up Web collaboration language resources, see [Section 15.5, "Configuring the Web collaboration resources", on page 342](#).

While the primary means of directing a Web collaboration request to a queue is by making use of the source, destination, or language associated with the contact request, you can also make use of the principles outlined in [Section 9.3, "Routing strategy workflow considerations", on page 186](#).

15.4.2 Web collaboration queue processing workflows

The basic principles outlined in [Section 9.5, “About queue processing workflows”, on page 212](#) apply to Web collaboration queue processing workflows. That is, the primary purpose of the workflow is to occupy the customer until OpenScape Contact Center finds an available user to handle the Web collaboration session.

Since the key activity targets when occupying a Web collaboration customer are the session window and the customer’s browser, there are three components available for Web collaboration:

- **Auto-push Message** – You can use an Auto-push Message component to push a message to a customer's browser during a Web collaboration session.
- **Auto-push URL** – You can use an Auto-push URL component to push a Web page to a customer's browser during a Web collaboration session.
- **Auto-push Performance Message** – You can use an Auto-push Performance Message component to push a message containing a performance statistic to a customer's browser during a Web collaboration session.

For example, a Web collaboration queue processing workflow could start by providing the initial estimated wait time. Subsequently, it could then display a standard message, **One of our agents will be with you shortly**, for example, every thirty seconds.

Similarly, a Web collaboration queue processing workflow could start by directing the customer’s browser to a page of products related to the nature of the contact. This could be accompanied by a standard message, delivered to the customer’s session window, for example, **An agent will be with you shortly... in the meantime, why not browse some similar products?**

These components use standard messages and URLs. For details, see [Section 15.5, “Configuring the Web collaboration resources”, on page 342](#).

For details on how to configure these components, see the *Manager Help*.

15.5 Configuring the Web collaboration resources

You must configure various resources that impact the Web collaboration feature.

NOTE: Your initial Web collaboration configuration is typically set up by your service representative. For information on the setup tasks, see the *System Management Guide*.

15.5.1 Configuring a Web collaboration language

You must configure a language resource in OpenScape Contact Center for each language in which you will be offering Web collaboration sessions. You can specify the default Web collaboration language used at your site (see [Section 15.6.3, "Configuring the default Web collaboration language"](#), on page 353).

NOTE: To create or change a language resource, you must have Full or Modify access, respectively, for the **Languages** Manager permission.

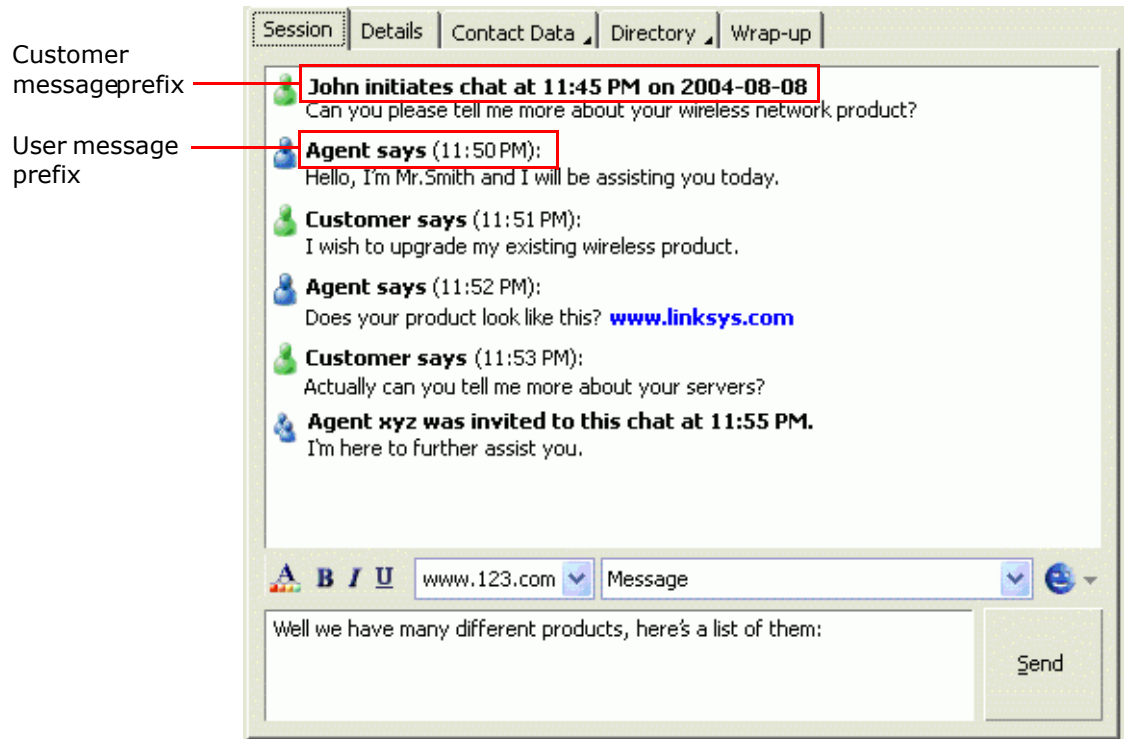
NOTE: The links on a Web page set up to request a Web collaboration session can specify the language associated with the session. For details on how language specifiers are set up in the URLs, see the *System Management Guide*.

In addition to the content typed by the user and the customer during a Web collaboration session, there are several default greetings, prefixes, and notifications that can be displayed as part of the session. These default messages are configured as part of the language resource.

Working with the Web collaboration feature

Configuring the Web collaboration resources

You build the default messages using text and a set of tags – variables that store items such as user names, times, and URLs. For example, a “Join conference” notification could be defined as “<USERNAME> was invited to this chat at <TIME12>.”



To configure a Web collaboration language:

1. On the **File** menu, point to **New**, then **Design Center**, then **Web Collaboration**, and then click **Language**.
2. On the **General** tab, under **Details**, do the following:
 - In the **Name** box, type a unique name for the language.
 - In the **Description** box, type a description for the language.

Working with the Web collaboration feature

Configuring the Web collaboration resources

3. Click the **Settings** tab.

The screenshot shows the 'Language' dialog box with the 'Settings' tab selected. The 'Auto-web Collaboration Defaults' section contains the following text boxes:

- Greeting:
- Customer message prefix:
- User message prefix:
- Requeue:
- Push URL:
- Join conference:
- Exit conference:
- System name:

At the bottom, there is a 'Preview' section with a text area and 'OK' and 'Cancel' buttons.

4. Under **Auto-Web Collaboration Defaults**, for each text box, type the text for the default message that can be displayed in a Web collaboration session. For each text box, you can type a maximum of 200 characters.
 - **Greeting** – Type the default greeting displayed, for example, *How can I help you?*.
 - **Customer message prefix** – Type the default customer message prefix displayed, for example, `<DATE>`, `<TIME24>` `<NAME>`:. .
 - **User message prefix** – Type the default user message prefix displayed, for example, `<DATE>`, `<TIME24>` `<NAME>`:. .
 - **Requeue** – Type the default requeue message prefix displayed, for example, *Waiting for another user to join...*

- **Push URL** – Type the default push URL message prefix displayed, for example, *<USERNAME> pushed <PUSHEDURL> to you.*
 - **Join conference** – Type the default message displayed when someone joins the Web collaboration session, for example, *<USERNAME> joined the session at <TIME24>.*
 - **Exit conference** – Type the default message displayed when someone exits the Web collaboration session, for example, *<USERNAME> has left the session.*
 - **System name** – Type the default system prefix displayed during a Web collaboration session.
5. To insert a tag into the text, click **Insert Tag** and select one of the following tags from the list:

Tag	Description
<USERNAME>	Displays the name of the contact center user, as defined in the Manager application.
<TIME12>	Displays the time in 12-hour format, with an AM or PM suffix.
<TIME24>	Displays the time in 24-hour format.
<DATE>	Displays the date in YYYY/MM/DD format.
<NAME>	Displays the customer's name.
<PUSHEDURL>	Displays the URL to be pushed to the customer.

NOTE: To ensure that the date format displayed in the Web Collaboration - Contact Details window matches the date format selected in the Windows Regional and Language options, you must select the language to be used for standards and formats, as well as for non-Unicode programs. If different languages are selected in these two places, the date format might not be displayed as expected.

6. To change the font style of the selected text, click .
7. Under **Preview**, view a preview of the selected text, including the actual value of any inserted tags.
8. Click **OK**.

15.5.2 Configuring a Web collaboration standard message

For each language in which you are offering Web collaboration sessions, you create an associated set of standard messages, which are useful for defining commonly-used content, such as standard responses to frequently-asked questions.

Standard messages can be used in the following ways:

- You can select a standard message when configuring an Auto-push Message component.

Each standard message can be associated with one or more queues. If you do not associate a standard message with a queue, the standard message will be considered generic and will be available to all queues. When configuring a queue processing workflow or when handling a contact for a given queue, you have access to all standard messages associated with that queue, as well as all generic standard messages.

NOTE: To create or change a standard message, you must have Full or Modify access, respectively, for the **Standard messages** Manager permission.

NOTE: You should set up all languages to be used with the Web collaboration feature before creating a standard message (see [Section 15.5.1, "Configuring a Web collaboration language", on page 342](#)).

To configure a Web collaboration standard message:

1. On the **File** menu, point to **New**, then **Design Center**, then **Web Collaboration**, and then click **Standard Message**.
2. On the **General** tab, under **Details**, do the following:
 - In the **Name** box, type a unique name for the standard message.
 - In the **Description** box, type a description for the standard message.
3. Under **Configure**, do the following:
 - In the **Language** list, select the configured language for the standard message.

- In the **Message** box, type the content of the standard message. You can type a maximum of approximately 1900 characters. The maximum is actually 2000 characters, but that includes the HTML code required for formatting.
4. To change the font style of the selected text, click .
- You can select several options of font sizes. However, the supported sizes are limited, as shown on the table below:

Selected size	Supported size
8 or lower	7.5
9 - 10	10
11 - 12	12
13 - 15	13.5
16 - 21	18
22 - 30	24
31 or higher	36

Table 15

Font Sizes

5. Click the **Queues** tab.
6. Under **Include**, select the Web collaboration queues that can display this standard message. You can also select the message when you configure a queue (see [Section 10.3, "Configuring a queue"](#)).

15.5.3 Configuring a Web collaboration URL

For each language in which you are offering Web collaboration sessions, you create an associated set of URLs for language-specific Web pages. URLs can be used in the following ways:

- You can select a URL when configuring an Auto-push URL component.

Each URL can be associated with one or more queues. If you do not associate a URL with a queue, the URL will be considered generic and will be available to all queues. When configuring a queue processing

Working with the Web collaboration feature

Configuring the Web collaboration resources

workflow or when handling a contact for a given queue, you have access to all URLs associated with that queue, as well as all generic URLs.

NOTE: To create or change a URL, you must have Full or Modify access, respectively, for the **URLs Manager** permission.

NOTE: You should set up all languages to be used with the Web collaboration feature before creating a URL (see [Section 15.5.1, “Configuring a Web collaboration language”](#), on page 342).

To configure a Web collaboration URL:

1. On the **File** menu, point to **New**, then **Design Center**, then **Web Collaboration**, and then click **URL**.
2. On the **General** tab, under **Details**, do the following:
 - In the **Name** box, type a unique name for the URL.
 - In the **Description** box, type a description for the URL.
3. Under **Configuration**, in the **Language** list, select the configured language for the URL.
4. In the **URL** box, type a valid URL (for example, <http://www.company.com>).

NOTE: If you are connected to a production database, you can click  to locate the URL on the Web.

5. Click the **Queues** tab.
6. Under **Include**, select the Web collaboration queues that can display this URL. You can also select the URL when you configure a queue (see [Section 10.3, “Configuring a queue”](#)).
7. Click **OK**.

15.5.4 Configuring a monitored source for Web collaboration

To gather statistics for a particular Web collaboration source, you must configure the source in OpenScape Contact Center so that it can be monitored. A source for Web collaboration is site-defined and can take

any textual value. For more information, see [Section 15.3, “Web collaboration sources and destinations”](#), on page 337.

NOTE: To create or change a monitored source for Web collaboration, you must have Full or Modify access, respectively, for the associated Manager permission.

NOTE: When you are modifying an existing monitored source, you can change only the name and description of the source. You cannot change the actual source. If you need to change the source, you must delete the monitored source and create a new one.

To configure a monitored source for Web collaboration:

1. On the **File** menu, point to **New**, then **Design Center**, then **Web Collaboration**, and then click **Monitored Source**.
2. On the **General** tab, under **Details**, do the following:
 - In the **Name** box, type a unique name for the source.
 - In the **Description** box, type a description of the source.
 - In the **Source** box, type the Web collaboration source that you want to monitor. You cannot use non-ASCII characters, non-printable ASCII characters, and the following special characters: accent grave (`), asterisk (*), comma (,), double quotation mark ("), exclamation mark (!), percentage sign (%), pipe (|), and underscore (_).

NOTE: When a Web Collaboration session is initiated, OSCC uses the “Source” field to associate the Chat session with a specific customer. If the field is left empty, then 360 Customer View is not enabled for this specific session.

3. Click the **Reports** tab.
4. Under **Include this source in these reports**, select the check box for each report that you want to display data about this source. You can view only the reports you own, or reports that are owned by users you can monitor.
5. Click **OK**.

15.5.5 Configuring a monitored destination for Web collaboration

To gather statistics for a particular Web collaboration destination, you must configure the destination in OpenScape Contact Center so that it can be monitored. A Web collaboration destination is site-defined and can take any textual value. For more information, see [Section 15.3, “Web collaboration sources and destinations”](#), on page 337.

NOTE: To create or change a monitored destination for Web collaboration, you must have Full or Modify access, respectively, for the associated Manager permission.

When you are modifying an existing monitored destination, you can change only the name and description of the destination. You cannot change the actual destination. If you need to change the destination, you must delete the monitored destination and create a new one.

To configure a monitored destination for Web collaboration:

1. On the **File** menu, point to **New**, then **Design Center**, then **Web Collaboration**, and then click **Destination**.
2. On the **General** tab, under **Details**, do the following:
 - In the **Name** box, type a unique name for the destination.
 - In the **Description** box, type a description for the destination.
 - In the **Destination** box, type the Web collaboration destination you want to monitor. You cannot use non-ASCII characters, non-printable ASCII characters, and the following special characters: accent grave (`), asterisk (*), comma (,), double quotation mark ("), exclamation mark (!), percentage sign (%), pipe (|), and underscore (_).
3. Click the **Reports** tab.
4. Under **Include this destination in these reports**, select the check box for each report that you want to display data about this destination. The list contains only the reports you own, or reports that are owned by users you can monitor.
5. Click **OK**.

15.6 Configuring the Web collaboration options

Use the Web collaboration options to configure the default settings for the Web collaboration feature. For details, see the following topics:

- [Section 15.6.1, "Configuring the default Web collaboration routing strategy, queue, and time-out URL", on page 351](#)
- [Section 15.6.2, "Configuring the Web collaboration error queue settings", on page 353](#)
- [Section 15.6.3, "Configuring the default Web collaboration language", on page 353](#)
- [Section 15.6.4, "Configuring the Web server settings for Web collaboration", on page 354](#)

NOTE: To configure any of the Web collaboration options, you must have Full or Modify access for the associated Manager permission.

15.6.1 Configuring the default Web collaboration routing strategy, queue, and time-out URL

You must specify the following defaults for the Web collaboration feature:

- **Default routing strategy workflow** – The routing strategy workflow that is initially used to route all Web collaboration contacts in the contact center. You can configure the default routing strategy workflow to link to subsequent routing strategy workflows, if required.
- **Default queue** – The queue that you want to use as the default option for the no match found (*) entry in a Destination Table component.
- **Time-out URL** – The Web page to which a contact will be routed provided that a time-out is specified when you configure a queue. This page is typically set up to indicate that the contact center is too busy to accept the request now and suggest trying later or providing links to more information.

Before configuring these settings, be sure to create the routing strategy workflow (see [Section 9.4, "Configuring a routing strategy workflow", on page 209](#)) and the queue (see [Section 10.3, "Configuring](#)

Working with the Web collaboration feature

Configuring the Web collaboration options

a queue”, on page 240) that you want to use as the default.

NOTE: In a multitenant environment, only a business unit administrator can configure the default Web collaboration routing strategy, queue, and time-out URL. For details, see [Section 19.3, “Administrator roles in a multitenant environment”](#), on page 392.

To configure the default Web collaboration settings:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Web Collaboration**.
3. On the **General** tab, under **Default**, do the following:
 - In the **Routing strategy** list, click the Web collaboration routing strategy you want to use to initially route all Web collaboration contacts.
 - In the **Queue** list, click the Web collaboration queue that you want to use as the default option for the no match found (*) entry in a Destination Table component.
 - In the **Time-out URL** box, select the URL that you want to use as the default time-out URL. The time-out URL is the Web page to which a contact will be routed provided that a time-out is specified when you configure a queue. You can click  to launch a Web browser and test the URL.
4. Click **OK**.

15.6.2 Configuring the Web collaboration error queue settings

The error queue is the queue to which Web collaboration contacts are routed in the case of recoverable system errors. Recoverable system errors are errors generated by the OpenScape Contact Center servers that cannot be handled by the **Exit on error** option provided in some of the workflow components. If the system detects a recoverable system error in a routing strategy workflow, the Web collaboration contact is routed to the error queue where it can then be routed to an appropriate user.

NOTE: In a multitenant environment, only a business unit administrator can configure the Web collaboration error queue settings. For details, see [Section 19.3, "Administrator roles in a multitenant environment"](#), on page 392.

To configure the Web collaboration error queue:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Web Collaboration**.
3. On the **General** tab, under **Error**, do the following:
 - In the **Queue** list, select the queue to which contacts are directed in the case of recoverable errors.
 - In the **Description** box, type a description for the error queue.
4. Click **OK**.

15.6.3 Configuring the default Web collaboration language

You must specify the default language for Web collaboration sessions. Links on Web pages set up to initiate Web collaboration sessions typically specify a language parameter to indicate the language for the

Working with the Web collaboration feature

Configuring the Web collaboration options

requested session. If the link does not specify a language, OpenScape Contact Center uses the default Web collaboration language for the site.

You can choose any one of the configured languages (see [Section 15.5.1, "Configuring a Web collaboration language", on page 342](#)).

NOTE: In a multitenant environment, only a business unit administrator can configure the default Web collaboration language. For details, see [Section 19.3, "Administrator roles in a multitenant environment", on page 392](#).

To configure the default Web collaboration language:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Web Collaboration**.
3. On the **General** tab, under **Language**, in the **Default language** list, select the language you want to use as the default.
4. Click **OK**.

15.6.4 Configuring the Web server settings for Web collaboration

You can configure the port that the Web Interaction Server uses to communicate with the corporate Web server for Web collaboration sessions.

IMPORTANT: When you are connected to the production database, if you change the port number, you will be required to restart the Web Interaction Server on the main server machine.

NOTE: In a multitenant environment, only a system administrator can configure the Web server settings for Web collaboration. For details, see [Section 19.3, "Administrator roles in a multitenant environment", on page 392](#).

To configure the Web server settings for Web collaboration:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Web Collaboration**.
3. Click the **Corporate Web Server** tab.
4. Under **Port Settings**, in the **Port number** list, select the port number that the Web Interaction Server uses to communicate with the corporate Web server to support Web collaboration. You can select an unsecured or a secured (TLS-enabled) port. For more information, see [Section 20.3.3, "Configuring the Web server settings"](#), on page 412.
5. Click **OK**.

Working with the Web collaboration feature

Configuring the Web collaboration options

16 Working with networking

This chapter introduces the optional networking features and provides details on the tasks involved in configuring the OpenScape Contact Center system to work with this feature.

Networking is a licensed feature that allows you to distribute calls across multiple OpenScape Contact Center sites. Each site that is configured to participate in networking shares various performance statistics with the other networked sites. A voice networking workflow enables a series of decision criteria to be applied so that it can determine whether to distribute a contact to a networked site and, if so, how to select the site to which the contact is sent.

NOTE: In a multitenant environment, networking is not supported. For details on the multitenancy feature, see [Chapter 19, “Working with the multitenancy feature”](#).

You can distribute contacts based on:

- **Load** – Access to local and remote performance statistics let you decide when to distribute contacts and which site is best equipped to handle overflow contacts.
- **Schedule** – Each site defines the times of the day, days of the week, and specific calendar dates when it is not accepting networked contacts.
- **Site-defined criteria** – You can provide your own ranking of sites, based on a criterion of your choosing, and distribute contacts on this basis.

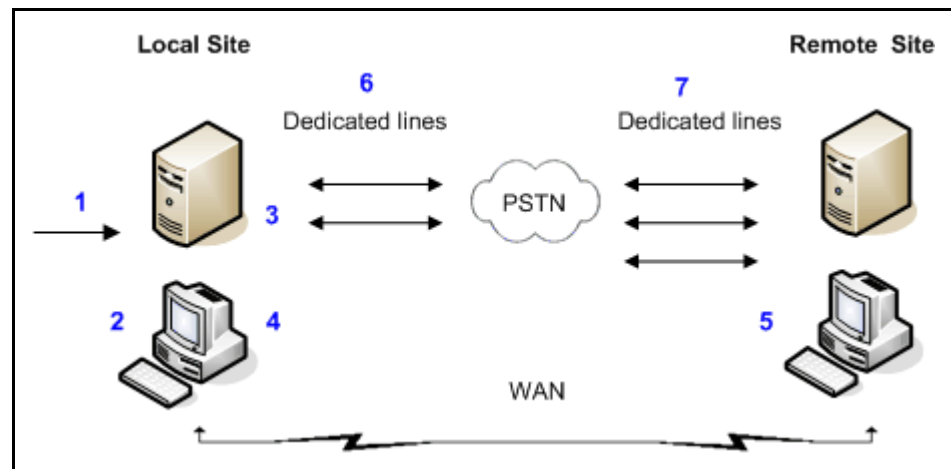
OpenScape Contact Center lets you combine these specific criteria to build a thorough, flexible networking strategy. In addition, while you can configure your networking strategy at the site level, you can also override those settings on a queue-by-queue basis. This lets you create multiple distribution strategies around queue-related considerations such as the purpose of the contact or information collected from the customer.

The central reporting feature can be used to produce historical reports across multiple networked sites. For details on the central reporting feature, see [Chapter 17, “Working with central reporting”](#).

Sites that are configured for high availability (warm standby) can also participate in networking. Not all networked sites need to be configured for high availability (warm standby). The networking feature allows both types of sites to participate in networking at the same time. Even though high availability (warm standby) is supported only when OpenScape Contact Center is connected to an OpenScape Voice, OpenScape 4000, or HiPath 4000 communication platform, other networked sites that are not configured for high availability (warm standby) can be connected to any communication platform type supported by OpenScape Contact Center. For details on the high availability (warm standby) feature, see [Chapter 18, "Working with the high availability \(warm standby\) feature"](#).

16.1 Contact processing

Each site allocates a number of dedicated telephone lines that it uses to transfer and accept networked voice traffic. The following diagram illustrates the basic steps in processing a contact in a networked contact center.



The numbered steps are as follows:

1. An incoming call arrives in OpenScape Contact Center.
2. The active routing strategy workflow executes and directs the contact to a queue enabled for networking.
3. Local routing of the contact is suspended while a networking workflow executes. Using performance statistics for the local site and for remote sites, the networking workflow determines whether the contact should be routed locally or distributed, and if it is to be distributed, to which site the contact is to be routed.

4. If the contact is to be distributed to a remote site, the local site requests the number for a telephone line to be used to transfer the contact to the selected remote site.
5. OpenScape Contact Center at the remote site returns the number of an idle telephone line.
6. The local site diverts the call to the remote site and dequeues the contact locally.
7. The remote site directs the call to a queue with the same name as the queue to which the contact was to be directed at the local site while OpenScape Contact Center finds a user available to handle the contact.

16.2 Networking at the queue level

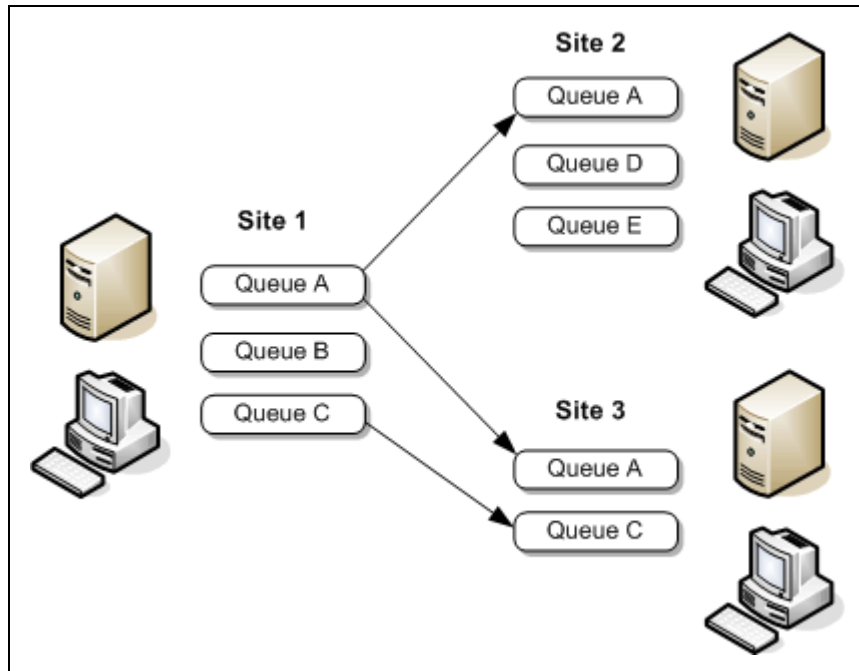
Networking is enabled and operates at the queue level. When an arriving contact is enqueued to a network-enabled queue, it can be distributed and enqueued only to an identically-named queue at another site participating in the network. To enable a queue for networking, see [Section 16.7.4, "Configuring the networking settings for a queue"](#), on page 374.

NOTE: Queues must only share a common name. They do not need to be configured identically.

Working with networking

Acceptance criteria

For example, a contact enqueued to **Queue A** at **Site 1** could potentially be distributed to either **Site 2** or **Site 3**, since both sites have a queue named **Queue A**. Contacts enqueued to **Queue C** at **Site A**, on the other hand, could potentially be distributed only to **Site 3** since it is the only other site with a queue named **Queue C**.



16.3 Acceptance criteria

Each site in the network specifies its own acceptance criteria, that tells other sites whether it is currently accepting network traffic. Acceptance criteria can consist of either or both of the following components:

- **Schedule** – The acceptance criteria schedule lets you designate the time of the day and days of the week when the site is accepting contacts from other networked sites. You can also specify specific calendar dates, holidays for example, when the contact center is not accepting contacts from other network sites.
- **Performance Criteria** – A local site can test one or more statistics-based conditions that dictate when it is accepting contacts from other sites. Each test compares the current value of a specific statistic to a configured threshold value using operators such as equals, over (greater than) and under (less than). For example, a site may only accept network contacts when the current estimated wait time at the site is less than one minute. When multiple performance criteria are specified, the schedule criteria and all

performance criteria must be met in order for the site to accept contacts. If no statistics-based tests are specified, only the schedule will be used to determine acceptance.

The schedule and performance elements of the acceptance criteria are defined at the site level (see [Section 16.8.2, “Configuring the networking acceptance settings”, on page 375](#)). At the queue level, you can override site-level performance criteria or provide additional performance criteria (see [Section 10.3.6, “Configuring the voice queue networking settings”, on page 253](#)).

Similarly, as part of the process of distributing a contact, the local site can select the best-equipped site based on the value of one or more of the remote site performance statistics. Each site has access to a set of site-level and queue-level performance statistics for every remote site participating in the networked contact center.

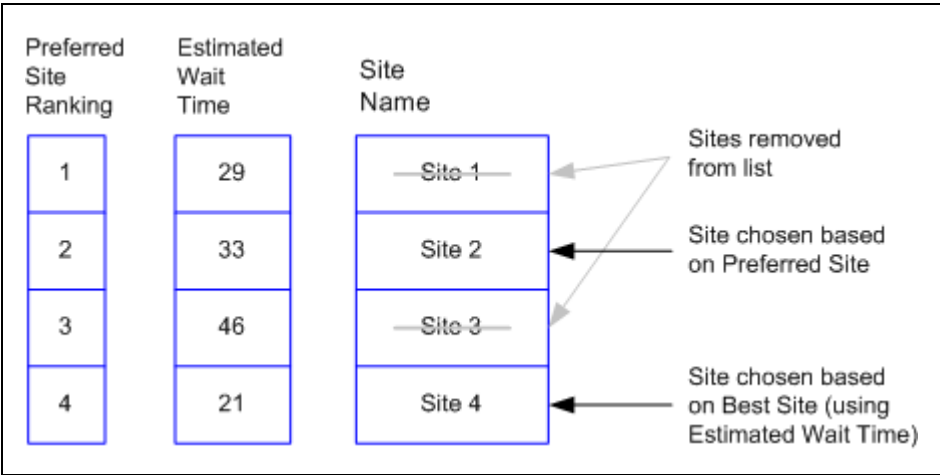
Each site in a network transmits its acceptance criteria and its package of performance statistics to other sites in the network on a configured, regular basis, ranging from every five seconds to every five minutes. For details on how to configure this interval, see [Section 16.8.1, “Configuring the general networking settings”, on page 374](#).

16.4 Distribution methods

If processing in a networking workflow reaches a Network Selection component, then the contact is to be distributed to another site. You can use one of two distribution methods:

- **Best Site** – The contact is routed to the site with the best performance on a single, specified statistic. For example, if the specified statistic is the estimated wait time, and there are still multiple sites in the short list, the contact will be routed to the site with the highest service level.
- **Preferred Site** – The contact is routed to the site remaining in the short list that ranks highest in a configured, prioritized list of eligible sites. This method lets you rank the sites in your network on an arbitrary, site-defined criterion, optionally on a queue-by-queue basis, and distribute contacts based on that criterion. Using this method you could distribute contacts based on geography or site-specialization, for example.

Given the Preferred Site ranking, Best Site tested statistic (estimated wait time), and a refined short list of eligible sites, the following diagram shows the site chosen for each method. Sites 1 and 3 are removed from the short list due to acceptance criteria or because performance on a particular statistic did not meet a configured level.



You can specify a single distribution method at the site level, to be used as the basis for all contacts that are to be routed to other networked sites. In addition, you can override the site setting in the configuration for each Network Selection component used in your networking workflows. This gives you the flexibility to vary your distribution method on a queue-by-queue basis or as dictated by local or remote traffic.

NOTE: For information on setting up a default, site level distribution method, see [Section 16.8.3, "Configuring the networking distribution settings"](#), on page 376.

NOTE: For information on overriding distribution method settings on a queue-by- queue level, see [Section 10.3.6, "Configuring the voice queue networking settings"](#), on page 253.

16.5 About networking workflows

If your site is licensed for networking, when a routing strategy workflow enqueues a call to a network-enabled queue, local processing of the workflow is suspended while a networking workflow executes.

The networking workflow provides the following basic functionality:

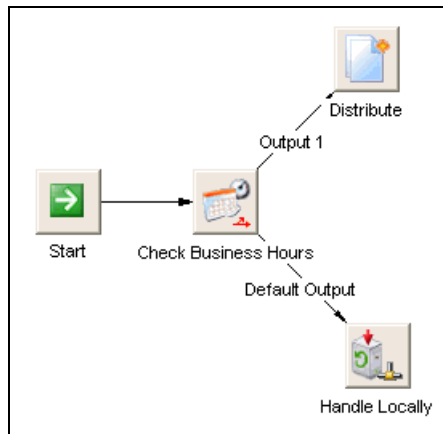
- Makes the decision to resume local routing of the contact or distribute it to another site based on a schedule or load at the local or remote sites.
- Refines the list of eligible networked sites by eliminating sites that fail specific performance tests.
- Distributes the contact to the site that performs best on a given performance statistic (Best Site method) or the site that ranks highest in a site-defined ordered list of sites (Preferred Site method).

OpenScape Contact Center provides a default networking workflow. You can make a copy of this workflow and use it as the starting point for creating a networking workflow, or you can create a new one. For details, see [Section 16.6, "Configuring a networking workflow", on page 368](#).

NOTE: When the system is configured for high availability (warm standby), the execution of a networking workflow can be impacted by a failover. This is because some decisions that are made in a networking workflow are based on statistics that may have different values after a failover. For more details on the high availability (warm standby) feature, see [Chapter 18, "Working with the high availability \(warm standby\) feature"](#).

16.5.1 Basic networking workflow example

In a simple scenario, a networking workflow could decide whether to handle the contact locally or distribute the contact to a networked site using a Schedule component: base the decision on the calendar date, day of the week, or time that a contact arrives.



Consider the following setup:

- The workflow shown above is running at a site called **Site 1** in a five-site contact center network, where the other four sites are located in different time zones.
- The **Check Business Hours** Schedule component is configured so that contacts arriving outside normal, Monday to Friday, 9 a.m. to 5 p.m. working hours, are routed to another site.
- If a contact arrives during normal business hours, processing is passed to **Handle Locally**, a Keep Local component, which terminates the networking workflow, allowing local routing of the contact to resume.
- Acceptance criteria for all sites is set to disallow acceptance of contacts from other sites outside normal business hours at those sites.
- Contacts are to be distributed using the Preferred Site method, with the site ordering at **Site 1** set as **Site 2**, **Site 3**, **Site 4**, and **Site 5**.

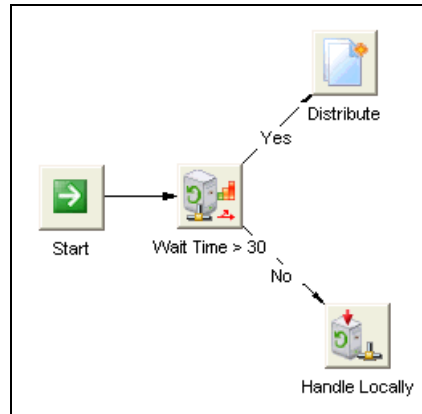
Workflow processing for a contact arriving at 7 p.m. when **Site 2** and **Site 3** are closed, might proceed as follows:

- Prior to any components executing, the acceptance criteria for all sites is checked. With **Site 2** and **Site 3** closed, the short list of eligible sites is refined to contain only **Site 4** and **Site 5**.
- Since the contact arrives at 7 p.m., the schedule component passes control to the **Distribute** component, which is a Network Selection component.

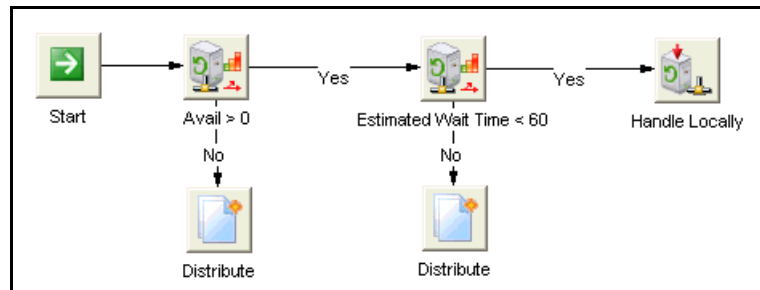
- Since the Preferred Site ordering of the short list of sites is **Site 4**, **Site 5**, the **Distribute** component routes the contact to **Site 4**, and then terminates the networking workflow.

16.5.2 Making the decision to process locally or distribute

A key decision in a networking workflow is whether to process the contact locally or to route it to another site in the networked contact center. While a Keep Local component terminates the workflow and resumes local routing of the contact, you can base the decision to execute that component on a performance statistic at the local site. For example, you could use a Local Performance Decision component to check the current wait time at the local site and ensure that is acceptably low before deciding to process the contact locally.



You can use multiple Local Performance Decision components if you want to test several queue-based or site-based statistics. For example, you could make the decision to process the contact locally only if there are available users at the local site AND the current estimated wait time is less than one minute.



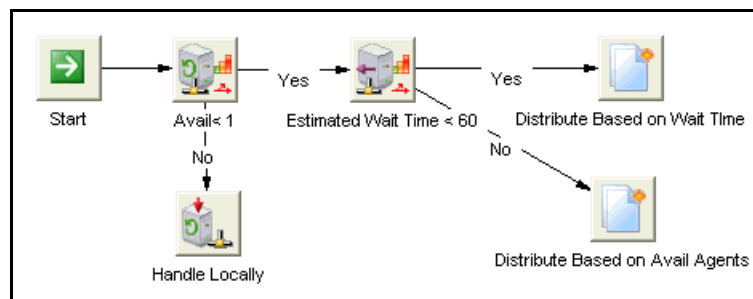
16.5.3 Refining the short list of eligible networked sites

Network Selection components in a workflow must choose one site from a short list of eligible networked sites to which to route a contact. At the time that a networking workflow starts to execute, the short list consists of all sites configured to participate in networking, except:

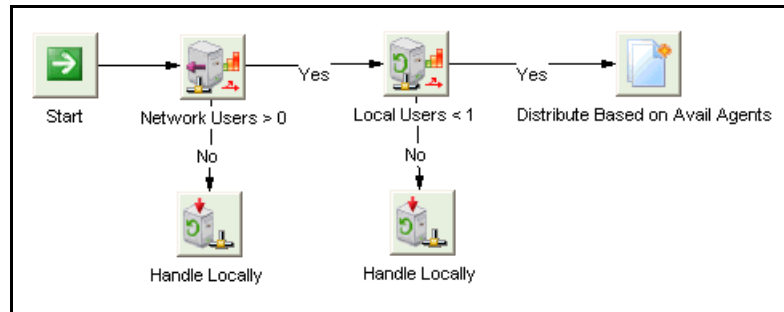
- Sites whose acceptance criteria dictate that those sites are not accepting networked contacts at the current time.
- Sites that do not have a queue named identically to the queue to which the contact is currently enqueued.

While a Network Selection component will ultimately choose the site from the short list to which a contact will be routed, you can refine the short list prior to execution of a Network Selection component. For example, after making the decision whether to keep the contact local or distribute, you could first try to eliminate all sites whose corresponding queue has an estimated wait time less than one minute.

In the following diagram, **Estimated Wait Time < 60** is a Distribution Decision component. This component type lets you test a site-based or queue-based statistic at all networked sites. If the test passes, the short list is reduced to only those sites that pass the test. You might then distribute to the site with the best available estimated wait time. If the test fails, then traffic for the associated queue is heavy at all sites. In that case, you might distribute to the site that has the most available agents, to maximize the chances that the contact is handled by an overflow user.



In the previous example, a Distribution Decision component was used to set up distribution using a Network Selection component. The information returned by a Distribution Decision component can also be used in other ways. For example, the following diagram shows a workflow in which a Distribution Decision is used earlier in the workflow to aid in the decision as to whether the contact is to be processed locally or distributed.



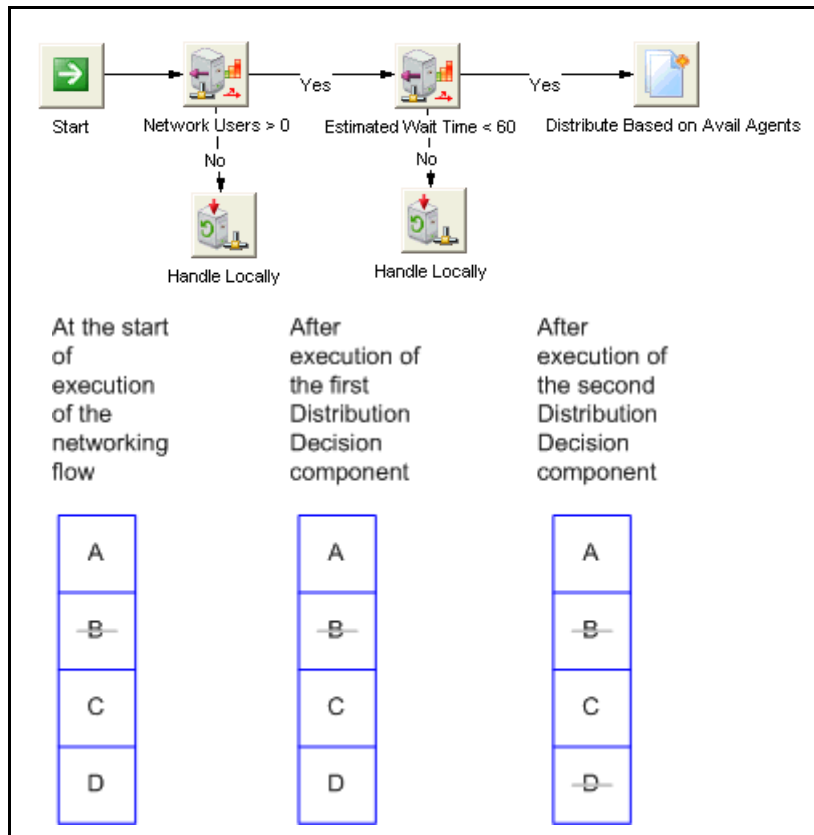
Lastly, you can also perform multiple Distribution Decision component tests in a workflow. The following diagram shows how a four-site (**A**, **B**, **C**, and **D**) short list might be refined by a workflow with two Distribution Decision components.

- As the networking workflow begins to execute, site **B** has been removed from the short list because either it does not have a queue named identically to that to which the current contact has been enqueued or its acceptance criteria indicate that it is not currently accepting contacts.
- The first test fails, that is there are no sites that pass the test, so the short list continues to include sites **A**, **C**, and **D**.

Working with networking

Configuring a networking workflow

- The second test passes, eliminating site **D**, and the short list is refined to include only sites **A** and **C**.



16.6 Configuring a networking workflow

A networking workflow is a sequence of events that determines the distribution of a call through networking to remote sites in the contact center.

NOTE: To create or change a networking workflow, you must have Full or Modify access, respectively, for the **Networking workflows** Manager permission.

To configure a networking workflow:

1. On the **File** menu, point to **New**, then **Design Center**, then **Voice**, and then click **Networking Workflow**.
2. On the **General** tab, under **Workflow**, do the following:
 - In the **Name** box, type a unique name for the networking workflow. The name appears on the tab in the Design Editor when you open the workflow diagram.
 - In the **Description** box, type a description for the networking workflow. The description should include the purpose of the workflow.
3. Click **OK**. The application saves the new workflow and gives it a status of **Incomplete**.
4. In the right pane, double-click the new workflow. A workflow diagram appears in the **Design Editor** with a **Start** component.
5. Create the components for the networking workflow diagram, as required.
6. Add components to the workflow diagram.
7. Connect the components.
8. On the **File** menu, click **Save**.

16.7 Configuring the networking resources

You must configure the resources that impact the networking feature.

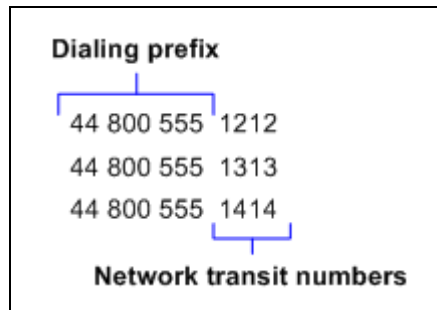
NOTE: Your initial networking configuration, such as the allocation of telephone lines and the setup of the Wide Area Network (WAN) used for site-to-site communication, is typically done by your service representative. For information on the setup tasks, see the *Communication Platform Integration Guide*.

NOTE: The settings of some of the default options, such as the shifts and service level, can impact network functioning. For details, see [Section 20.7, "Configuring the statistics options", on page 430](#).

16.7.1 Configuring the telephone lines for networking

Each networked site has a number of telephone lines that are used to traffic networked contacts. The dialable number associated with each line breaks down into two components:

- **Dialing prefix** – The initial digits that are common to all telephone lines in the networked site, such as country code and area code. This is defined when you configure a networked site. For details, see [Section 16.7.2, “Configuring a networked site”, on page 371](#).
- **Network transit number** – The pilot number or CDL call number of the remote site that is used by the local site to move a contact to the remote site. For details, see [Section 16.7.3, “Configuring a network transit number”, on page 372](#).



Each site configuration stores all of the network transit numbers for that site, as well as the dialing prefix for all other sites in the network. When a contact is to be distributed to another site, the OpenScape Contact Center system requests a network transit number from the target site, and then uses the dialing prefix for that site to resolve the network transit number to a dialable number.

NOTE: When the system is configured for high availability (warm standby) and is connected to an OpenScape 4000 or HiPath 4000 communication platform with a standby Access Point Emergency unit that is located in a different area code than the main communication platform, you must ensure that your service provider sets up a unique global dialing prefix that can be used with the network transit numbers. This will allow incoming calls from the PSTN to be routed to either the communication platform or the Access Point Emergency unit, regardless of which unit is in control of the call processing.

16.7.2 Configuring a networked site

You must configure the remote OpenScape Contact Center sites that this site communicates with for networking purposes.

NOTE: To create or change a networked site, you must have Full or Modify access, respectively, for the **Networked sites** Manager permission.

To configure a networked site:

1. On the **File** menu, point to **New**, then **Administration Center**, then **Networking**, and then click **Site**.
2. On the **General** tab, under **Details**, do the following:
 - In the **Name** box, type a unique name for the networked site. Ensure that the site name is unique so that site level reports display only the statistics for one particular site.
 - In the **Description** box, type a description of the networked site.
 - In the **Dialing prefix** box, type the dialing prefix that is used to resolve the network transit number for the networked site into a dialable number. For background information on network transit numbers, see [Section 16.7.1, "Configuring the telephone lines for networking"](#), on page 370.
3. Under **Administration Server**, do the following:
 - In the **Host name** box, type the host name of the server machine where the networked site resides.

NOTE: When the system is configured for high availability (warm standby), you must type the name of the server cluster, rather than the name of the server machine.

- In the **Port number** box, type the port number of the Administration Server on the server machine.
4. Under **Contact**, do the following:
 - In the **Name** box, type the name of the person responsible for the operation of the networked site. This person is usually the administrator who configures the OpenScape Contact Center database and provides technical support.

Working with networking

Configuring the networking resources

- In the **Telephone number** box, type the telephone number where the contact person can be reached.
5. Click the **Reports** tab.
 6. Under **Reports**, select the check box for each report that you want to display data about this networked site. The list contains only the reports you own, or reports that are owned by users you can monitor.
 7. Click **OK**.

16.7.3 Configuring a network transit number

A network transit number is a pilot number that is used to route networked calls. You must define the network transit numbers that are used by the networked site. For background information, see [Section 16.7.1, "Configuring the telephone lines for networking"](#), on page 370.

When configuring a network transit number, you specify one of the following numbers depending on the type of communication platform to which the system is connected:

- OpenScape Voice – A pilot number for an OpenScape Contact Center Hunt Group.
- OpenScape 4000 or HiPath 4000 – A pilot number for an OpenScape Contact Center Route Control Group.
- OpenScape Business – A CDL call number for an OpenScape Contact Center UCD group.

NOTE: To create or change a network transit number, you must have Full or Modify access, respectively, for the **Network transit numbers** Manager permission.

All network transit numbers for the site must have the same number of digits and must be externally dialable with the addition of the dialing prefix. For example, pilot number 2345 must be externally dialable by 555-2345. If it is externally dialable by 555-1234 only, it cannot be used.

IMPORTANT: You must ensure that network transit numbers are configured properly. If they are not configured properly, serious call processing problems can arise, such as calls being dequeued and not handled by the system.

NOTE: You must configure a network transit number in both OpenScape Contact Center and the communication platform. This resource cannot be synchronized using the Config Sync feature.

When you are modifying an existing network transit number, you can change only the name of the network transit number. You cannot change the actual number. If you need to change the number, you must delete the network transit number and create a new one.

To configure a network transit number:

1. On the **File** menu, point to **New**, then **Telephony Center**, and then click **Network Transit Number**.
2. Under **Details**, in the **Name** box, type a name for the range of network transit numbers you want to create.
3. In the **From** box, type the first pilot number in the range.
4. In the **To** box, type the last pilot number in the range.

NOTE: If you want to create a single resource, type only the number in the **From** box. You do not need to type a number in the **To** box.

5. Click **OK**. The application creates a network transit number for each pilot number you specified.

16.7.4 Configuring the networking settings for a queue

Networking is implemented at the queue level. The definition for each queue participating in the networked contact center must be enabled for networking. For details, see [Section 10.3, "Configuring a queue", on page 240](#).

16.8 Configuring the networking options

If your site is licensed for networking, you can configure the default networking options. For details, see the following topics:

- [Section 16.8.1, "Configuring the general networking settings", on page 374](#)
- [Section 16.8.2, "Configuring the networking acceptance settings", on page 375](#)
- [Section 16.8.3, "Configuring the networking distribution settings", on page 376](#)

NOTE: To configure any of the networking options, you must have Full or Modify access for the associated Manager permission.

16.8.1 Configuring the general networking settings

The general networking settings allow you to:

- Enable and disable networking for the site. When networking is enabled at the site level, the site can accept and distribute contacts according to the details of the networking configuration at the site. You can disable a site's participation in networking to correct errors or otherwise modify the configuration.

NOTE: In addition to enabling networking at the site level, the networking feature must be fully configured. For details, see [Section 16.7, "Configuring the networking resources", on page 369](#).

- Configure the data exchange interval. Each site in a networked contact center makes use of performance statistics from other sites in the network in deciding to which site a contact is to be routed. (For details, see [Section 16.4, "Distribution methods", on page 361](#)). In addition, each site must be aware of whether each remote site is currently accepting networked contacts at the current time. To accommodate this, each site transfers its acceptance criteria and a collection of performance statistics to all other participating sites, at configured intervals.
- Specify the default voice networking workflow. For information on how to configure a voice networking workflow, see [Section 16.6, "Configuring a networking workflow", on page 368](#).

To configure the general networking settings:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Networking**.
3. To enable this site to participate in networking, under **Networking Participation**, select the **Enable** check box.
4. Under **Networking data exchange**, in the **Data exchange interval** box, type or select the time interval at which data is exchanged with the other networked sites.
5. Under **Default**, in the **Networking workflow** list, select the voice networking workflow that you want to use as the default.
6. Click **OK**.

16.8.2 Configuring the networking acceptance settings

You can configure the hours of operation during which the site will accept distributed calls from other networked sites. Optionally, you can configure the performance criteria that have to be met for a networked voice queue to accept distributed contacts. For more information, see [Section 16.3, "Acceptance criteria", on page 360](#).

To configure the networking acceptance settings:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Networking**.
3. Click the **Acceptance** tab.
4. To configure the acceptance schedule, under **Schedule**, click **Edit schedule**.

Working with networking

Configuring the networking options

5. In the **Networking Acceptance Schedule** dialog box, double-click the day you want to configure, and then edit the active time range for the day.

NOTE: You can also drag the start or end point of an active range to change the range.

6. Optionally, click the **Exceptions** tab to create an exception to the default schedule. An exception overrides the schedule for the entire day.
 - a) On the calendar, click the day for which you want to schedule an exception, for example, a national holiday. The **Default** row shows the default schedule for that day.
 - b) Select the **Override** check box.
 - c) In the **Override** row, double-click a cell, and then edit the active time range for the override schedule. Click **OK**.
7. Use the **Summary** tab to view the schedule by status or by day of the week.
 - Expand **By Status**, and then click **Active** or **Inactive** to see the days and times when the e-mail schedule is active or inactive, respectively.
 - Expand **By Day**, and then click the day of the week to see the schedule for that day.
8. Click **OK**.
9. To configure a performance acceptance criterion, under **Performance Acceptance Criteria**, click **Add**, or select a criterion in the list and click **Edit**.
10. Click **OK**.

16.8.3 Configuring the networking distribution settings

You can configure the settings that allow this site to distribute calls to other networked sites. You must specify the distribution method and the list of sites that will be considered for distribution.

The distribution methods are described as follows:

- **Best Site** – Distributes a contact to the site with the best performance on a single, specified statistic. When this method is selected, the Included Sites list defines the sites that will be tested to determine the best performing site.
- **Preferred Site** – Distributes a contact to the site that ranks highest in the defined preferred order of sites. When this method is selected, the Included Sites list defines the preferred order of the sites available for distribution.

For more information, see [Section 16.4, “Distribution methods”, on page 361](#).

To configure the networking distribution settings:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Networking**.
3. Click the **Distribution** tab.
4. Under **Included Sites**, select the sites to which this site can distribute calls. Double-click a row in the table to activate the list of configured sites, and then select a site from the list. You must have already configured the sites before you can select them here.
5. Under **Default Distribution Method**, in the **Method** list, select the method by which OpenScape Contact Center selects a site to which to distribute a call. You can choose **Best Site** or **Preferred Site**.
6. If you chose **Best Site** in step 5, above, under **Default Best Site Selection Statistic**, specify the default selection statistic as follows:
 - a) In the **Evaluate at** list, select the level at which to select the statistic to be evaluated. You can choose **Queue Level** or **Site Level**.
 - b) In the **Statistic** list, select the statistic you want to use to evaluate the site.
 - c) If you chose **Queue Level** in step a), in the **Queue** list, select the queue against which to evaluate the selected statistic.
7. Click **OK**.

Working with networking

Configuring the networking options

17 Working with central reporting

This chapter introduces the optional central reporting feature, and provides details on the tasks involved in configuring the OpenScape Contact Center system to work with this feature.

The central reporting feature uses a separate central reporting server machine that is running Informix and a subset of the OpenScape Contact Center servers.

A central reporting server machine can be used for the following purposes:

- To produce historical reports across multiple networked sites. For details on the networking feature, see [Chapter 16, "Working with networking"](#).
- To offload the historical reporting function from the main server machine. This allows the main server machine to process real-time contacts and real-time reports more efficiently.
- To provide increased data retention. Since more historical reporting data can be stored on a central reporting server machine, you can store reporting data for longer periods of time.
- When the system is configured for high availability (warm standby), to consolidate the historical reporting data from the server cluster. For details on the high availability (warm standby) feature, see [Chapter 18, "Working with the high availability \(warm standby\) feature"](#).

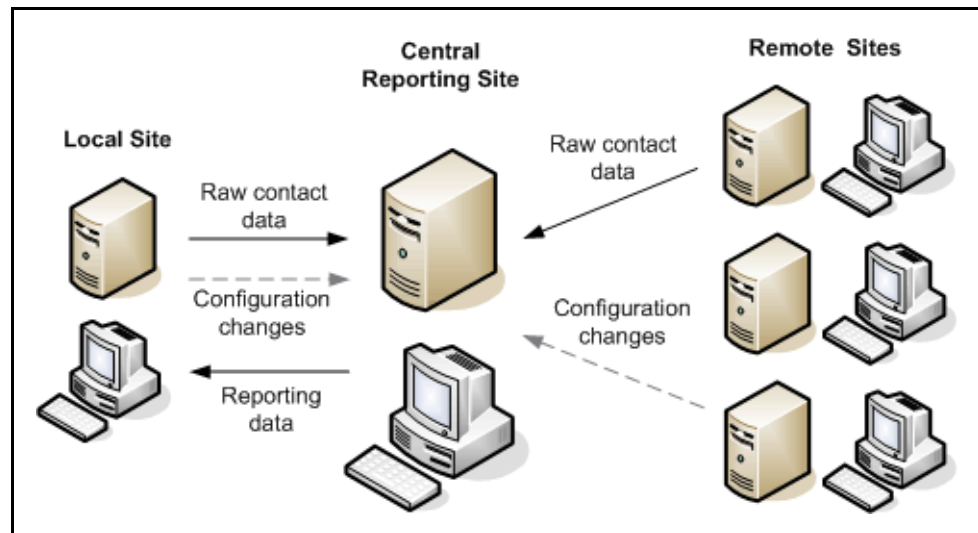
The central reporting feature provides reporting on all available media types. The central reporting server machine stores its own set of report definitions, independent of the definitions stored at local sites.

When the central reporting server machine is used for networking, the key difference between network reports and reports generated on individual sites, is that network reports group entries for individual resources by site and provide totals for each site. For example, a user historical report will show totals for each user, with the users grouped according to the site where they are working, and totals for each site. Also, when configuring user, routing state reason, and Wrap-up reason reports, the **Select by** list on the **Content** tab offers the option to select the content of the report by site name.

17.1 Central reporting data consolidation

Informix replication is used to consolidate data from the local sites (that is, the sites other than the site where the central reporting server machine resides) into the OpenScape Contact Center database on the central reporting server machine.

Throughout the day, the raw contact data is rolled up to report-ready data for 15-minute and hourly reports. Once a day, at data maintenance time, rollup data for daily, weekly, and monthly reports is calculated. Also at this time, any configuration changes for local sites, such as new user definitions, are imported to the central reporting site. For more information on the data maintenance time, see [Section 20.6.1, "Configuring the data maintenance time", on page 420](#).



17.2 Central reporting limited functionality

When you are logged on to a central reporting server machine, the Manager application provides the following limited functionality:

- Only the Administration Center and Reporting Center are available.
- In the Administration Center, only users, user templates, profiles, servers, and notifications are displayed. For details on configuring users, see [Section 17.3, "Configuring a user on a central reporting machine", on page 381](#).
- In the Reporting Center, only historical reports are available – real-time, cumulative, and activity reports are not available. All historical reports that are available at the local sites are supported.

- In the Options dialog box, only options related to the central reporting feature and the configuration of the Manager application itself are available. For details, see [Section 17.4, "Configuring the central reporting options"](#), on page 382.
- Although it is possible to save the production database as a design database for customer support purposes, you cannot save a design database over the production database.

17.3 Configuring a user on a central reporting machine

All administrators and supervisors who will be logging on to the central reporting server machine to generate reports or perform site maintenance must be configured on the central reporting server machine.

The user configuration includes:

- Permissions to work with specific report types (for example, user historical and queue historical) or perform administration tasks. Two default profiles specific to central reporting are provided:
 - **Manager** – Provides permissions to work with all report types, user definitions, and a selection of related features.
 - **Manager Administrator** – Provides the same permissions as the Manager profile and also includes permissions to work with the Options dialog box settings specific to central reporting.
- Monitoring rights to the specific resources to be reported on (for example, queues and users).
- Ownership of report definitions, if the user does not have permission to create or modify report definitions.

[Section 4.1, "Configuring a user"](#), on page 31 provides instructions on how to configure users at a local site. The same principles apply on a central reporting server machine, however only the **General**, **Permissions**, and **Monitoring** tabs are available and only central reporting-specific settings are available on these tabs.

17.4 Configuring the central reporting options

You must configure the default options that specifically relate to central reporting. For details, see the following topics:

- [Section 17.4.1, "Configuring the central reporting server machine settings", on page 382](#)
- [Section 17.4.2, "Configuring the server settings for networked sites", on page 383](#)

Other options can be configured on the central reporting server machine independently of the same settings on the main server machine. For details, see the following topics:

- [Section 7.13.2, "Configuring the first day of the week", on page 152](#)
- [Section 7.13.5, "Configuring the e-mail reports option", on page 156](#)
- [Section 20.6, "Configuring the data management options", on page 420](#)
- [Section 20.7.1, "Configuring the service level interval", on page 430](#)
- [Section 20.7.3, "Configuring the user calculation", on page 435](#)

17.4.1 Configuring the central reporting server machine settings

If your contact center is using central reporting, you can configure the settings for the central reporting server machine.

NOTE: In a multitenant environment, only a system administrator can configure the central reporting server machine settings. For details, see [Section 19.3, "Administrator roles in a multitenant environment", on page 392](#).

To configure the central reporting server machine settings:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Reporting**.
3. Click the **Central Reporting** tab.
4. In the **Site name** box, type the name of the central reporting site.
5. In the **Host name** box, type the host name of the central reporting server machine.

6. In the **Port number** box, type the port number of the Administration Server on the central reporting server machine.

17.4.2 Configuring the server settings for networked sites

When you are connected to a central reporting server machine in a networked environment, you can change the name of a networked site and the port number of the Administration Server at a networked site.

To configure the server settings for the networked sites:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Reporting**.
3. Click the **Networked Sites** tab.
4. Under **Networked Sites**, select a site in the list and click **Edit**.
5. In the **Networked Sites** dialog box, change the following, as required:
 - In the **Site name** box, type a name for the site.
 - In the **Port number** box, type the port number of the Administration Server at the site.
6. Click **OK**.

Working with central reporting

Configuring the central reporting options

18 Working with the high availability (warm standby) feature

This chapter discusses the high availability (warm standby) feature, and provides details on the tasks involved in configuring the OpenScape Contact Center system to work with this feature.

High availability (warm standby) is a licensed feature that is supported only when the system is connected to an OpenScape Voice, OpenScape 4000, or HiPath 4000 communication platform.

The high availability (warm standby) feature uses a redundant server machine to provide a high level of availability for OpenScape Contact Center server processes and required third-party processes in the event of a hardware or software component failure.

When the system is configured for high availability (warm standby), the administration and processing data is replicated between the primary and backup server machines. To ensure that the system gets updated with the replicated data, the OpenScape Contact Center service on the server machine that is in standby mode restarts every day, one hour before the configured data maintenance time. For information on how to configure the data maintenance time, see [Section 20.6.1, “Configuring the data maintenance time”](#), on page 420.

If you make any significant administration changes on the server machine that is in active mode, we recommend that you restart the OpenScape Contact Center service on the server machine that is in standby mode. This will ensure that, if the system fails, the backup instance of the system will have the latest changes.

An optional central reporting server machine can be used to consolidate statistical data from the server cluster and thus provide on-going historical reporting during and after failover. For details, see [Chapter 17, “Working with central reporting”](#).

In most cases, you should log on to the Manager application using the cluster name (see [Section 3.2, “Logging on to the Manager application”](#), on page 23) when you are working in a high availability (warm standby) environment. You must restart the Manager application manually after a failover.

NOTE: Certain reporting statistics are affected when a failover to the backup server occurs. For details, see the *Reporting Reference Guide*.

Working with the high availability (warm standby) feature

Call Director configuration in a high availability (warm standby) environment

18.1 Call Director configuration in a high availability (warm standby) environment

When the system is configured for high availability (warm standby), redundant voice processors are required for Call Director. Therefore:

- You must configure the backup voice processor separately on the backup server machine. If the system is using multiple OpenScape Contact Media Service voice processors, you must configure a voice processor on the backup server machine for each voice processor on the primary server machine, and each pair of voice processors must be configured in the same voice processor region (if distributed).
- You must configure a second set of Call Director extensions or subscriber numbers on the backup server machine for each backup voice processor.

In a high availability (warm standby) environment, you normally log on to the Manager application using the cluster name. However, when you are configuring items on the backup server machine, you must connect to the physical machine in the format *portnumber@servername*.

In addition, the Call Director .wav files are not replicated on the backup server machine. You must manually copy the .wav files to the WaveFiles folder on the backup server machine and ensure that the .wav files on the primary and backup server machines remain synchronized. For details, see [Section 12.3.3, "Configuring a .wav file"](#).

After configuring these items and copying the .wav files, you must restart the OpenScape Contact Center service on the backup server machine.

18.2 Configuring the high availability (warm standby) option

The high availability (warm standby) feature requires special hardware and software and must be configured during installation of the OpenScape Contact Center system. After installation, the high

Working with the high availability (warm standby) feature

Configuring the high availability (warm standby) option

availability (warm standby) option is enabled by default to ensure that the system operates with the high availability (warm standby) feature turned on.

IMPORTANT: Changing the setting of the high availability (warm standby) option after initial system setup can adversely affect the operation of OpenScape Contact Center, and will require that you restart the OpenScape Contact Center service on the main server machine. Contact your service representative before proceeding.

NOTE: When you are connected to a design database, the high availability (warm standby) option will appear only when connected to an OpenScape Voice, OpenScape 4000, or HiPath 4000 communication platform.

NOTE: In a multitenant environment, only a system administrator can configure the high availability (warm standby) option. For details, see [Section 19.3, “Administrator roles in a multitenant environment”](#), on page 392.

To configure the high availability (warm standby) option:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **System**.
3. Click the **Advanced** tab.
4. Under **High Availability (Warm Standby)**, select or clear the **Enable** check box, as required.
5. Click **OK**.

Working with the high availability (warm standby) feature

Configuring the high availability (warm standby) option

19 Working with the multitenancy feature

Multitenancy is a licensed feature that is supported only when the system is connected to an OpenScape Voice, OpenScape 4000, or HiPath 4000 communication platform. This chapter discusses the multitenancy feature, and provides details on the tasks involved in configuring the OpenScape Contact Center system to work with this feature.

NOTE: Networking, SAP CIC integration, and SAP ICI integration are not supported in a multitenant environment.

NOTE: Licensed features are shared between business units in a multitenant environment.

The multitenancy feature enables a single contact center to have multiple business units that are clearly separated from each other. For example, in a managed services environment, the service provider needs to ensure that the different business units on the system cannot view each other's resources. Similarly, in a service bureau, supervisors and agents servicing different customers should not be able to view another customer's resources.

NOTE: If a single contact center site has the multitenancy feature and is using a central reporting server machine, all the business units within the site can use the central reporting server machine. However, if the contact center has multiple sites and one of those sites has the multitenancy feature, the central reporting server machine can be used by only one site and cannot be shared by multiple sites.

Contacts are associated with a business unit as follows:

- Routed calls are associated with a business unit based on the hunt group (OpenScape Voice) or route control group (OpenScape 4000 or HiPath 4000) where the call was received. Direct calls are associated with a business unit based on the subscriber number (OpenScape Voice) or user extension (OpenScape 4000 or HiPath 4000) that is assigned to the business unit.
- Callbacks are associated with a business unit when they are created.

Working with the multitenancy feature

Changing to multitenancy

- E-mail messages are associated with a business unit based on the e-mail destination where the message was received. Outgoing e-mail messages are associated with a business unit based on the user who sends the message.
- Web collaboration contacts are associated with a business unit based on the business unit name that was specified as part of the Web page configuration.

In the event that the OpenScape Contact Center system cannot route a contact to a particular business unit in a multitenant environment, the system will route the contact to the error business unit that is configured at the system level.

19.1 Changing to multitenancy

You can convert the OpenScape Contact Center system from a single tenant environment to a multitenant environment. This conversion enables the contact center to have multiple business units that are separated from each other.

IMPORTANT: When the system is configured for high availability (warm standby), some additional steps are required when changing to multitenancy. For details, see [Section 19.2, "Changing to multitenancy in a high availability \(warm standby\) environment"](#), on page 391.

IMPORTANT: Changing to multitenancy is a one-way operation – the system cannot be converted back after it has been changed.

IMPORTANT: When you are connected to the production database, you must ensure that all users are logged off the system before changing to multitenancy, and restart the OpenScape Contact Center service on the main server machine after changing to multitenancy.

To change to multitenancy:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **System**.
3. Click the **Advanced** tab.
4. Click **Change to Multitenancy**.

5. In the warning dialog box, under **Do you want to change to multitenancy?**, select **Yes**, and then click **OK**.
6. When the system prompts you to confirm that you want to change to multitenancy, click **Yes**. The system changes to multitenancy.
7. Click **OK**.

19.2 Changing to multitenancy in a high availability (warm standby) environment

When the system is configured for high availability (warm standby), you must use the following procedure to change to multitenancy.

NOTE: This procedure requires you to pause and resume the server machine that is in standby mode. For details on pausing and resuming nodes (server machines), see the *Cluster Administrator Help*.

To change to multitenancy in a high availability (warm standby) environment:

1. On the server machine that is in standby mode, do the following:
 - a) Using the Microsoft cluster application, pause the server machine.
 - b) Stop the **OpenScape Contact Center** and **OpenScape Contact Center AutoPA** services. Wait for the services to completely shut down before proceeding.
2. On the server machine that is in active mode, do the following:
 - a) Change to multitenancy. For details, see [Section 19.1, "Changing to multitenancy"](#), on page 390. The new data will be replicated to the database on the server machine that is in standby mode.
 - b) When the system prompts you, restart the **OpenScape Contact Center** service.
3. On the server machine that is in standby mode, do the following:
 - a) Start the **OpenScape Contact Center** and **OpenScape Contact Center AutoPA** services. The server machine will come up in standby mode with multitenancy enabled.
 - b) Using the Microsoft cluster application, resume the server machine.

19.3 Administrator roles in a multitenant environment

In a multitenant environment, there are two administrator roles:

- **System administrator** – System administrators are responsible for configuring the business units and other system-level resources, such as the OpenScape Contact Center servers, communication platform resources.
- **Business unit administrator** – Business unit administrators are responsible for configuring all other items required for their specific business unit, such as Broadcaster and wallboard views, routing strategy and queue processing workflows, queues, and reports.

The following table lists the administrator tasks that can be performed only by system administrators, and the tasks that can be performed by both system administrators and business unit administrators. All other Manager tasks can be performed only by business unit administrators.

System administrator only tasks	Both system and business unit administrator tasks
● Configuring business units ● Configuring servers ● Configuring communication platform resources (such as extensions, subscriber numbers, request targets, ConfigSync domain ranges) ● Configuring notifications ● Configuring excluded numbers ● Configuring emoticons ● Uploading a design database ● Activating product features ● Configuring the error log report ● Accessing the System Monitor application ● Configuring most of the system-related options (see the explanation in Section 19.3.1, “Configuration of system-related options in a multitenant environment”, on page 393)	● Configuring users ● Configuring user templates ● Configuring profiles ● Configuring reasons – system administrators can only change system-defined reasons (except Wrap-up reasons) and business unit administrators can only configure new reasons ● Configuring e-mail destinations ● Validating the database ● Saving a design database ● Configuring the change log

Table 16 Administrator tasks in a multitenant environment

System administrators need to provide guidance to business unit administrators regarding business unit resources that can impact the system. For example, user IDs must be unique across the system. In this case, the system administrator should assign a range of user IDs to each business unit, and then convey those ranges to the business unit administrator to ensure that they do not configure user IDs that are in use by another business unit.

19.3.1 Configuration of system-related options in a multitenant environment

System administrators are responsible for configuring most items in the Options dialog box under System Settings, with the exception of the following options, which are configured by business unit administrators:

- **Contact Lookup** – The settings on the General tab.
- **Voice** – The settings on the General tab and the OpenScape Contact Center Ring No Answer feature.
- **Callback** – The caller ID settings (available only when connected to an OpenScape Voice, OpenScape 4000, or HiPath 4000 communication platform).
- **E-mail** – The settings on the General tab (not including the e-mail routing schedule) and the e-mail message settings.
- **Web Collaboration** – The settings on the General tab.
- **Routing** – The maximum offer time.
- **Call Director** – The error message file and default navigation.
- **Statistics** – The service level interval and corresponding service level calculation formula.

19.4 Updating a design database in a multitenant environment

To prevent conflicts between different business units, only a system administrator can upload a design database in a multitenant environment. Therefore, a business unit administrator who wants to make offline configuration changes in a design database must follow the general process provided in this section.

NOTE: A business unit administrator can access only the configuration information related to their own business unit. However, the design database contains the configuration information for all business units. Therefore, a system administrator must allow only one business unit at a time to make configuration changes to a design database.

Working with the multitenancy feature

Configuring the multitenancy resources

To update a design database in a multitenant environment:

1. Ask a system administrator for a copy of the design database.
The system administrator saves a design database, locks the production database, and gives you a copy of the design database.
2. Make the required changes to the design database.
3. Give the updated design database to the system administrator. The system administrator uploads the design database.

19.5 Configuring the multitenancy resources

You must configure the resources that impact the multitenancy feature.

19.5.1 Configuring a business unit

In a multitenant environment, a system administrator must configure each business unit within the contact center.

NOTE: To create or change a business unit, you must have Full or Modify access, respectively, for the **Business units** Manager permission.

When a system administrator makes configuration changes that impact a particular business unit, the system administrator should inform the person responsible for the business unit.

NOTE: When the system has central reporting, a system administrator cannot configure business units on a central reporting server machine. The business units are created automatically on a central reporting server machine at startup or at data maintenance time.

To configure a business unit:

1. On the **File** menu, point to **New**, then **Administration Center**, and then click **Business Unit**.
2. Under **Details**, do the following:
 - a) In the **Name** box, type a unique name for the business unit. You cannot use the name **system**, which is reserved for the system-level business unit.
 - b) In the **Description** box, type a description for the business unit.
 - c) In the **Master password** box, type the password for the business unit's Master Administrator user account. For details on the Master Administrator user account, see [Section 3.2.1, "About the Master Administrator"](#), on page 25.
 - d) In the **Confirm password** box, retype the password to confirm that you entered it correctly.
3. Under **Contact**, do the following:
 - In the **Name** box, type the name of the person responsible for the business unit. This person is usually the business unit administrator who configures the OpenScape Contact Center database and provides technical support.
 - In the **Telephone number** box, type the contact telephone number for the person responsible for the business unit.
4. Click the **Security** tab. This tab is available only if the enhanced security option is enabled. For details, see [Section 20.3.4, "Configuring the enhanced security option"](#), on page 414.
5. Under **Users**, select the check box for each user who you want to be able to modify this business unit. The list contains only the users who have Full or Modify access to the **Business units** Manager permission.
6. Click **OK**.

19.5.2 Configuring a user at the system level

In a multitenant environment, a system administrator can configure other system level users and delegate system level administration tasks to those users.

NOTE: Use SAML2 authentication, to allow users to login automatically. For more information, please refer to chapter [Chapter 20, "Single Sign On using SAML2 protocol"](#).

To configure a user at the system level:

1. On the **File** menu, point to **New**, then **Administration Center**, then **User**, and then click **User**.

Application	Permissions	License Used
Manager	No	-
IT Monitor	No	-

2. On the **General** tab, under **User**, do the following:
 - In the **First name** box, type the user's first name.
 - In the **Last name** box, type the user's last name.

3. Under **System Identification**, do the following:
 - In the **User name** box, type a unique user name. This name is used when logging on to the Manager application and for recording statistics. If you want to use the Windows authentication method, the user name must match the name used for logging on to the Windows domain.
 - In the **Authentication** list, select one of the following:
 - To have the OpenScape Contact Center system validate the user, select **Use OpenScape Contact Center**, type the password in the **Password** box, and then type it again in the **Verify password** box to ensure that you typed it correctly.
 - To have Windows validate the user, select **Use Windows**, and then type the NetBIOS name for the Windows domain in the **Domain** box. Ensure that the user name matches the name used for logging on to the Windows domain. When you select this option, this user will not see the Logon window when starting the Manager application.
4. To set the user attributes based on a user template (see [Section 4.2, "About user templates", on page 49](#)), under **Templates**, click **Change** and select the user template you want to apply to the user from the list. If you later change an attribute in the user record or user template, an indicator shows that the template association is not current. For details, see [Section 4.2.1, "User template associations", on page 50](#).
5. Under **Application**, specify the user's access to the applications. For each application, click the item in the **Permissions** column and select either **Yes** or **No** from the list.
6. Click the **Permissions** tab. Only the profiles and permissions related to system level tasks are available. For details, see [Section 19.3, "Administrator roles in a multitenant environment", on page 392](#).
7. In the **Profiles** table, select the check box for each profile that you want to assign to the user. If two or more profiles are selected, the user's actual access level is changed to the highest access level of the selected profiles.
8. Optionally, in the **Permissions** table, modify the default permissions. For each function you want to change, click the item in the **Actual** column and select the access level from the list. For a description of the access levels, see [Section 4.3.3, "Access levels", on page 51](#).

Working with the multitenancy feature

Configuring the multitenancy resources

[on page 62.](#)

NOTE: You can click **Reset** to reset the effective permissions to the default access levels.

9. To show only the permissions in the list for which the default access level has been modified, select the **Show overrides only** check box.
10. Click the **Security** tab. This tab is available only if the enhanced security option is enabled. For details, see [Section 20.3.4, "Configuring the enhanced security option"](#), on page 414.
11. To configure the users who can modify this user, do the following:
 - a) Under **Configure**, select **Users who can modify this user**. This option is disabled if the user you are configuring does not have access to the Manager application.
 - b) In the list, select the check box for each user who you want to be able to modify this user. The list contains only the users who have Full or Modify access for the **Users** Manager permission.
12. To configure the resources that the user can modify, do the following:
 - a) Under **Configure**, select **Resources this user can modify**. This option is disabled if the user does not have Full or Modify access permission for any of the eligible resources.
 - b) Under **Include**, in the **Show** list, select the type of resource that you want to configure. The list contains only the resource types for which both you and the user have Full or Modify access permission.
 - c) In the resulting list, select the check box for each resource that you want this user to be able to modify.
13. Click **OK**.

19.5.3 Configuring an e-mail destination in a multitenant environment

All e-mail messages are stored in a single mailbox on the corporate e-mail server. If you want to have more than one destination e-mail address for your contact center (such as, *sales@company.com* and *support@company.com*), you must configure the e-mail destinations you want to use.

In a multitenant environment, you must configure separate e-mail destinations for each business unit. E-mail destinations are initially created by a system administrator and then later configured by a business unit administrator.

19.5.3.1 Configuring an e-mail destination at the system level

In a multitenant environment, a system administrator creates the required e-mail destinations and assigns them to a business unit.

NOTE: Before a system administrator can delete or reassign an e-mail destination to another business unit, a business unit administrator must ensure that the e-mail destination is not selected as the default incoming or outgoing e-mail address for any business unit.

To configure an e-mail destination at the system level:

1. On the **File** menu, point to **New**, then **Design Center**, then **E-mail**, and then click **Destination**.
2. On the **General** tab, under **Details**, do the following:
 - In the **Name** box, type a unique name for the e-mail destination.
 - In the **Description** box, type a description for the e-mail destination.
 - In the **E-mail address** box, type the destination e-mail address.
 - In the **Business unit** list, select the business unit to which you want to assign this e-mail destination.
3. Click **OK**.

19.5.3.2 Configuring an e-mail destination at the business unit level

In a multitenant environment, a business unit administrator can configure the existing e-mail destinations for their own business unit. However, a business unit administrator cannot change a destination e-mail address itself, create a new e-mail destination, or delete an existing e-mail destination.

NOTE: You specify the default e-mail addresses in the Options dialog box. For details, see [Section 14.3.1, "Configuring the default e-mail routing strategy, queue, and addresses"](#), on page 326.

To configure an e-mail destination at the business level:

1. On the **File** menu, point to **New**, then **Design Center**, then **E-mail**, and then click **Destination**.
2. On the **General** tab, under **Details**, do the following:
 - In the **Description** box, type a description for the destination.
 - In the **From text** box, type an alias for the destination e-mail address. This alias appears in the From box when a user replies to an e-mail message.
 - To gather statistics for this destination for reporting purposes, select the **Monitored** check box. When you select this option, the Reports tab becomes active.
3. If you selected the **Monitored** check box, click the **Reports** tab and select the check box for each report that you want to display data about this destination. The list contains only the reports you own, or reports that are owned by users you can monitor.
4. Click **OK**.

19.6 Configuring the error business unit

In the event that the OpenScape Contact Center system cannot route a contact to a particular business unit in a multitenant environment, the system will route the contact to the error business unit. A system administrator configures the error business unit for the system.

To configure the error business unit:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **System**.

3. Click the **Advanced** tab.
4. Under **Multitenancy**, in the **Error business unit** list, select the business unit to which contacts are routed in the event of an error.
5. Click **OK**.

Working with the multitenancy feature

Configuring the error business unit

20 Configuring other global options

An OpenScape Contact Center configuration includes a number of options (such as application settings, intervals, calculations, and scheduled events) that impact routine operation, reporting, and the level of service experienced by customers. Initially, most customers start by using the default settings for many of these options, but you can reconfigure the settings at any time. You configure the settings globally, although you can override some settings in queues and routing strategy workflows.

IMPORTANT: Contact your service representative before making significant changes to the threshold and interval settings configured in your database.

Some of the global options are described in the relevant chapter (for example, routing options are described in [Chapter 8, "Routing"](#)), but the remaining options are described in this chapter.

NOTE: In a multitenant environment, most system-level options can be configured only by a system administrator. A small subset of the system-level options can be configured by a business unit administrator. For details, see [Section 19.3, "Administrator roles in a multitenant environment"](#), on page 392.

20.1 Configuring the personal options

You can configure several personal options, including:

- The appearance and behavior of the Manager application, such as the display of the Index bar.
- The display of system messages in the Messages window and in the status bar. The status bar is located at the bottom of the main Manager application window.
- The notification method used to indicate when a threshold in a real-time or cumulative report is reached.
- The default user template to be used when creating a new user. For more information on user templates, see [Section 4.2, "About user templates"](#), on page 49.

Configuring other global options

Configuring the personal options

You can also configure the confirmation options (see [Section 20.1.1, "Configuring the confirmation options", on page 405](#)).

To configure the personal options:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **User Settings**, click **Personal**.
3. On the **General** tab, under **Show**, select the checkboxes for the items you want to show:
 - **Index bar** – Displays the Index bar, which allows you to select from a subset of items in a list. To display the letters on the Index bar that have entries associated with them in bold text, select the **Display active Index bar letters in bold** check box.
 - **ToolTips** – Displays the function of the toolbar buttons in the Manager application window when you hold your mouse pointer over the button.
 - **Record hints** – Displays a description of the selected record. Record hints are displayed above the right pane in the main Manager application window.
4. Under **Messages**, do the following:
 - To specify the length of time system messages are displayed in the status bar, type or select the number of seconds in the **Hide status bar messages after** box.
 - To have the application display the system messages in a separate window when they occur, select the **Display System Message window when new messages occur** check box. If you do not select this option, the system messages are recorded, but the window does not open.

NOTE: To view the System Messages window, on the **View** menu, click **System Messages**.

5. Under **When a Threshold is Reached**, select the **Flash title bar or taskbar icon if Real-time Viewer is hidden or minimized** check box if you want the Real-time Viewer to flash when a threshold is reached. If the Real-time Viewer is hidden, the title bar will flash, and if the Real-time Viewer is minimized, the taskbar icon will flash.
6. Under **Default User Template**, in the **Select template** list, select the user template that you want to use as the default. The default template is used when you create multiple users and a user template is not specified. For details, see [Section 4.2.5, "Creating](#)

multiple users by importing a text file”, on page 56.

7. Click **OK**.

20.1.1 Configuring the confirmation options

You can configure the application to prompt you for confirmation when you perform various actions such as deleting a record or exiting the application.

To configure the confirmation options:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **User Settings**, click **Personal**.
3. Click the **Confirmations** tab.
4. Under **Show Confirmations When**, select the check box for each action that you want the Manager application to prompt you for:
 - **Deleting records** – The application will ask if you are sure you want to delete the record (that is, a resource or definition in one of the application centers).
 - **Exiting the Manager application** – The application will ask if you are sure you want to exit the application.
 - **Removing a report from a report view** – The application will ask if you are sure you want to remove the report from the report view.
 - **Historical reports were completed** – When you log on, the application will inform you that historical reports were completed while you were logged off.
 - **Report changes cause thresholds to be deleted** – When you change a report (that is, change the report type, the resource reported by, the resource selected by, or the type of activity reported on), the application will inform you that the currently defined thresholds for the report will be deleted as a result of the change.
 - **Report was successfully submitted** – The application will inform you that the report was successfully submitted to the Scheduler.
 - **Background operations were completed** – The application will inform you when a background operation (such as deleting multiple users) is complete.
5. Click **OK**.

20.2 Configuring the advanced options

You can configure various advanced user-related options for the Manager application.

20.2.1 Configuring the diagnostic settings

You can configure the Manager application to log messages to a diagnostic file, which your administrator or service technician can use to track the operations of the applications and resolve problems, such as why an application disconnected from an OpenScape Contact Center server. You can turn diagnostic logging on and off, and also configure the contents of the diagnostic file. You should need to configure the contents only if problems occur within your contact center.

To turn diagnostic logging on:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **User Settings**, click **Advanced**.
3. Under **Diagnostics**, select the **Turn diagnostic logging on** check box.
4. Click **OK**.

To configure the diagnostic file contents:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **User Settings**, click **Advanced**.
3. Under **Diagnostics**, click **Details**. The **Diagnostics** dialog box is displayed.

NOTE: The diagnostic files are saved to the folder specified in the **Location** box.

4. Under **Levels**, select the check box for each diagnostic level you want to include in the file:

NOTE: By default, when you start any application, the **Event**, **ActiveX Component**, and **Function Entry/Exit** diagnostic levels are selected.

- **Warning** – Saves messages related to errors that do not break down the connectivity.
- **Information** – Saves messages related to normal connectivity operations.
- **Event** – Diagnostic trace of event.
- **ActiveX Component** – Saves messages related to OCX operations.
- **Function Entry/Exit** – Diagnostic trace of the code workflow.

5. Click **OK**.

20.2.2 Changing the password

An administrator will provide you with a user name and password for logging on to the Manager application. For security, you should change your password the first time you log on, and then change it periodically to conform to security policies at your site. This guideline also applies to the default Master Administrator password. For more information on the Master Administrator user account, see [Section 3.2.1, "About the Master Administrator"](#), on page 25.

To change the password:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **User Settings**, click **Advanced**.
3. Under **Password**, click **Change**.
4. In the **Change Password** dialog box, do the following:
 - a) In the **Old Password** box, type your current password.
 - b) In the **New Password** box, type your new password.
 - c) In the **Confirm new password** box, retype your new password to verify that you entered it correctly.
 - d) Click **OK**.

Configuring other global options

Configuring the system options

5. Click **OK**.

20.2.3 Restoring the default settings

You can restore certain user settings, such as custom shortcuts, toolbars and colors, to the default settings provided when you first installed the application.

To restore the default settings:

1. On the **Tools** menu, click **Options**.
2. Click the **Advanced** tab.
3. Under **Default Settings**, click **Restore**.
4. Under **Features**, do the following:
 - a) Select the check boxes for the features you want to restore to the default settings.
 - b) Clear the check boxes for the features that you do not want to restore to the default settings.
 - c) Click **OK**.
5. Click **OK**.

20.3 Configuring the system options

You can configure various system options related to the contact center.

NOTE: To configure any of the system options, you must have Full or Modify access for the associated Manager permission.

20.3.1 Configuring the general system settings

You can configure general system settings, such as the information related to the contact center's site and technical support, and the location of the ShareData folder.

The ShareData folder is a repository for storing and transferring various items in the contact center, such as design databases, historical reports, .wav files, and XML data.

IMPORTANT: We strongly recommend that you do not change the default location of the ShareData folder. Locating the ShareData folder on a machine other than the main server machine can adversely affect system performance. If it is absolutely necessary to change the default location, it should be changed only by your service representative.

NOTE: In a multitenant environment, only a system administrator can configure the general system settings. For details, see [Section 19.3, “Administrator roles in a multitenant environment”](#), on page 392.

To configure the general system settings:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **System**.
3. Under **Profile**, in the **Site** box, type the name of your contact center. This name appears on reports about the contact center, and when you monitor servers.
4. Under **Contact**, do the following:
 - In the **Name** box, type the name of the person responsible for the operation of the contact center. This person is usually the administrator who configures the OpenScape Contact Center database and provides technical support.
 - In the **Telephone number** box, type the telephone number for the person responsible for the operation of the contact center.
5. Under **ShareData**, in the **Location** box, type the path and name of the ShareData folder. This folder is usually located on the main server machine.
6. Under **360° Customer View**, check the **Enable** checkbox to activate the feature.
7. If the contact center is using an auxiliary server machine, under **Notifications**, in the **Select Watchdog Server** list, select the Watchdog Server that sends notifications for the site. For details on configuring an auxiliary server, see [Section 5.3.4, “Configuring a Real-Time Server on an auxiliary server machine”](#), on page 74.
8. Click **OK**.

20.3.2 Configuring the e-mail server settings

Incoming e-mail messages are routed through the corporate e-mail server to the OpenScape Contact Center E-mail Server. The corporate e-mail server and the OpenScape Contact Center E-mail Server communicate using the IMAP4 protocol. Message attachments are retrieved using separate IMAP4 and MIME functions.

Outgoing e-mail messages are distributed using an SMTP interface. This includes completed historical reports that are distributed as attachments to e-mail messages. For more information, see [Section 7.13.5, "Configuring the e-mail reports option", on page 156](#).

IMPORTANT: When you are connected to the production database, if you change the e-mail server settings, you will be required to restart the OpenScape Contact Center E-mail Server on the main server machine.

NOTE: In a multitenant environment, only a system administrator can configure the e-mail server settings. For details, see [Section 19.3, "Administrator roles in a multitenant environment", on page 392](#).

To configure the e-mail server settings:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **System**.
3. Click the **E-mail Settings** tab.
4. Under **Corporate IMAP Server**, do the following:
 - In the **Host name** box, type the host name (or FQDN) of the machine where the IMAP server resides.
 - In the **Port number** box, type the port number of the IMAP server.
 - To secure the connection, select the **Use TLS** check box.
 - In the **User name** box, type the user name needed to log on to the IMAP server, for example, OSCCEmail.
 - In the **Password** box, type the password needed to log on to the IMAP server.
 - In the **Confirm password** box, retype the password to confirm that you entered it correctly.

- In the **Maximum IMAP sessions** box, type the maximum number of allowed IMAP sessions. The value **0** means not limited.

NOTE: Set the parameter **Maximum IMAP sessions** to 20 if the e-mail server is Office365.

5. Under **Corporate SMTP Server**, do the following:

- In the **Host name** box, type the host name (or FQDN) of the machine where the SMTP server resides.
- In the **Port number** box, type the port number of the SMTP server.
- To secure the connection, select the **Use TLS** check box.
- In the **Authentication** list, select one of the following:
 - **None** – Do not use any authentication.
 - **Use IMAP settings** – Use the same user name and password specified for the IMAP server.
 - **Use settings below** – Use the user name and password specified in the following boxes. The following three options are available only if you select this option.
- In the **User name** box, type the name of the user needed to log on to the SMTP server.
- In the **Password** box, type the password needed to log on to the SMTP server.
- In the **Confirm password** box, retype the password to confirm that you entered it correctly.
- In the **Heartbeat e-mail address** box, type a valid e-mail address that the SMTP server must be capable of using as the From address when creating a new e-mail message (for example, the outgoing e-mail address specified in the general e-mail options).

Configuring other global options

Configuring the system options

- In the **Message rate limit** box, type the maximum number of outgoing messages that can be processed per minute. You can enter a value between 0 and 1000. The default value is 0 and indicates that there is no limit.

IMPORTANT: We strongly recommend that you do not change the message rate limit from the default value of 0 unless you are using Microsoft Office 365 as the corporate e-mail server.

6. Click **OK**.

20.3.3 Configuring the Web server settings

The Web Interaction Server communicates with the corporate Web server to provide a direct interface for Web callbacks, VoiceXML integration, and Web collaboration sessions.

This section describes how to configure an unsecured port and a secured (TLS-enabled) port that the Web Interaction Server can use to connect to the corporate Web server. You have the option to configure one port or both ports.

IMPORTANT: When you are connected to the production database, if you change either of the port numbers, you will be required to restart the Web Interaction Server on the main server machine.

NOTE: Ensure that the port numbers you configure in the Manager application match the port numbers configured on the corporate Web server. For details, see the *System Management Guide*.

NOTE: In a multitenant environment, only a system administrator can configure the Web server settings. For details, see [Section 19.3, "Administrator roles in a multitenant environment"](#), on page 392.

If you want to secure the connection between the Web Interaction Server and the corporate Web server, the system can be configured to use TLS certificate-based authentication.

To complete the TLS configuration, you must also do the following:

- Install a TLS certificate on the main server machine. For details, see the *Installation Guide*.
- Enable TLS security on the corporate Web server. For details, see the *System Management Guide*.
- Select an TLS-enabled port for the Web connection when you configure the following settings:
 - VoiceXML settings – see [Section 11.5.5, “Configuring the VoiceXML settings”](#), on page 278.
 - Web callback options – see [Section 13.3.3, “Configuring the Web callback settings”](#), on page 305.
 - Web collaboration options – see [Section 15.6.4, “Configuring the Web server settings for Web collaboration”](#), on page 354.

NOTE: We recommend that you do not select an TLS-enabled port until all other Web Interaction Server configurations are complete.

To configure the Web server settings:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **System**.
3. Click the **Web Settings** tab.
4. Under **Port Settings**, do the following:
 - In the **Port number** box, type the number of the unsecured port that the Web Interaction Server uses to communicate with the corporate Web server.
 - In the **Port number (TLS)** box, type the number of the TLS-enabled port that the Web Interaction Server uses to securely communicate with the corporate Web server.
5. Click **OK**.

20.3.4 Configuring the enhanced security option

The enhanced security feature allows you to restrict access to the following resources to authorized personnel only:

- Business units (in a multitenant environment only)
- Users
- User templates
- Groups (for group-based routing)
- Skills and virtual groups (for skills-based routing)
- Contact handling rules (when multiple contact handling is enabled)
- Departments
- Locations
- Profiles
- Call Director components (when Call Director is licensed)
- .wav files

When the option is enabled, the dialog boxes related to the applicable resources contain an additional Security tab where you can configure the security settings for the resource.

When you first enable the enhanced security option, only the Master Administrator user is able to access the applicable resources. For details on the Master Administrator user, see [Section 3.2.1, "About the Master Administrator"](#), on page 25.

NOTE: In a multitenant environment, only a system administrator can configure the enhanced security option. For details, see [Section 19.3, "Administrator roles in a multitenant environment"](#), on page 392.

To configure the enhanced security option:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **System**.
3. Click the **Advanced** tab.
4. Under **Enhanced Security**, select or clear the **Enable** check box, as required.
5. Click **OK**.

20.3.5 Configuring the network communication settings

You can configure the network communication settings for the OpenScape Contact Center components to use the Transport Layer Security (TLS) 1.2 protocol for encryption.

To configure the network communication settings:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **System**.
3. Click the **Advanced** tab.
4. Under **Network Communications**, do the following:
 - a) In the **Encryption setting** box, select one of the following:
 - **Disabled** – Rejects any attempt to use TLS 1.2 encryption. The network communication will be unencrypted.
 - **Allowed** – Accepts any attempt to use TLS 1.2 encryption. The network communication will be encrypted if requested.
 - **Required** – Only accepts requests to use TLS 1.2 encryption for network communication.

NOTE: The **Required** encryption setting is not supported when using the OpenScape Contact Center IVR API integration.

- b) In the **Cipher suite** box, select one of the following:
 - TLS_RSA_WITH_AES_128_GCM_SHA256
 - TLS_RSA_WITH_AES_256_GCM_SHA256
 - TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256
 - TLS_ECDHE_RSA_WITH_AES_1256_GCM_SHA256

NOTE: The default encryption setting is **Disabled** and the default cipher suite is **TLS_RSA_WITH_AES_128_GCM_SHA256**.

5. Click **OK**.

Configuring other global options

Configuring the application options

NOTE: In order to use the Agent Portal application, JCE (Java Cryptography Extension) must be installed on the client machine into the java folder (for example C:\Program Files\Java\jdk1.8.0_91\jre\lib\security) when the encryption settings are Allowed or Required with the following Ciphers:

- TLS_RSA_WITH_AES_256_GCM_SHA384,
- TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA384.

Otherwise the Agent Portal application will not work properly.

IMPORTANT: If you change the encryption setting or cipher suite, you must restart the OpenScape Contact Center service on the main server machine.

20.4 Configuring the application options

The application options affect the operation of the Manager application. When you configure these options, the settings are implemented for all users in the contact center.

You can configure:

- The interval at which OpenScape Contact Center automatically refreshes information in the Manager application.
- The time-out interval for the Master Administrator account in the Manager application.

- The Broadcaster settings. For details, see [Section 20.5](#), “Configuring the contact lookup options”, on page 419.

NOTE: To configure any of the application options, you must Full or Modify access for the associated Manager permission.

NOTE: In a multitenant environment, only a system administrator can configure the application options. For details, see [Section 19.3](#), “Administrator roles in a multitenant environment”, on page 392.

NOTE: When you are connected to a central reporting server machine (see [Chapter 17](#), “Working with central reporting”), you can only configure the time-out interval for the Master Administrator account in the Manager application.

To configure the application options:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Application**.
3. Under **Contacts Waiting Indicator**, do the following for each media type:
 - In the **On** box, type the minimum number of contacts required to turn the indicator on.
 - In the **Slow flash** box, type the minimum number of contacts required to make the indicator flash slowly.
 - In the **Fast flash** box, type the minimum number of contacts required to make the Indicator flash quickly.
4. To use a key position on the telephone for the Contacts Waiting Indicator, select the **Use key position on telephone keypad** check box, and then in the **Position** box, type the integer that represents the key position you want to use. This option is available only if the system is connected to an OpenScape 4000, HiPath 4000 or OpenScape Business communication platform. The default value is 8 when connected to a OpenScape 4000 or HiPath 4000 communication platform, or 25 when connected to an OpenScape Business communication platform. To select a different key position, refer to the communication platform documentation. Ensure that you do not select a key position that is already assigned to a communication platform feature.

Configuring other global options

Configuring the application options

5. Under **Manager Settings**, in the **Real-time refresh interval** box, type or select the number of seconds between data updates in the Manager application. Various statistics used in real-time and cumulative reports and visible properties in the application are refreshed at the specified interval. The default value is 30 seconds.

NOTE: When setting the Manager real-time refresh interval, you should consider the system hardware and the volume of contacts in the contact center. For example, you should not use a low refresh rate such as 5 seconds if your hardware meets only minimum requirements and you have high contact volume. A refresh rate of 10 seconds or even 15 seconds will improve system performance.

6. Under **Manager Settings**, in the **Time-out** box, type or select the number of minutes of inactivity that can elapse before the Master Administrator account is automatically logged off. The default value is 60 minutes.
7. Click **OK**.

20.4.1 About the Contacts Waiting Indicator

The Contacts Waiting Indicator enables the user to gauge the number of contacts waiting for the user. It has three states: on, slow flash, and fast flash. As the number of contacts waiting for the user increases, the indicator moves through the three states.

You can configure the Contacts Waiting Indicator for each media type. For example, if you configure the three states as 1, 5, and 10 contacts:

- The indicator will be bright constantly when the number of contacts waiting is between 1 and 4.
- The indicator will flash slowly when the number of contacts waiting is between 5 and 9.
- The indicator will flash quickly when the number of contacts waiting is higher than 10.

NOTE: The Contacts Waiting Indicator shows reserved contacts if the reserved contact is for the user.

20.5 Configuring the contact lookup options

You can configure the Manager application in order for the Agent Portal Web applications to search in a specified directory when a contact is received and try to match an element from the contact data to a selected directory field. The contacts in the directory that contain a matching field will be displayed on the Directory tab in the Contact Details window. This limits the contact data the user sees when a contact is received. Setting the search criteria appropriately can reduce the number of records that are searched. The response time will improve if the directory search is simple.

NOTE: Agent Portal Java is not affected by the above configurations. For Agent Portal Java the contact lookup will only work for Voice Media for all added Directories and cannot be deactivated.

Before you begin, you must configure the directory that you want to search (see [Section 5.5, "Configuring a directory", on page 78](#)).

NOTE: To configure the contact lookup options, you must have Full or Modify access for the **Directories** Manager permission.

NOTE: In a multitenant environment, only a business unit administrator can configure the contact lookup settings. For details, see [Section 19.3, "Administrator roles in a multitenant environment", on page 392](#).

To configure the contact lookup options:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Contact Lookup**.
3. Under **Directory**, in the **Directory** list, select the directory to be searched for contact data. Only the directories that have been configured in the Manager application are displayed in the list.
4. Under **Search**, do the following:
 - a) In the **Media** box, select the media type for which you want to configure the search, for example, **Voice**.
 - b) Select the **Enable** check box.
 - c) In the **Directory field name to search** box, type the name of the directory field on which you want to search.

Configuring other global options

Configuring the data management options

d) Select the contact data you want to compare to the specified database field name. You can choose one of:

- **Source** of the contact.
- **Destination** of the contact.
- **Contact data key**, that is, a key in the contact data. If you choose **Contact data key**, type the name of the key from the contact data that contains the value that will be used in the search.

For example, if you want to search for all entries in the database where the field "Calling From" matches the source of the current contact, you would type the database field name that corresponds to the display name "Calling From" in the **Directory field name to search** box, and then select the **Source** option.

5. Click **OK**.

20.6 Configuring the data management options

You can configure the options related to the management of data in the contact center, including the data retention periods.

NOTE: To configure any of the data management options, you must have Full or Modify access for the associated Manager permission.

20.6.1 Configuring the data maintenance time

The data maintenance time is a specified time during the day when the application performs automatic data maintenance procedures. During this time, the system performs various tasks, such as calculating daily, weekly, and monthly statistics, and deleting information that has been kept longer than the specified data retention periods. You cannot create reports while the data maintenance procedures are being performed.

By default, the application is configured to export the existing administration data to a Microsoft Access database at data maintenance time. A new database, named according to the time the database was created, is exported at each data maintenance time and is saved in the AdministrationData folder in the ShareData folder. The

last 30 databases are saved. These databases can be used by your service representative to troubleshoot problems with the system. The structure of these databases is identical to a design database.

To minimize the impact on contact center operations, you should configure data maintenance to occur when the contact center is closed or during its least busy period. Be sure to consider the time zones of remote locations. For details, see [Section 20.6.1.1, "Effect of different time zones on data maintenance"](#), on page 422.

NOTE: In a multitenant environment, only a system administrator can configure the data maintenance time. For details, see [Section 19.3, "Administrator roles in a multitenant environment"](#), on page 392.

NOTE: When the system is configured for high availability (warm standby), the OpenScape Contact Center service on the server machine that is in standby mode automatically restarts every day, one hour before the configured data maintenance time. This ensures that the backup instance of the system gets updated with the replicated data changes that have been made on the active server machine.

To configure the data maintenance time:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Data Management**.
3. Under **Data Maintenance**, in the **Maintenance time** box, type or select the hour of the day when the system begins to perform data maintenance procedures. The minutes cannot be changed.
4. Ensure that the **Export administration data** option is selected.

IMPORTANT: The **Export administration data** option is enabled by default and should be disabled only under the direction of your service representative.

5. Click **OK**.

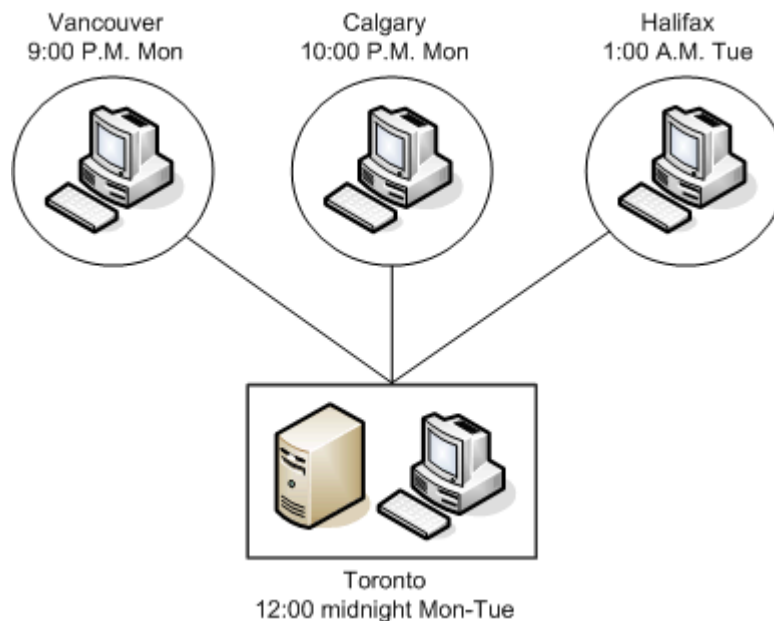
Configuring other global options

Configuring the data management options

20.6.1.1 Effect of different time zones on data maintenance

The OpenScape Contact Center system allows you to run reports against different time zones. Because of this, we recommend that you ensure that the full day is complete at all locations that are in different time zones before data maintenance occurs. If the full day (or full week or full month) is not complete at all locations when the reporting statistics are calculated, reports that are based on the time zone of the user's location will not show any data for that day (or week or month). However, the data will be available the next day.

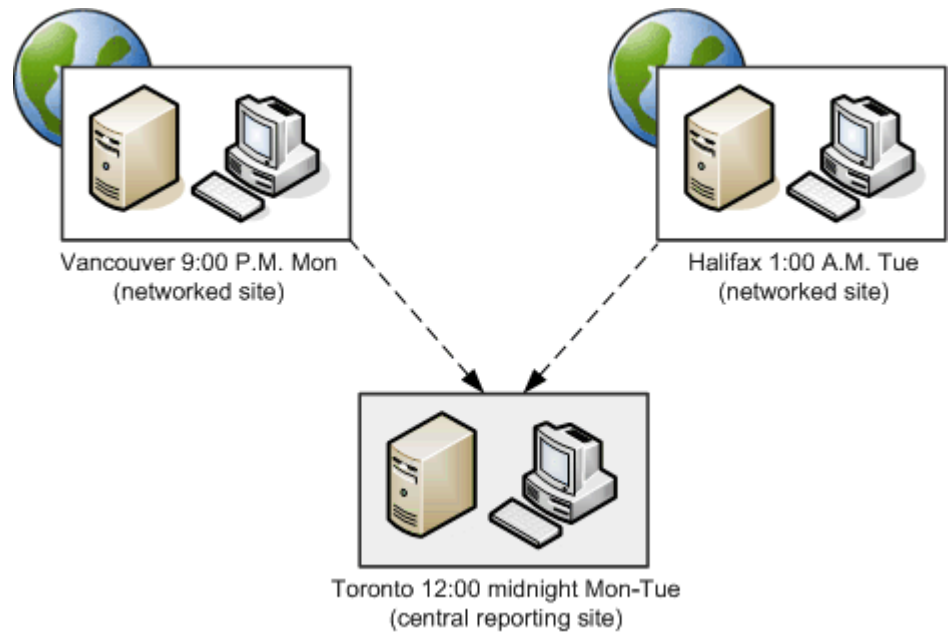
For example, in the following diagram, the main server machine is located in Toronto. If you schedule data maintenance to occur at 12:00 midnight (Monday- Tuesday) in Toronto, the day is not complete in Vancouver where it is only 9:00 P.M. Monday. In this case, the data for Monday will not be available in reports that are based on the time zone of a user whose location is Vancouver (specifically user, routing state reason, Wrap-up reason, and Post-processing reason historical reports). We recommend that you schedule data maintenance to occur after 3:00 A.M. Tuesday to ensure that the full day is complete in Vancouver.



Configuring other global options

Configuring the data management options

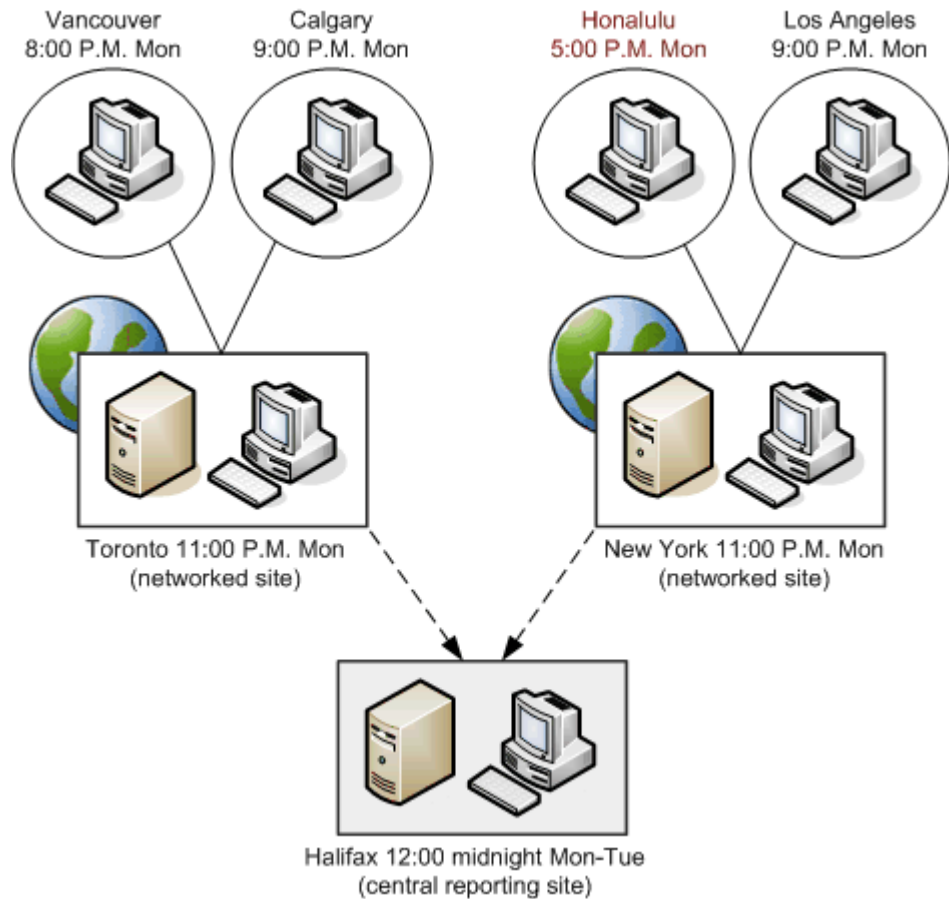
Similarly, when the contact center has the networking feature, you should schedule data maintenance on the central reporting server machine to occur after the full day is complete at all remote networked sites. For example, in the diagram below, you should schedule data maintenance to occur in Toronto after 3:00 A.M. This will ensure that the data for Monday in Vancouver is available when you run reports from the central reporting server machine based on the time zone of the Vancouver site. In the case of networking, all historical reports that are based on the time zone of a remote site can be affected, not just user historical reports.



Configuring other global options

Configuring the data management options

Finally, when the contact center has both networking and remote locations, you should take the time zones of the remote networked sites and their locations into consideration. For example, in the following diagram, you should schedule data maintenance to occur at the central reporting site in Halifax after 7:00 A.M. Tuesday, to ensure that the full day (Monday) in Honolulu is complete.



20.6.2 Adding a data location

To ensure that the system has enough data storage capacity, you should check the total data usage, and use the values provided to help you determine if you need to add a new data location.

NOTE: The Data Locations and Total Database Usage group boxes appear only when you are connected to a production database.

In the Data Management options, on the General tab under Total Database Usage, the following values are displayed as a guideline:

- **Maximum allowed space** – This is the maximum disk space allowed for data storage. This value cannot be changed.
- **Allocated space** – This is the total amount of disk space currently allocated by the system for data storage.
- **Estimated required space** – This is the amount of disk space currently estimated to be required for data storage, based on the current system usage and the total of the configured retention periods.

The new data location must be an internal hard disk drive that is intended exclusively for OpenScape Contact Center data storage. Before you begin, you must ensure that the disk drive you want to add is already installed.

NOTE: The System Monitor application displays a message when there is not enough disk space available to store the data that will be generated over the next two weeks or less. The estimation is based on the configured retention periods and the current system usage. You can also configure a notification to this effect. For details, see [Section 5.3.5, “Configuring a notification”](#).

NOTE: In a multitenant environment, only a system administrator can add a data location. For details, see [Section 19.3, “Administrator roles in a multitenant environment”](#), on page 392.

To add a data location:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Data Management**.
3. On the **General** tab, under **Data Locations**, click **Add**.
4. In the **Add Data Location** dialog box, select the disk drive you want to use for additional data storage.
5. Click **OK**.

20.6.3 Deleting a data location

Before you can delete a specified OpenScape Contact Center data location, you must remove all data from the disk drive.

NOTE: The Data Locations and Total Database Usage group boxes appear only when you are connected to a production database.

NOTE: In a multitenant environment, only a system administrator can delete a data location. For details, see [Section 19.3, "Administrator roles in a multitenant environment"](#), on page 392.

To delete a data location:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Data Management**.
3. On the **General** tab, under **Data Locations**, select the disk drive in the table that you want to delete.
4. Click **Delete**.

20.6.4 Configuring the retention periods for reporting data

You can configure how long to store various OpenScape Contact Center reporting statistics and the error log.

The reporting statistics are described as follows:

- **Detailed statistics** – Detailed statistics include detailed contact and user statistics, and contact data. The following reports use the detailed statistics: user and source activity reports, contact and source historical reports, queue by user historical reports, and user by queue historical reports.
- **15-minute statistics** – Historical reports with no interval, 15-minute intervals, and hourly intervals, are generated using the 15-minute statistics.
- **Daily statistics** – Historical reports with daily intervals are generated using the daily statistics.
- **Weekly statistics** – Historical reports with weekly intervals are generated using the weekly statistics.

- **Monthly statistics** – Historical reports with monthly intervals are generated using the monthly statistics.

Under Database Usage for Reporting, the following values are displayed as a guideline:

- **Maximum allowed space** – This is the maximum disk space allowed for reporting data storage. This value cannot be changed.
- **Allocated space** – This is the total amount of disk space currently allocated by the system for reporting data storage.
- **Estimated required space** – This is the amount of disk space currently estimated to be required for reporting data storage, based on the current system usage and the specified retention period.

NOTE: The Database Usage for Reporting group box appears only when you are connected to a production database.

NOTE: In a multitenant environment, only a system administrator can configure the retention periods for reporting data. For details, see [Section 19.3, “Administrator roles in a multitenant environment”](#), on page 392.

To configure the retention periods for reporting data:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Data Management**.
3. Click the **Reporting** tab.
4. Under **Retention Periods**, for each row in the table, click in the **Value** column and type a new value in the cell. You can also click  to specify the retention period using the Retention Period Converter dialog box.
5. Under **Database Usage for Reporting**, the application updates the value of the **Estimated required space** based on your changes.
6. Click **OK**.

20.6.5 Configuring the retention period for e-mail data

You can configure how long to store e-mail messages and contact information.

Under Database Usage for E-mail, the following values are displayed as a guideline:

- **Maximum allowed space** – This is the maximum disk space allowed for the storage of e-mail data. This value cannot be changed.
- **Allocated space** – This is the total amount of disk space currently allocated by the system for the storage of e-mail data.
- **Estimated required space** – This is the amount of disk space currently estimated to be required for the storage of e-mail data, based on the specified retention period.

NOTE: The Database Usage for E-mail group box appears only when you are connected to a production database.

NOTE: In a multitenant environment, only a system administrator can configure the retention period for e-mail data. For details, see [Section 19.3, “Administrator roles in a multitenant environment”](#), on page 392.

To configure the retention period for e-mail data:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Data Management**.
3. Click the **E-mail** tab.
4. Under **Retention Period**, click in the **Value** column in the table, and type a new value in the cell. You can also click  to specify the retention period using the Retention Period Converter dialog box.
5. Under **Database Usage for E-mail**, the application updates the value of the **Estimated required space** based on your changes.
6. Click **OK**.

20.6.6 Configuring the retention period for Web collaboration data

You can configure how long to store Web collaboration transcripts. You can use the transcript data for custom reporting.

Under Database Usage for Web Collaboration, the following values are displayed as a guideline:

- **Maximum allowed space** – This is the maximum disk space allowed for the storage of Web collaboration data. This value cannot be changed.
- **Allocated space** – This is the total amount of disk space currently allocated by the system for the storage of Web collaboration data.
- **Estimated required space** – This is the amount of disk space currently estimated to be required for the storage of Web collaboration data, based on the specified retention period.

NOTE: The Database Usage for Web Collaboration group box appears only when you are connected to a production database.

NOTE: In a multitenant environment, only a system administrator can configure the retention period for Web collaboration data. For details, see [Section 19.3, “Administrator roles in a multitenant environment”](#), on page 392.

To configure the retention period for Web collaboration data:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Data Management**.
3. Click the **Web Collaboration** tab.
4. Under **Retention Period**, click in the **Value** column in the table, and type a new value in the cell. You can also click  to specify the retention period using the Retention Period Converter dialog box.
5. Under **Database Usage for Web Collaboration**, the application updates the value of the **Estimated required space** based on your changes.
6. Click **OK**.

20.7 Configuring the statistics options

The options you specify for the statistics affect the user performance calculations in the Manager application.

NOTE: To configure any of the statistics options, you must have Full or Modify access for the associated Manager permission.

20.7.1 Configuring the service level interval

The service level interval is a target set for the contact center to help monitor performance. The service level interval is the target amount of time within which a contact should be answered. This means that a contact should not wait in queue longer than the time specified to be considered answered successfully. You set the service level interval globally for each media type in the contact center; however, you can override this setting for a specific queue.

The application uses the service level interval to calculate the service level for all queues that route OpenScape Contact Center contacts. The service level is defined as the number of successfully answered contacts divided by the total number of contacts. The application calculates the service level based on the chosen service level calculation formula.

NOTE: In a multitenant environment, only a business unit administrator can configure the service level intervals. For details, see [Section 19.3, "Administrator roles in a multitenant environment"](#), on page 392.

To specify the service level intervals:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Statistics**.
3. Under **Service Level Calculation**, for each **Media** type in the table, double-click the time and then type the time interval in which a user should be able to answer a contact. Note that the time interval for calls is in hours, whereas the time interval for callbacks and e-mail messages is in days.
4. Click **OK**.

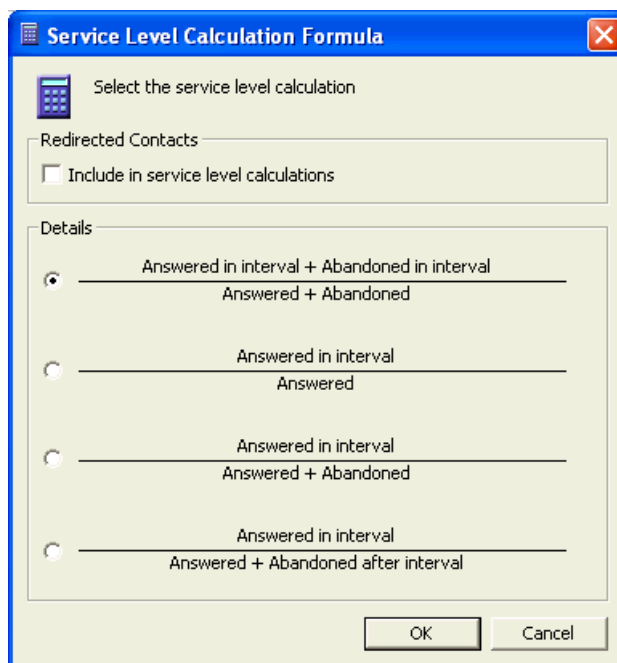
20.7.1.1 Choosing the service level calculation formula

The application uses the service level interval to calculate the service level for all queues that route OpenScape Contact Center contacts. The application calculates the service level using one of four formulas, each of which defines “successfully answered contacts” and “total number of contacts” differently.

NOTE: In a multitenant environment, only a business unit administrator can configure the service level calculation formula. For details, see [Section 19.3, “Administrator roles in a multitenant environment”](#), on page 392.

To choose the service level calculation formula:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Statistics**.
3. Click **Formula**.

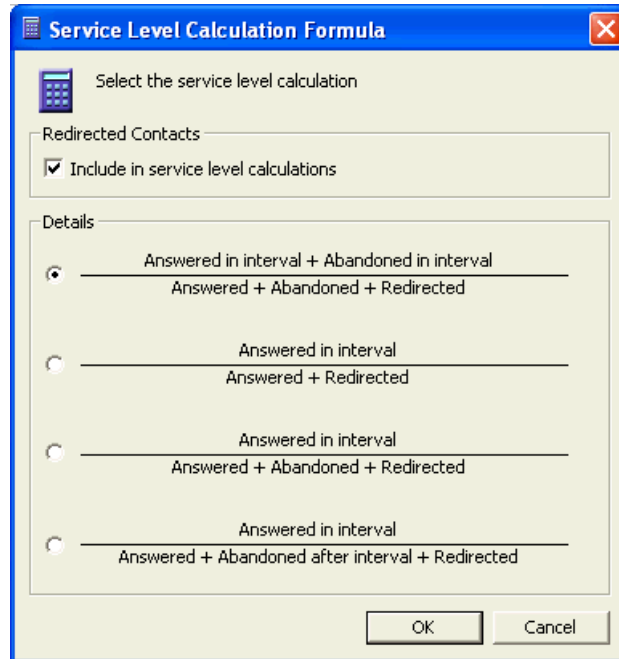


4. In the **Service Level Calculation Formula** dialog box, under **Redirected Contacts**, select the **Include in service level calculations** check box if you want to include redirected contacts

Configuring other global options

Configuring the statistics options

in the formulas. Redirected contacts include calls redirected to an unmonitored device before being answered by a user, abandoned by the caller, or timed out.



5. Under **Details**, select the service level calculation formula you want to use to calculate the service level. For a description of the formulas, see [Section 20.7.1.2, "Service level calculation formulas"](#), on page 432.
6. Click **OK**.

20.7.1.2 Service level calculation formulas

In the service level calculation formula, the *numerator* defines which contacts are considered successfully answered within the service level interval. The numerator can include:

- The number of contacts answered within the service level interval.
- The number of contacts abandoned within the service level interval. (You can consider these contacts successfully answered because it is difficult to answer a contact that is abandoned quickly.)

The *denominator* defines which contacts comprise the total number of contacts. This number is determined by the type of report the service level is displayed in. In a real-time report, the total number of contacts is the number of contacts received since the last shift start, up to a maximum of 24 contacts. In a cumulative or historical report, the total number of contacts depends on the time range specified in the report. The denominator can include:

- The number of contacts answered during the defined time.
- The number of contacts abandoned during the defined time.
- The number of contacts abandoned after the service level interval. (You can use this number instead of the total number of abandoned contacts, if contacts that are abandoned quickly are not included.)
- The number of redirected contacts, if the **Include in service level calculations** check box is selected under **Redirected Contacts**.

NOTE: The meaning of the terms Abandoned, Answered, and Redirected differ by media. For details, see the *Reporting Reference Guide*.

Example

If the global service level interval for voice is set to 30 seconds, it means that calls in your contact center should be completed within 30 seconds. Assume that 15 calls come into the contact center: 9 calls are answered within 30 seconds; 2 calls are abandoned by the caller before 30 seconds; and 4 calls are answered after 30 seconds. This means:

- Answered in service level interval = 9
- Abandoned in service level interval = 2
- Answered = 13
- Abandoned = 2

Based on these numbers, in the Service Level Calculation Formula dialog box:

- The first formula calculates the service level as $11/15 = 0.73333333$
- The second formula calculates the service level as $9/13 = 0.692307$
- The third formula calculates the service level as $9/15 = 0.6$
- The fourth formula calculates the service level as $9/13 = 0.692307$

20.7.2 Configuring the wait time

By default, wait time starts when a contact is placed in a queue. You can specify whether to include the time before a call is enqueued (such as when the contact is in an IVR) or the time when a callback or e-mail message is suspended by the system. This is reflected in the wait time statistics used in reporting.

The wait time includes the time a contact spends reserved for a specific user while enqueued. Reserved contacts that remain unanswered before proceeding to the queue steps could adversely affect the service level calculation. For more information, see [Section 8.4.1, "Configuring the manual reserve time"](#), on page 168, and [Section 20.7.1, "Configuring the service level interval"](#), on page 430.

NOTE: In a multitenant environment, only a system administrator can configure the wait time. For details, see [Section 19.3, "Administrator roles in a multitenant environment"](#), on page 392.

To configure the wait time:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Statistics**.
3. Under **Wait Time**, do the following:
 - To have the wait time start when the call arrives at the first monitored resource, such as an IVR extension, select the **Include time before enqueue** check box. When this option is cleared, the wait time starts when the call is enqueued. This option only applies to calls.
 - To include the time when the contact is suspended by the system, select the **Include system suspended contacts** check box. The system suspends the routing of e-mail messages and callbacks when the current time is outside the configured routing schedule for the media type. This option only applies to e-mail messages and callbacks.
4. Click **OK**.

20.7.3 Configuring the user calculation

Statistics are monitored for every OpenScape Contact Center user who handles contacts. These statistics include the time spent in each state and utilization.

Utilization is the percentage of logged on time that a user spends handling routed contacts or otherwise working (for example, attending meetings):

$$\text{Utilization} = (\text{Routed Handling time} + \text{Busy time}) \div \text{Logged on time} * 100$$

You can choose to include the time a user spends in Idle state in the Utilization calculation. For more information on the definition of user statistics, see the *Reporting Reference Guide*.

You can also specify the amount of time that must pass after a user contacts another person at the site, for the contact to be considered a consultation.

NOTE: In a multitenant environment, only a system administrator can configure the user calculation. For details, see [Section 19.3, "Administrator roles in a multitenant environment"](#), on page 392.

To configure the user calculation:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Statistics**.
3. Under **User Calculations**, do the following:
 - In the **Consider consultation after** box, type or select the number of seconds that must be exceeded after a user contacts another person at the site, for the contact to be considered a consultation.
 - To include the time that a user spends in Idle state in the Utilization calculation, select the **Include idle time in utilization** check box.
4. Click **OK**.

20.7.4 Configuring how contacts that are finished in Call Director or an IVR are considered

If the OpenScape Contact Center system has Call Director or an IVR as a front end, or if a contact is transferred to Call Director or an IVR from within a routing strategy workflow, the contact can be finished in Call Director or the IVR before it is enqueued. This can happen in two ways: by Call Director or the IVR disconnecting, or by the caller abandoning.

You can specify whether contacts that are finished in this way are considered as Answered or Abandoned. For example, if a customer gets all the information the customer needs from the IVR and then hangs up, you would want this to be considered Answered rather than Abandoned. Contacts that are redirected out of scope are also considered Answered when this option is enabled.

Contacts that finish in Call Director or an IVR while they are enqueued are considered Abandoned, regardless of this setting value.

NOTE: In a multitenant environment, only a system administrator can configure this option. For details, see [Section 19.3, "Administrator roles in a multitenant environment"](#), on page 392.

To configure how contacts that are finished in Call Director or an IVR are considered:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Statistics**.
3. To consider the contacts that are finished in Call Director or an IVR as Answered, under **Call Director or IVR**, select the **Consider finished in Call Director or IVR as Answered** check box. If you do not select this option, these contacts will be considered as Abandoned.
4. Click **OK**.

20.7.5 Configuring the shifts

The real-time statistics are calculated for contacts based on time periods in the contact center normally defined as shifts. At the start of a shift, the real-time statistics for your contact center are set to 0 to start calculating new real-time statistics.

You can have a maximum of three shifts in a 24-hour period. You must specify the Shift 1 start time; the other two start times are optional. By default, the start time for Shift 1 is 00:01 (one minute past midnight). With only one shift configured, your site will have one 24-hour data set per day. The times are entered using the 24-hour clock.

The reports and views in the Manager application show the real-time statistics for the current shift only.

NOTE: In a multitenant environment, only a system administrator can configure the shifts. For details, see [Section 19.3, “Administrator roles in a multitenant environment”](#), on page 392.

To configure the shift start times:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **Statistics**.
3. Click the **Shifts** tab.
4. Under **Shifts**, type or select the start time for **Shift 1**. By default, the **Shift 1** check box is selected and cannot be cleared.
5. To configure additional start times, select the check box next to the **Shift** label, and then type or select the required start time.
6. Click **OK**.

NOTE: To delete a shift start time, clear the check box next to the shift you want to delete.

20.8 Configuring the CRM integration options

If the contact center is licensed for either SAP CIC or SAP ICI integration, you can configure the integration settings. For details, see the following topics:

- [Section 20.8.1, “Configuring the SAP CIC settings”](#), on page 438

Configuring other global options

Configuring the CRM integration options

- [Section 20.8.2, “Configuring the SAP ICI settings”, on page 440](#)

NOTE: To configure any of the CRM integration options, you must have Full or Modify access for the associated Manager permission.

20.8.1 Configuring the SAP CIC settings

If the contact center is licensed to integrate with an SAP Customer Interaction Center (CIC), you can configure the SAP CIC system and server settings.

IMPORTANT: When you are connected to the production database, any changes you make will take effect immediately and may impact the users that are currently connected to the system.

NOTE: In a multitenant environment, SAP CIC integration is not supported. For details on the multitenancy feature, see [Chapter 19, “Working with the multitenancy feature”](#).

NOTE: Multiple contact handling is not supported for SAP CIC users. For details on multiple contact handling, see [Section 8.3, “About multiple contact handling”, on page 165](#).

To configure the SAP CIC settings:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **CRM Integration**.
3. Click the **SAP CIC** tab.
4. Under **SAP CIC Settings**, do the following:
 - a) In the **Host name** box, type the IP address or host name of the SAP system.
 - b) In the **Client number** box, type the Client number for the SAP system.
 - c) In the **User name** box, type the user ID defined on the SAP system.

- d) In the **Password** box, type the password required for the user ID on the SAP system.
 - e) In the **Confirm password** box, retype the password to confirm that you typed it correctly.
5. Under **Server Settings**, do the following:
- a) In the **SAP program ID** box, type the program ID for the SAP system.
 - b) In the **SAP RFC destination** box, type the RFC destination defined in the SAP system.
 - c) In the **SAP gateway host** box, type the IP address or host name of the gateway for the SAP system.
 - d) In the **SAP gateway service** box, type the name of the gateway service on the SAP system.
 - e) In the **SAP system number** box, type the number of the SAP system.
 - f) In the **SAP telephony server** box, type the name of the telephony server on the SAP system.
 - g) In the **Voice logon label** box, type the name of a voice queue defined in the SAP system. This provides the SAP logon mechanism with a configurable logon label. Refer to your SAP CIC documentation for more information.
 - h) In the **E-mail logon label** box, type the name of an e-mail queue defined in the SAP system. This provides the SAP logon mechanism with a configurable logon label. Refer to your SAP CIC documentation for more information.
6. Click **OK**.

20.8.2 Configuring the SAP ICI settings

If the contact center is licensed to integrate with an SAP Integrated Communication Interface (ICI), you can configure the SAP ICI port number and script settings.

NOTE: In a multitenant environment, SAP ICI integration is not supported. For details on the multitenancy feature, see [Chapter 19, "Working with the multitenancy feature"](#).

NOTE: Multiple contact handling is not supported for SAP ICI users. For details on multiple contact handling, see [Section 8.3, "About multiple contact handling"](#), on page 165.

The script settings are related to the ANI scripting feature which is used to modify the ANI passed from the communication platform before relaying it to the SAP CRM system so that it adheres to SAP standards. Depending on the format of the ANI provided, you might have to:

- In North America, add a country code and area code to the ANI provided for a local call, for example, change 5551430 to 14165551430.
- In Germany, strip out a leading zero and add 49 to the ANI provided for a national call, for example, change 08972289561 to 498972289561.

OpenScape Contact Center provides two sample script files: SapIciAniScript.vbs and SapIciAniScript.js. These sample script files are installed in the default folder on the server machine. You can open one of the sample scripts, modify the code to the specific needs of the contact center, and then save the file under a new name.

IMPORTANT: When you are connected to the production database, any changes you make to the SAP ICI settings will take effect immediately and might impact the users currently connected to the system.

NOTE: If you want to change the script that is currently in use, we recommend that you save the script as a new file, make the required changes to the new file, and then specify the new file name, as described in the following procedure.

To configure the SAP ICI settings:

1. On the **Tools** menu, click **Options**.
2. In the left pane, under **System Settings**, click **CRM Integration**.
3. Click the **SAP ICI** tab.
4. Under **SAP ICI Settings**, in the **Port Number** box, type the port number the SAP ICI system uses to communicate with OpenScape Contact Center.
5. Under **Script Settings**, do the following:
 - a) To enable ANI scripting, select the **Enable script processing** check box.
 - b) In the **Script file name** box, type the file name of the script you want to use, including the extension.
 - c) In the **Script language** list, select the scripting language: **VBScript** or **Jscript**.
 - d) In the **Maximum file size** box, type or select the maximum size of the script file. If the size of the script file exceeds this value, script processing will not be used and the ANI will be passed to the SAP ICI system in the original format.
 - e) In the **Maximum script duration** box, type or select the maximum amount of time for which the script can run. If the script execution exceeds this value, the script will terminate and the ANI will be passed to the SAP ICI system in the original format.
6. Click **OK**.

Index

A

- abandoned calls
 - configuring a queue to create a callback 242
 - configuring calls finished in Call Director or an IVR 436
- acceptance criteria
 - about 360
- access levels for permissions 62
- accumulated daily statistics 99
- activity reports
 - about 100
 - generating for sources 142
 - generating for users 141
- Administration Center, about 28
- administration data, exporting 420
- Administrator profile 58
- aggregates
 - about 257
 - creating 257
 - monitoring permission 45
 - real-time monitoring 94
 - specifying the queues 254
 - using weighted averages 153
- alarms, setting in reports 117
- announcement extensions, configuring 289
- answered calls, finished in Call Director or an IVR 436
- application access, configuring for a user 35
- application options, configuring 416
- authentication, configuring for a user 34
- automatic post-processing, configuring for a user 35
- Autowork feature, configuring for a user 35
- auxiliary server machine
 - configuring a Real-Time Server on 74
 - configuring for a user 35
 - running SAP servers on 71
- average active time, configuring for a user 44
- average handling time excluding post-processing, configuring for a user 44
- average handling time, configuring for a user 44
- average non-primary time, configuring for a user 44
- average post-processing time, configuring for a user 43

B

- bar charts, specifying in a report 120
- best site distribution method 361
- Broadcast Center, about 28
- Broadcaster views

- content types 81

- broadcasting information 81
- business unit administrators, role in multitenancy 392
- business units
 - configuring for multitenancy 394
 - logging on to 24

C

- calculations
 - choosing the service level formula 431
 - configuring the user calculation 435
 - service level interval 432
- Call Director
 - about 281
 - configuring calls finished as Answered 436
 - configuring the default error message 289
 - configuring the default navigation 293
 - configuring the default options 288
 - configuring the extension allocation 289
 - configuring the language 289
 - configuring the responses 295
 - configuring the voice processors 283
 - extension allocation ratio examples 291
 - overriding settings in a routing strategy workflow 211
 - using in workflows 189
 - workflow components 282
- callback queues
 - configuring the maximum number of retries 249, 251
 - overriding the default caller ID settings 249, 251
- callbacks
 - about the callback feature 297
 - configuring a queue to create a callback on abandon 242
 - configuring a schedule in an outbound list 310
 - configuring the automatic dial delay 301
 - configuring the caller ID 302
 - configuring the create on abandon options 301
 - configuring the default options 301
 - configuring the maximum time to enter a result 301
 - configuring the routing schedule 304
 - configuring the Web callback options 305
 - creating a Retry reason 299
 - creating an excluded number 300
 - creating an outbound list 309
 - creating Delete reasons 300

- cumulative reporting 99
- default queuing 298
- generating a Scheduled Callback List 307
- historical reporting 97
- importing from an outbound list 308
- list of scheduled callbacks 100
- queue processing 298
- real-time monitoring 94
- caller ID
 - configuring for outbound calls 302
 - overriding the default setting 249, 251
- categories
 - configuring for e-mail 319
 - displaying confidence levels 331
 - using to route e-mail messages 316
- central reporting
 - about 379
 - configuring a user 381
 - configuring server settings for networked sites 383
 - configuring the central reporting server 382
 - configuring the options 382
 - data consolidation 380
 - default user profiles 381
 - generating reports 380
 - limited functionality 380
 - Manager functions available 380
 - reasons for use 379
- charts, specifying in a report 120
- client application access, configuring for a user 35
- colors in reports
 - configuring 150
 - restoring the default settings 408
- columns
 - specifying in a report 116
- COM modules, writing 205
- communication platforms
 - basic interaction with the system 260
 - configuring the settings 271
 - resources defined 264
 - supported types 259
- components
 - executing repeatedly 213
- confidence levels, displaying for e-mail categories 331
- Config Sync
 - about 265
 - completing a user definition 266
 - configuring the default settings 277
 - treatment of other resources 267
 - treatment of user IDs 266
- configuration synchronization, *see* Config Sync
- configuration tasks, overview 13
- configuring for the Web Interaction Server 412
- confirmation options, configuring 405
- consultations, configuring the start time 435
- contact data
 - configuring the lookup criteria 419
 - obtaining the Web collaboration language 340
 - using in custom functions 205
 - using in outbound lists 310
 - using in workflows 193
- contact handling rules, configuring 167
- contact handling settings, configuring for a user 38
- contact lookup, configuring 419
- contact person
 - configuring for a location 65
 - configuring for a networked site 371
 - configuring for business unit 394
 - configuring for the contact center 408
- contact volume, effect on queue setup 234
- contacts
 - configuring the manual reserve time 168
 - historical reporting 97
 - real-time monitoring 94
 - reserved for a user 331
- Contacts Waiting Indicator
 - about 418
 - configuring 416
- CRM integration
 - configuring the options 437
 - configuring the SAP CIC settings 438
 - configuring the SAP ICI settings 440
- CSTA server settings, configuring 271
- cumulative reports
 - about 99
 - common uses 100
 - configuring 102
 - examples 100
 - including a bar chart 120
 - selecting the resources to report on 110
 - setting thresholds and alarms 117
 - specifying the output options 124
 - specifying the range 105
- custom functions
 - datatype and declaration 206
 - exception handling 207
 - handling contact data 205
 - memory allocation constraint 207
 - return codes 207
 - runtime restrictions 207
 - threadsafe requirement 207
 - writing 205
- customer information, collecting in workflows 189

D

- data locations
 - adding 424
 - deleting 426
- data maintenance time, configuring 420
- data management, configuring the default options 420
- data sources, configuring 77
- data usage, viewing 424
- Database Function components
 - configuring the external data sources 77
- database functions, using in workflows 196
- databases
 - configuring an external data source 77
 - exporting administration data 420
- default e-mail message settings, configuring 330
- default navigation, configuring for Call Director 293
- default options, configuring 403
- default queue
 - configuring for e-mail 326
 - configuring for voice 268
 - configuring for Web collaboration 351
- default routing strategy workflow
 - configuring for e-mail 326
 - configuring for voice 268
 - configuring for Web collaboration 351
- default user profiles, about 58
- default user settings, restoring 408
- Delete reasons, creating 300
- Department reporting level, about 102
- departments
 - configuring 63
- Design Center, about 28
- design database
 - configuration overview 15
 - selecting at logon 25
- design overview 13
- destinations
 - configuring for e-mail 324
 - configuring for e-mail in a multitenant system 399
 - configuring for Web collaboration 350
 - cumulative reporting 99
 - historical reporting 97
- devices, configuring for silent monitoring 145
- diagnostic settings, configuring 406
- dialable numbers, configuring for networking 370
- dialing prefix, specifying for a networked site 371
- directories
 - configuring access to external directories 78
 - configuring the connection settings 148
 - configuring the options 147
 - configuring the query settings 148

- configuring the results settings 149
- Discard reasons, creating 320
- disk drives, adding for data storage 424
- distribution methods
 - configuring the default method 376
 - use in networking 361
- distributions
 - configuring for a wallboard view 91
- DLLs, writing 205
- documentation
 - formatting conventions 11
 - intended audience 11
 - providing feedback 12

E

- e-mail
 - about 315
 - conducting a history search 333
 - configuring a category 319
 - configuring a destination 324
 - configuring a destination in a multitenant system 399
 - configuring a monitored source 325
 - configuring the data retention periods 428
 - configuring the default message settings 330
 - configuring the default options 326
 - configuring the default queue 326
 - configuring the default routing strategy 326
 - configuring the e-mail server settings 410
 - configuring the error queue settings 328
 - configuring the routing schedule 328
 - configuring the settings for a user 40
 - considerations for planning 315
 - creating message templates 322
 - default From address 326
 - externally consulting 331
 - routing by categories 316
 - specialized components 318
- e-mail categories
 - configuring 319
 - displaying confidence levels 331
 - using to route e-mail messages 316
- e-mail queues
 - overriding the default message settings 249, 251
- e-mail reports
 - configuring the option 156
 - specifying the output options 127
- e-mail templates
 - about 321
- emoticons, creating for Web collaboration 348
- enhanced security, configuring 414
- Enqueue components

- configuring the manual reserve time 168
- error business unit, configuring for multitenancy 400
- error message, configuring for Call Director 290
- error queue
 - configuring for e-mail 328
 - configuring for voice 269
 - configuring for Web collaboration 353
 - overriding the default settings in a routing strategy workflow 212
- examples
 - basic networking workflow 364
 - Call Director extension allocation 291
 - Category Decision components 316
 - Contact Data Decision component 194
 - Contact Data Update component 193, 196
 - Custom Function component 204
 - Database Function component 196
 - Default Treatment component 215
 - Digit Collection component 194
 - Disconnect component 189
 - Distribution Decision component 366
 - Enqueue component 188
 - extension allocation for Call Director 291
 - Local Performance Decision component 365
 - Menu Prompt component 189
 - Menu Prompt components 196
 - Message component 189
 - Performance Decision component 192
 - real-time reports 95
 - routing strategy workflow 185
 - Schedule components 190
 - Source/Destination Decision component 187, 188
 - Source/Destination Decision components 186
 - Wait Interval components 213
 - Workflow Decision components 213
- exceptions
 - configuring in the callback schedule 304
 - configuring in the e-mail schedule 328
 - configuring in the networking acceptance schedule 375
- excluded numbers, creating 300
- exercises
 - adapting a predefined historical report 134
 - creating a simple real-time report 128
 - creating a simple routing strategy workflow 222
- exporting administration data 420
- extension allocation, configuring for Call Director 289
- external data sources, configuring 77
- external directories, configuring access to 78

F

- fallback number, configuring 275

features

- Manager application 23
- first day of the week, configuring for reports 152
- forecasting, using cumulative reports 99
- formula, choosing for the service level calculation 431
- Full reporting level, about 102

G

- general queue information, configuring 241
- general report properties, configuring 103
- general user properties, configuring 33
- global options, configuring 403
- global queue intervals, configuring 151
- group-based routing
 - about 157
 - calculating queue step intervals 238
 - configuring the options 168
 - group setup considerations 157
- groups
 - about 157
 - configuring 158
 - cumulative reporting 99
 - functional area groups 158
 - historical reporting 97
 - monitoring permission 45
 - real-time monitoring 94
 - setup considerations 157
 - specialization 157

H

- heartbeat application name, configuring 274
- high availability (warm standby)
 - about 385
 - Call Director configuration 386
- high availability (warm standby), configuring 386
- HiPath 4000 resources 261
- historical reports
 - about 97
 - common uses 97
 - configuring 102
 - exporting to a file 126
 - including a bar chart 120
 - scheduling to run immediately 122
 - scheduling to run on a regular basis 123
 - scheduling to run once at a specific time 122
 - selecting the resources to report on 112
 - selecting to print 126
 - selecting to send via e-mail 126
 - selecting to view on screen 126
 - specifying the output options 126
 - specifying the range 105
- history search, conducting for e-mail messages 333

I

- IMAP server settings, configuring for e-mail 410
- implementation, planning 13
- incoming e-mail server, configuring 410
- initial contact processing 14, 232
- initial Manager configuration 21
- initial system configuration 13
- interactive extensions, configuring 289
- internal disk drives, adding for data storage 424
- intervals
 - calculating for queue steps 237
 - configuring the global queue report interval 151
 - configuring the Master Administrator time-out interval 416
 - configuring the network data exchange interval 374
 - configuring the real-time refresh interval 416
 - configuring the service level interval 430
 - specifying in a cumulative report 105
 - specifying in a historical report 107
- invalid customer responses, configuring the Call Director message displayed 295
- IVRs
 - configuring calls finished in as Answered 436

K

- key/value pairs, *see* contact data
- keywords, using to route e-mail messages 316

L

- language
 - configuring a Web collaboration resource 342
 - configuring the default for Call Director 289
 - configuring the default for Web collaboration 353
- LDAP directories, configuring access to 78
- linking workflows 218
- locations
 - configuring 64
 - running reports against 107
- logging on to the Manager application 23
- logon profile, saving 27

M

- Manager profile 59
- manual reserve time, configuring 168
- Master Administrator profile 59
- Master Administrator time-out interval, configuring 416
- maximum active time, configuring for a user 44
- maximum defer count, configuring for a user 44
- maximum external consult count, configuring for a user 45
- maximum handling time excluding post-processing, configuring for a user 44

- maximum handling time, configuring for a user 44
- maximum non-primary time, configuring for a user 44
- maximum offer time, configuring 169
- maximum post-processing time, configuring for a user 43
- media-specific settings, configuring for a user 40
- messages
 - about e-mail message templates 321
 - creating for Web collaboration 346
 - selecting for a Web collaboration queue 256
- modem, configuring for a Watchdog Server 71
- monitored destinations
 - configuring for e-mail 324
 - configuring for e-mail in a multitenant system 399
 - configuring for Web collaboration 350
- monitored resources, configuring for a user 45
- monitored sources
 - configuring for e-mail 325
 - configuring for Web collaboration 348
- monitoring permissions, impact on reporting 101
- multiple contact handling
 - about 165
 - changing to 180
 - configuring a call or callback as the primary contact 180
 - configuring contact handling rules 167
 - selecting the contact handling rules for a user 38
- multiple users
 - creating based on a user template 55
 - creating by importing a text file 56
 - user list requirements 57
- multitenancy
 - about 389
 - administrator roles 392
 - changing to 390
 - configuring a user at the system level 396
 - configuring an e-mail destination 399
 - configuring business units 394
 - configuring resources 394
 - configuring the error business unit 400
 - logging on to a business unit 24
 - updating a design database 393

N

- network communication, configuring 415
- network transit numbers
 - about 370
 - configuring 372
 - specifying the dialing prefix 371
- networked sites
 - configuring 371

- configuring the server settings for central reporting 383
- including in reports 372
- real-time monitoring 94
- networking
 - about 357
 - acceptance criteria 360
 - configuring a queue 253
 - configuring the acceptance schedule 375
 - configuring the data exchange interval 374
 - configuring the default options 374
 - configuring the default workflow 374
 - configuring the dialable numbers 370
 - configuring the distribution settings 376
 - contact processing 358
 - deciding to keep contacts local or distribute 365
 - disabling 374
 - distribution methods 361
 - enabling 374
 - including a queue in the site-level statistics 242
 - queue level implementation 359
 - refining the list of eligible sites 366
- networking workflows
 - about 363
 - creating 368
- notifications
 - configuring 74
 - configuring the method for reports 144
 - selecting the Watchdog Server 409

O

- offer time, configuring 169
- OpenScape 4000 resources 261
- OpenScape Contact Center authentication, configuring for a user 34
- OpenScape Contact Center servers
 - about 69
 - changing the properties 70
- OpenScape Voice resources 260
- Operator function, configuring for Call Director 294
- options
 - configuring for Call Director 288
 - configuring for callbacks 301
 - configuring for central reporting 382
 - configuring for contact lookup 419
 - configuring for data management 420
 - configuring for e-mail 326
 - configuring for networking 374
 - configuring for routing 168
 - configuring for statistics 430
 - configuring for the outbound feature 306
 - configuring for voice 267

- configuring for Web collaboration 351
- configuring the default options 403
- order of columns in a report, specifying 116
- outbound feature
 - about 308
 - configuring the options 306
 - enabling 314
- outbound lists
 - callback record examples 313
 - creating 309
 - error handling 308
 - field format and descriptions 310
 - format 309
 - requirements 310
- outgoing e-mail server, configuring 410
- output options
 - configuring the defaults for reports 144
 - specifying for a historical report 126
 - specifying for a real-time or cumulative report 124
- overrides, configuring for a queue 249
- overviews
 - configuring a queue 240
 - configuring a report 103
 - configuring a user 31
 - configuring a wallboard view 85

P

- passwords
 - changing 407
 - Master Administrator account 25
 - restrictions for SAP CIC users 34
- performance routing, enabling 251
- permissions
 - access levels 62
 - configuring for users 36
 - impact on reporting 101
- personal performance thresholds, configuring for a user 42
- planning tasks 13
- Post-processing handling state, configuring automatic setting for a user 35
- Post-processing reasons
 - cumulative reporting 99
 - historical reporting 97
- Post-processing reasons, configuring 67
- predefined user profiles 58
- preferred device
 - configuring for silent monitoring 145
- preferred site distribution method 361
- prefilling
 - skill levels 39
 - skill preferences 39

Index

- priority increment, configuring in a queue 247
- processing contacts 14
- production database, selecting at logon 24
- profiles
 - about user 58
 - configuring 60
 - list of default profiles 58
 - permission access levels 62

Q

- queue processing workflows
 - about 212
 - activating 221
 - considerations in planning 213
 - exiting 215
 - linking 218
 - looping 213
 - terminating 215
 - Web collaboration considerations 341
- queue processing, about 15
- queue real-time reports
 - including Ringing and Unanswered contacts 153
 - using weighted averages 153
- queue report intervals, configuring 151
- queue time, effect on queue setup 234
- queues
 - about 231
 - assigning to aggregates 254
 - assigning to reports 255
 - automatically opening contact-associated documents or URLs 243
 - backup-oriented setup 235
 - calculating the queue step intervals 237
 - callback processing 298
 - configuration overview 240
 - configuring the default queue processing workflow 241
 - configuring the networking settings 253
 - configuring the overrides 249
 - configuring the steps 244
 - configuring the steps for skills-based routing 247
 - configuring the supplemental information 241
 - configuring the time-out settings 244
 - configuring the Web collaboration messages 256
 - configuring the Web collaboration URLs 256
 - configuring to create a callback on abandon 241
 - cumulative reporting 99
 - effect of initial contact processing on setup 232
 - effect of scheduling on setup 232
 - effect of staffing, contact volume, and queue time on setup 234
 - enabling performance routing 251

- historical reporting 97
 - including in an aggregate 257
 - including site-level statistics for networking 242
 - less specialized setup 236
 - monitoring permission 45
 - real-time monitoring 94
 - selecting Wrap-up reasons 254
 - setup considerations 231
 - skills versus virtual groups 233

R

- ranges
 - specifying in cumulative reports 105
 - specifying in historical reports 105
- real-time refresh interval, configuring 416
- real-time reports
 - about 94
 - activating and viewing 133
 - common uses 96
 - configuring 102
 - examples 95
 - including a bar chart 120
 - selecting the resources to report on 109
 - setting thresholds and alarms 117
 - specifying the output options 124
- Real-Time Server
 - configuring for a user 35
 - deploying on an auxiliary server machine 74
- real-time statistics, *see* statistics
- reasons
 - configuring a Discard reason 320
 - configuring a Post-processing reason 67
 - configuring a Work reason 66
 - configuring a Wrap-up reason 68
 - configuring an Unavailable reason 66
 - creating a Delete reason for callbacks 300
 - creating a Retry reason for callbacks 299
- refresh interval, configuring 416
- Report Center, about 28
- reporting data, configuring the retention periods 426
- reporting feature, about 93
- reporting level feature, about 102
- reporting options
 - configuring for central reporting 382
 - configuring the colors in reports 150
 - configuring the data maintenance time 420
 - configuring the default output settings 144
 - configuring the directory options 147
 - configuring the first day of the week 152
 - configuring the global queue report interval 151
 - configuring the notification methods 144
 - configuring the queue real-time report options 153

- configuring the retention period for e-mail data 428
- configuring the retention period for Web collaboration data 429
- configuring the retention periods for reporting 426
- configuring the silent monitoring settings 145
- configuring the system reporting options 150
- configuring the user reporting options 144
- configuring the workforce management output location 154
- reports
 - about activity 100
 - about cumulative 99
 - about historical 97
 - about real-time 94
 - assigning an owner 103
 - assigning users to 46
 - configuration overview 102
 - configuring the general properties 103
 - displaying data for an aggregate 257
 - impact of monitoring permissions 101
 - including a table or chart 103
 - including networked sites 372
 - modifying 103
 - selecting the content 108
 - selecting the resources to report on 108
 - selecting the type 103
 - setting thresholds and alarms 117
 - specifying a bar chart 120
 - specifying the column order 116
 - specifying the output options 124
 - specifying the reports for a queue 255
 - specifying the statistics to be displayed 116
- reserve time, configuring for contacts in queue 168
- resource worksheets 15
- resources
 - selecting for a cumulative report 110
 - selecting for a historical report 112
 - selecting for a real-time report 109
- retention periods
 - configuring for e-mail data 428
 - configuring for reporting data 426
 - configuring for Web collaboration data 429
- Retry reasons, creating 299
- return codes, custom functions 207
- Ring No Answer feature
 - configuring 271
- Ringling contacts
 - configuring the maximum offer time 169
 - including in queue real-time reports 153
- routing options, configuring 168
- routing schedules
 - configuring for callbacks 304
 - configuring for e-mail 328
- routing state reasons
 - cumulative reporting 99
 - historical reporting 97
- routing strategy workflows
 - about 184
 - activating 221
 - considerations in planning 186
 - creating 209
 - example of a simple voice workflow 185
 - linking 218
 - overriding the Call Director settings 211
 - overriding the error queue settings 212
 - using contact data 193
 - using custom functions 204
 - using database functions 196
 - using schedules 190
 - using source and destination information 187
 - using with Call Director 189
- S**
 - SAP CIC settings, configuring 438
 - SAP CIC users
 - password restrictions 34
 - SAP ICI settings, configuring 440
 - SAP ICI users, configuring 40
 - Scheduled Callback List
 - about 100
 - generating 307
 - schedules
 - configuring for callbacks 304
 - configuring for e-mail 328
 - configuring for networking 375
 - effect on queue setup 232
 - scheduling a historical report 121
 - security
 - configuring the enhanced security option 414
 - configuring the network communication 415
 - servers
 - about 69
 - changing the properties 70
 - configuring an auxiliary server for a user 35
 - configuring an auxiliary server machine 74
 - configuring the settings for central reporting networked sites 383
 - running SAP servers on an auxiliary server machine 71
 - service level
 - calculation formulas 432
 - choosing the calculation formula 431
 - configuring the interval 430
 - overriding the default setting for a queue 249, 251

Index

- ShareData folder, configuring the location 408
- shifts, configuring 437
- shortcuts
 - restoring the default settings 408
- silent monitoring
 - configuring the settings 145
- site information, configuring 408
- Site reporting level, about 102
- sites, real-time monitoring 94
- skill levels
 - about 177
 - activating 178
 - default value 39
- skill preferences
 - activating 179
 - default value 39
- skill scoring
 - about 172
 - configuring 174
 - schemes 173
- skills
 - about 161
 - selecting for a user 38
- skills-based routing
 - about 160
 - calculating queue step intervals 239
 - changing to 171
 - configuring the options 168
 - configuring the priority increment in a queue 247
 - configuring the queue overrides 251
 - configuring the queue steps 247
 - enabling performance routing 251
 - queue setup considerations 231
- skills-based routing, changing to 16
- SMTP server settings, configuring for e-mail 410
- Source Activity Reports
 - about 100
 - generating 142
- sources
 - configuring for e-mail 325
 - configuring for Web collaboration 348
- staffing, effect on queue setup 234
- standard messages
 - creating for e-mail 321
 - creating for Web collaboration 346
- starting the Manager application 23
- statistics
 - configuring the options 430
 - configuring the retention periods 426
 - configuring the shift restart times 437
 - specifying in a report 116
 - use in reports 426

- using in workflows 192
- steps, configuring for a queue 244
- Supervisor profile 59
- supplemental information address, using 243
- switches, *see* communication platforms
- system administrators, role in multitenancy 392
- system options, configuring 408
- system reporting options, configuring 150

T

- Telecommunications Specialist profile 59
- telephone devices, configuring for silent monitoring 145
- telephone lines, configuring for networking 370
- Telephony Center
 - about 29
- text file, using to create multiple users 56
- thresholds
 - configuring for a user 42
 - configuring for a wallboard item 90
 - configuring for columns in a report 117
- time-out extension
 - configuring for a queue 246
 - configuring the default extension 268
- time-out interval, configuring for the Master Administrator 416
- time-out URL
 - configuring for a queue 246
 - configuring the default for Web collaboration 351
- toolbars
 - restoring the default settings 408
- total data usage, viewing 424
- traffic, effect on queue setup 234
- trends, using cumulative reports 99

U

- Unanswered contacts
 - configuring the maximum offer time 169
 - including in queue real-time reports 153
- Unavailable reasons, configuring 66
- URLs
 - automatically opening contact-associated Web pages 243
 - creating for Web collaboration 347
 - selecting for a queue 256
- User Activity Reports
 - about 100
 - example 101
 - generating 141
- user calculation, configuring 435
- user interface, about 27
- user list requirements, for creating multiple users 57

- user profiles
 - about 58
 - configuring 60
 - list of default profiles 58
- user reporting options
 - about 144
 - configuring the colors in reports 150
 - configuring the default output settings 144
 - configuring the directory options 147
 - configuring the notification methods 144
 - configuring the silent monitoring settings 145
- user settings, restoring 408
- user templates
 - about 49
 - associations 50
 - configuring 50
 - creating a new template 51
 - creating template based on an existing user 52
 - updating 52
- users
 - assigning to reports 46
 - completing a Config Sync user definition 266
 - configuration overview 31
 - configuring automatic post-processing 35
 - configuring personal performance thresholds 42
 - configuring system identification 34
 - configuring the application access 35
 - configuring the backup group 40
 - configuring the general properties 33
 - configuring the media-specific settings 40
 - configuring the monitored resources 45
 - configuring the permissions 36
 - configuring the Web collaboration settings 41
 - creating based on a user template 53
 - creating multiple based on a user template 55
 - creating multiple by importing a text file 56
 - cumulative reporting 99
 - historical reporting 97
 - real-time monitoring 94
 - selecting the contact handling rules 38
 - selecting the skills for 38
- Utilization
 - including Idle time 435
- utilization
 - configuring for a user 44

V

- views
 - configuring a wallboard view 85
- virtual groups
 - about 162
 - configuring 164

- cumulative reporting 99
- historical reporting 97
- real-time monitoring 94
- voice error queue, configuring 269
- voice options, configuring 267
- voice processor regions, configuring
 - configuring voice processor regions 285
- voice processors, configuring for Call Director 283
- voice queues
 - configuring the networking settings 253
 - configuring the time-out extension 246
 - configuring to create a callback on abandon 241
- VoiceXML, enabling and configuring 278

W

- wait time, configuring for calls 434
- wallboard distributions, configuring 92
- wallboard views
 - configuration overview 85
 - configuring a threshold on an item 90
 - configuring an item 89
 - configuring the content 87
 - configuring the distribution 91
 - configuring the general information 85
 - content types 81
- wallboards
 - about 81
 - configuring a view 85
 - creating a custom type 82
 - creating a definition 83
- Watchdog Server, configuring 71
- .wav files
 - configuring 285
 - requirements 287
 - using with Call Director 281
- Web callback options, configuring 305
- Web collaboration
 - about 335
 - about sources and destinations 337
 - component interaction 336
 - configuring a language 342
 - configuring the data retention periods 429
 - configuring the default language 353
 - configuring the default overrides for a user 41
 - configuring the default routing strategy, queue, and time-out URL 351
 - configuring the error queue settings 353
 - configuring the options 351
 - configuring the server settings 354
 - configuring the settings for a user 41
 - creating a standard message 346
 - creating a URL 347

Index

- creating an emoticon 348
- language specifier in workflows 340
- overriding the default greeting for a user 41
- overriding the message prefix for a user 41
- queue processing workflow considerations 341
- routing strategy workflow considerations 338
- specialized components 341
- user/customer interaction 335
- workflow considerations 338
- Web collaboration queues
 - configuring the messages 256
 - configuring the time-out URL 246
 - configuring the URLs 256
- Web Interaction Server
 - configuring the port for VoiceXML 278
 - configuring the port for Web callbacks 305
 - configuring the port for Web collaboration sessions 354
 - configuring unsecured and secured ports 412
- weighted averages, using for queue real-time and aggregate statistics 153
- Windows authentication 23, 26, 34
- Windows authentication, configuring for a user 34
- Work reasons, configuring 66
- workflow diagrams
 - about 183
 - using contact data 193
 - using custom functions 204
- workflow processing, about 14
- workflows
 - about networking workflows 363
 - activating 221
 - connecting 218
 - linking 218
 - looping 213
 - using database functions 196
 - using schedules 190
 - using statistics 192
 - using with Call Director 189
- workforce management data, configuring the output location 154
- Wrap-up reasons
 - configuring 68
 - configuring mandatory setting for a user 35
 - cumulative reporting 99
 - historical reporting 97

X

- XML data, configuring the output location 154

