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GUIDE

MiContact Center Enterprise

System Description

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Powering connections

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INTRODUCTION

Mitel MiContact Center Enterprise (MiCC Enterprise) is a suite of applications and services that offers true skills-based routing functions, agent desktop applications as well as management applications for server-based contact centers. It is implemented as a true client/server architecture where all components can be installed on the same machine or individually on its own PC.

It is possible to manage multiple MiCC Enterprise systems from one single location with a feature called Centralized Management. A MiCC Enterprise system with this feature installed is called a MiCC Enterprise Network Operations Center (MiCC Enterprise NOC); for an overview of this feature please see the document Centralized Management.

Note: True skills-based routing means that each agent can be assigned with an individual set of skills (with different levels) as opposed to the more traditional skills-base routing systems where agents having the same set of skills are grouped together.

True client/server, as opposed to file/application sharing, means that clients communicate with server components over an IP network.

OVERVIEW

MiCC Enterprise uses the Open Application Server (OAS) for call control and media services through Telephony Services API (TSAPI) with extensions. OAS is a multimedia server platform which supports the MX-ONE Call Manager.

MiCC Enterprise can also use the Telephony Application Server (TAS) for call control and media services on Call Managers other than the MX-ONE.

DATABASE

A MiCC Enterprise system uses a database referred to as the MiCC Enterprise Database. A MiCC Enterprise NOC system uses a database referred to as the Centralized Database. These databases have the exact same structure, but the Centralized Database contains information from all the MiCC Enterprise systems that are managed by the MiCC Enterprise NOC.

MICC ENTERPRISE SERVICES

The services included in a MiCC Enterprise system differ from the services included in a MiCC Enterprise NOC. This is due to the fact that MiCC Enterprise NOC does not handle incoming or outgoing calls and some services have been created in order to implement the Centralized Management features.

A MiCC Enterprise server contains the following services:

- Router Service
- Broker Service

- Archive Service
- Configuration Service
- ConfigurationWcf Service
- Event Service
- Report Service
- Agent Service
- Open Media Service
- MiContact Center Agent Service
- Call Control Service
- Script Manager Service
- Campaign Service
- Real Time Interface Service
- Database Utility Service
- Chat Service
- Email Service
- Scheduler Service

A MiCC Enterprise NOC contains the following services:

- Broker Service
- Configuration Service
- Database Utility Service
- Report Service
- Network Database Service

NETWORK COMMUNICATION

The MiCC Enterprise services and applications communicate with each other over an IP Network. The MiCC Enterprise components use Internet Protocol Version 4, IPv4 for its communication but can also be installed and run on dual stack networks where both IPv4 and IPv6 are enabled.

ROUTER SERVICE

Router Service communicates with Open Application Server via TSAPI with extensions for call control, status reporting and media control. The Router Service:

- Facilitates call control by interfacing with Script Manager Service.

- Interacts with Agent Service to receive agent status, call status, and call qualification codes entered via the MiContact Center Agent application. Call information collected from Script Manager Service or Router Service will be sent to Agent Service for display in MiContact Center Agent.
- Receives performance statistics from Event Service for routing purposes and sends call activity events to Event Service for real time presentation and reporting.
- Sends system alarm information to Configuration Service.
- Communicates with Configuration Service to subscribe to configuration events.
- Manages Phone Agents.
- Communicates with Campaign Service for call campaigns.
- Communicates with SMS Gateway Service for SMS routing.
- Communicates with Chat Service for routing chat sessions.
- Communicates with Open Media Service for routing Open Media sessions.
- Communicates with E-mail Service for routing e-mail sessions.
- Makes routing decisions for service and private calls based on rules defined by the user.

BROKER SERVICE

Broker Service is a housekeeping service and serves as a location broker for all services and applications. The Broker Service also provides static information to other services and clients. At startup, all MiCC Enterprise services and applications connect to Broker Service to ask for the locations of services and database. Complete startup of the MiCC Enterprise services is dependent on successful startup of the Broker Service and the Configuration Service.

The machine name of the Broker Service is available in the Windows registry. For client computers the machine name can be changed by the Setup program.

ARCHIVE SERVICE

Archive Service receives service access events, service group events and agent status events from Event Service as well as configuration events from Configuration Service. These data are stored into the MiCC Enterprise database at predefined intervals for production of reports later on. All configuration and status data are stored in GMT (Greenwich Mean Time) time.

Archive Service sends alarms to the Configuration Service when the MiCC Enterprise database is 80% and 95% full. When these thresholds are reached, it will trigger the notification service in SQL Server.

CONFIGURATION SERVICE

Configuration Service receives configuration changes from Configuration Manager and distributes these changes as configuration events to all subscribing MiCC Enterprise components. It also distributes alarms received from different services to clients.

Configuration Service receives service access status changes from the Router Service and distributes these changes to all subscribing clients.

Configuration Service connects to the license server and manages the distribution of the licenses to different applications.

Configuration Service also maintains a connection to the Open Application Service Configuration Service(s) and receives events when OAS configuration is changed.

When Configuration Service is used in the MiCC Enterprise NOC, it receives information from all the managed systems via the Centralized Database. When the database has been updated by Network Database Service, Configuration Service must reload all configuration data and broadcast this information to the clients.

Complete startup of all MiCC Enterprise services is dependent on successful startup of Configuration Service and Broker Service.

EVENT SERVICE

Event Service receives all the activity events, such as Script Manager data, agent status and call routing activity from the Router Service. Event Service analyzes the events received and the resulting status events are distributed to subscribers (that is, MiContact Center Agent, Event Web Service, Archive Service and Router Service). Event Service also calculates performance data for display of real time information. Event Service communicates with Configuration Service to subscribe to configuration events.

Note: Multiple Event Services may be installed for the purpose of load sharing.

REPORT SERVICE

Report Service provides the capability to produce immediate, scheduled and call detail reports. It receives report requests and sends report events to requesting Report Manager applications. In addition, Report Service stores and retrieves report templates in the database and retrieves report data at the time of report generation. Report Service must be started with a Windows user account that has access to the desired printer(s).

Report Service communicates with Configuration Service to subscribe to configuration events.

When Report Service is used in the MiCC Enterprise Network Operations Center, Report Service will connect to the Centralized Database instead of the MiCC Enterprise database.

AGENT SERVICE

The Agent Service receives session information packets from the Router Service, and sends agent status information to the Router Service.

Agent Service informs the Router Service that an agent has logged on and provides the agent media preference and informs whether the agent is privileged to handle E-mail, Chat, Open Media sessions and Campaign calls.

Agent Service connects to the database for retrieval of campaign scripts when campaign calls are allocated to MiContact Center Agent and to store campaign results.

Agent Service communicates with Configuration Service to subscribe to configuration events.

When the Continuous Monitoring feature is used, Agent Service will retrieve information from the call manager by connecting to the Call Control Service via CSTA.

In a system with multiple TAS servers connecting to the call manager, the load balancing of agent logons is performed by Agent Service by utilizing the least loaded Call Control Service when an Agent is logging on.

MICONTACT CENTER AGENT SERVICE

The MiContact Center Agent Service provides a client/server interface for MiContact Center Agents to communicate with the Agent Service. The MiContact Center Agent Service is the gateway into the other MiCC Enterprise services for MiContact Center Agents, providing configuration and routing information.

SCRIPT MANAGER SERVICE

Script Manager Services consist of multiple services. When Script Manager is installed, Script Manager Application Contact Center Service interacts with the Router Service for Interactive Voice Response (IVR) data as well as call activity, service access events, and service group events.

CAMPAIGN SERVICE

Campaign Service connects to the MiCC Enterprise database and receives campaign data (master customer list, campaign information, customer template, customer information and do-not-call list) changes from Configuration Manager and distributes these changes as campaign events to all subscribing MiCC Enterprise components.

Campaign Service will monitor the campaign once the campaign is created. When it is time to start the campaign, Campaign Service will communicate with the Router Service to distribute the campaign calls to customers. When a campaign call is completed, Campaign Service will receive the campaign call status from Router Service and update it in the database.

REAL TIME INTERFACE SERVICE

At startup, the Real Time Interface Service connects to the Broker Service to retrieve the locations of other MiCC Enterprise services and the MiCC Enterprise database. It will also communicate with Configuration Service to subscribe to configuration events.

The Real Time Interface Service also connects to Event Service in order to receive real-time events about service group activity as well as agent group activity. The service will process the event to determine if it is for an agent, service access, and monitored entry for this site. If so, it will write the data to the MiCC Enterprise database.

The Real Time Interface Service also connects to other remote MiCC Enterprise sites, which have been configured for connection. When performance updates are received, the Real Time Interface Service will broadcast the data to other Real Time Interface Service in networked MiCC Enterprise sites.

DATABASE UTILITY SERVICE

Database Utility Service checks scheduled backup and restore settings in the MiCC Enterprise database and performs the backup and restore operation.

NETWORK DATABASE SERVICE

The Network Database Service collects information (for example configuration, campaign and activity data) from the databases of all managed systems and stores this information in the Centralized Database in the MiCC Enterprise NOC. The Network Database Service does not change any information in the managed systems.

Network Database Service continuously checks that the MiCC Enterprise NOC license is installed and determines the number of systems to connect to. Network Database Service then connects to the database in each managed system and use store procedures to look for changes and retrieve data.

Configuration changes are sent to the Configuration Service of the MiCC Enterprise NOC. Configuration Service stores this information in the Centralized Database and informs Report Service, Broker Service and Event Web Service about the changes.

Activity and Call Detail Record data is written directly to the database and used from Report Service only when creating reports.

CALL CONTROL SERVICE

The Call Control Service provides a client/server interface for clients to communicate with the OAS CSTA32 DLL or the Telephony Application Server. The interface between CSTA32 and OAS uses direct TCP/IP preventing communication through a blocked firewall. The interface between clients and the Call Control Service can use direct TCP/IP or HTTP to handle the firewall issue.

When TAS is used the Call Control Service communicates to TAS using CSTA III protocol on port 8732 (default).

CONFIGURATION WCF SERVICE

The Configuration WCF service provides access to MiCC Enterprise configuration to third parties that logon with valid MiCC Enterprise credentials with the privilege to access configuration data.

OPEN MEDIA SERVICE

The Open Media Service provides a HTTP interface for third party applications to manage Open Media requests. Open Media requests are sent to Open Media service groups and routed according to the same rules as other media types in MiCC Enterprise.

Open Media requests can be anything an integrator wants to have routed using MiCC Enterprise. For example, a company may want to use skills based routing for their help desk. The ticket number would be provided in the IVR or private data when the OM request is added. The service group would have an agent action to launch the help desk application using the ticket number. When the agent starts handling the OM request, the help desk application would be launched using the ticket number.

In addition, the Open Media Service provides a HTTP interface for third party applications to access the Session Information Service API. This interface allows clients to receive session information from subscribed service groups including call ID, queue position, preferred agent ID, media type, time in queue, customer information, dialed number and IVR information. For more details, refer to the Session Information Service description in the CPI.

CHAT SERVICE

The Chat Service provides an interface for receiving and managing chat requests to the MiCC Enterprise contact center. It sends notifications of incoming requests to the Router Service for routing to agents. A sample chat client application is provided with MiCC Enterprise, and it can be modified or customized based on the contact center's needs.

EMAIL SERVICE

The Email Service allows MiCC Enterprise to integrate with e-mail servers supporting standard IMAP4/SMTP. One e-mail server may be configured per tenant. Incoming e-mail requests are

sent to the MiCC Enterprise Router service and Script Manager for routing and handling. Outbound e-mails can also be initiated by Script Manager or by MiContact Center Agents.

SCHEDULER SERVICE

The Scheduler Service executes configuration changes that have been scheduled for future application using the Web Manager application.

Plannable changes include assignment of skills to agents, assignment of skills to Service Groups and assignment of agents to an Agent Group. One-time and recurrent schedules are supported.

SERVICE DEPENDENCIES AT STARTUP

Dependencies exist among MiCC Enterprise services for the MiCC Enterprise system to start properly. Refer to Dependencies Table 1 for details.

Table 1: Dependencies

SERVICE	REQUIRED SERVICE(S)
Broker Service	None
Configuration Service	Broker Service, SQL Server, Enterprise License Server
Router Service	Broker Service, Configuration Service
Agent Service	Broker Service, Configuration Service, Router Service
MiContact Center Agent Service	Broker Service, Configuration Service, Router Service, Agent Service
Event Service	Broker Service, Configuration Service, Router Service
Archive Service	Broker Service, Configuration Service, SQL Server
Report Service	Broker Service, Configuration Service, SQL Server
Database Utility Service	Broker Service, Configuration Service, SQL Server
Script Manager Service	None
Real Time Interface Service	Broker Service, Event Service, Configuration Service
Network Database Service	Broker Service, Configuration Service, SQL Server
Call Control Service	Broker Service, Configuration Service, SQL Server
Open Media Service	Broker Service, Configuration Service, Router Service, SQL Server

Scheduler Service	Broker Service, Configuration Service

Note: Services will start up even if they cannot connect to other services. However, they may not be available for client connections.

WEB SERVICES

This section lists web services in MiCC Enterprise and MiCC Enterprise Network Operations Center.

LOGON WEB SERVICE

Logon Web Service receives configuration data from Configuration Service. It is used by all clients as the common logon component to obtain the list of user names and authenticate the logged on user.

EVENT WEB SERVICE

Event Web Service receives configuration data from Configuration Service. It also receives status and performance events from Event Service. The Event Web Service maintains the Information Manager user sessions, acquires and releases licenses from Configuration Service on behalf of the client.

The Event Web Service collects the Defining Log settings from Configuration Manager. These settings can be found and changed in Contact Center.

Please refer to Configuration Manager - User Guide for more information.

NETWORK EVENT WEB SERVICE

The Network Event Web Service is the part of the MiCC Enterprise NOC that receives configuration data from Configuration Service. It also receives status and performance event from Event Services from all managed systems. The Network Event Web Service provides event data for Information Manager from all connected and managed MiCC Enterprise systems.

Network Event Web Service provides a combined interface for all the connected managed MiCC Enterprise Systems to the Information Manager. This interface looks exactly the same as an Event Web Service in a managed system. The only thing that differs from Event Web Service is that Network Event Web Service adds the name of the managed MiCC Enterprise system as a prefix to all service groups and user names. This is to be able to separate the managed MiCC Enterprise systems.

REPORT WEB SERVICE

Report Web Service receives configuration data from Configuration Service. It also receives report and campaign data from Report Service. The Report Web Service maintains the Report Manager user sessions, acquires and releases license from Configuration Service on behalf of the client.

FLOW SHEET WEB SERVICE

Flow Sheet Web Service is a communication interface for Script Manager. It handles configuration data, that is binary and data files, for scripts and tenant handling.

CONFIGURATION WEB SERVICE API

A Web Services API for integration directly in MiCC Enterprise configuration services. With this API it will be possible to do integrations to, for example, Work Force Management (WFM) systems and allow configuration changes of MiCC Enterprise to be done directly in real time from the WFM system.

Please refer to MiCC Enterprise Configuration Web Service for more information.

MICC ENTERPRISE APPLICATIONS

A MiCC Enterprise System contains the following applications:

- Configuration Manager
- Information Manager
- Report Manager
- Web Manager
- Script Builder
- Script Designer
- MiContact Center Agent
- Web Agent
- Mobile Agent

A MiCC Enterprise NOC contains the following applications:

- Configuration Manager
- Information Manager
- Report Manager
- Script Designer

CONFIGURATION MANAGER

Configuration Manager is an application that serves as a tool for structuring the contact center, so that calls to the contact center are handled with maximum efficiency and accuracy. With Configuration Manager, the following can be done:

- Access other applications such as Script Designer, OAS Management Console, Script Builder and Real Time Interface Service
- Configure service accesses, including the relevant message prompts for different stages of the call flow provided by the service accesses.
- Create call campaigns
- Create skills and assign such skills to the desired service groups or users based on the level associated with each skill
- Define call qualification codes for use by service groups when generating activity reports
- Define reasons for being Not Ready
- Establish service groups, agent groups, user types and users

- Set contact center system properties
- Set or change a variety of counter and time alarm thresholds for service groups and agent groups
- View the relationships among service groups, skills and agents as well as those between service accesses and service groups at a glance

Configuration Manager communicates with the Configuration Service to read and write configuration data to the database. Configuration Manager will receive a configuration event whenever another Configuration Manager client has changed any configuration data. In addition to managing the contact center objects, Configuration Manager also provides the Campaign feature; it is used to configure the campaign which when started will utilize the skills-based routing mechanism.

Configuration Manager allows importing of the campaign customer list for campaign calls as well as modification/deletion/addition to the customer list. Configuration Manager communicates with the Campaign Service for all the campaign data.

From within Configuration Manager, the Script Designer application can be launched if it has been installed on the same machine as Configuration Manager. This allows the user to build a script that can be used later in a Script Manager service access. Configuration Manager can also launch the OAS, Configuration Manager, Real Time Interface Service Configuration and Script Builder utility applications. Allocation of licenses to tenants is also managed from the Configuration Manager.

If Configuration Manager is launched from a MiCC Enterprise NOC environment, the user will be able to select which system to logon to. It is possible for the user to logon to either any of the managed MiCC Enterprise systems or to the MiCC Enterprise NOC. When selecting a managed MiCC Enterprise system, Configuration Manager connects to the Configuration Service of the managed system and the appearance will be the same as if Configuration Manager was launched locally from the managed system. Using Configuration Manager from the MiCC Enterprise NOC allocates the license from the Network Operations Center system and not from the managed MiCC Enterprise system. The user accounts used for logon can be any account on the selected MiCC Enterprise system that has privileges to launch Configuration Manager.

If using Configuration Manager to configure the MiCC Enterprise NOC, only a limited amount of settings will be available. The MiCC Enterprise NOC will appear as a tenanted system with only the default tenant available. This automatically limits the amount of contact center objects to configure to user and user type configuration. Campaign Service is not available within the MiCC Enterprise NOC, thus there is no need for campaign configuration. If used in a MiCC Enterprise NOC, the accessible settings and external applications in the Tools Menu are limited. The only available items are:

- Script Designer, which launches the Script Designer application. and
- License Properties, for configuration of MiCC Enterprise NOC licenses.

REAL TIME INTERFACE CONFIGURATION

The Real Time Interface Configuration application can be launched from Configuration Manager. It is used to communicate with the local Real Time Interface Service, in order to configure remote

Real Time Interface Services to be connected to, and to configure which service groups and agents should be monitored in the local MiCC Enterprise system.

INFORMATION MANAGER

Information Manager provides a graphical user interface to configure and present real time information on the Wall Display and the Virtual Wall Display unit.

Upon the startup of the Information Manager application, a connection to Event Web Service will be made to retrieve configuration data and event data. If this connection fails, Information Manager will be terminated. When started, the Information Manager application uses the MiCC Enterprise Logon user name to retrieve user preferences for the display of information.

Information Manager saves and retrieves user preferences via the Event Web Service to the database.

When launched from a MiCC Enterprise NOC environment, Information Manager connects to the Network Event Web Service instead of the Event Web Service. The connection to Network Event Web Service might cause an updating delay compared to the time for updates when connected to Event Web Service (up to four seconds compared to up to two seconds).

REPORT MANAGER

With Report Manager statistical reports on the system services and resources of MiCC Enterprise can be produced. Reports can be produced for contact center objects in specified time and date intervals for one-time reporting, or on a regular basis (scheduled reports). Depending on whether the report data is historical or scheduled to be gathered in the future, reports can be printed or saved immediately, or scheduled.

Report Manager communicates with Report Web Service to subscribe to configuration events. Report Manager configures reports and communicates with the Report Service. Report Service creates report templates, and generates schedule and one-time printout of reports.

SCRIPT BUILDER

Script Builder is a stand-alone application that is part of the Campaign feature in MiCC Enterprise. It can be launched via Configuration Manager, or run directly.

Script Builder connects to the MiCC Enterprise database using ODBC. It retrieves existing campaign information and updates script questions in the database.

SCRIPT DESIGNER

Script Designer is an editing tool allowing the user to design and build powerful IVR applications. The resulting binary script generated can be used to create service applications.

When launched in a MiCC Enterprise NOC, the user can select at start-up which managed MiCC Enterprise System to work with. Script Designer can only connect to one managed MiCC Enterprise system at a time.

MICONTACT CENTER AGENT

MiContact Center Agent is a client application that provides call control and access to contact center agent features supporting MiCC Enterprise.

The main features of MiContact Center Agent are the following:

- Call handling - make, answer, hold, retrieve, deflect, transfer, conference and hang up calls
- Call control using SIP softphone or hard phone extensions
- Handling Contact Center calls, callbacks, E-mail, Open Media, Chat and SMS messages
- Requesting and providing Assistance to other MiContact Center Agents
- Forcing the status of other MiContact Center Agents to Ready, Not Ready or Logged off
- Monitoring other MiContact Center Agents
- Instant messaging between MiContact Center Agents or knowledge workers (MiContact Center Expert users)
- Contact list management, including integration to CMG, Outlook, or LDAP/AD
- Presence status for other MiContact Center Agents and Expert users
- Handling Dispatch calls, e-mails, SMS and campaign calls
- Viewing service group statistics

WEB AGENT

Web Agent is a browser-based application that provides call control and access to contact center agent features supporting MiCC Enterprise.

The main features of Web Agent are the following:

- Call handling - make, answer, hold, retrieve, deflect, transfer, conference and hang up calls
- Call control using hard phone extensions
- Handling Contact Center calls, callbacks and Open Media
- Instant messaging between MiContact Center Agents or knowledge workers (MiContact Center Expert users)
- Presence status for other MiContact Center Agents and Expert users
- Viewing service group statistics

MOBILE AGENT

Mobile Agent is a browser-based application that assists Phone Agents to log on to the system and manage their presence status (Ready/Not Ready). It also provides service group statistics to be displayed for up to 8 selected queues.

UTILITIES

MiCC Enterprise Utilities include:

- Installation and Setup
- Application Toolbar
- Database Maintenance Tool
- Script Manager Configuration
- Spy Tracer
- SMS Configuration

INSTALLATION AND SETUP

The Installation application is used for the installation of MiCC Enterprise and MiCC Enterprise NOC components. Prior to installation of the components, it creates the MiCC Enterprise database on the SQL Server and verifies that enough disk space is available on the PC. For more information, please refer to the document *MiCC Enterprise Installation Instructions*.

The Setup application is used for installation, uninstallation and updating of the localization files as well as the components of the MiCC Enterprise and MiCC Enterprise NOC. For more information on installation and setup, please refer to the document *Initial Configuration*.

APPLICATION TOOLBAR

Application Toolbar communicates with Logon Web Service to verify the entered logon ID. Application Toolbar then retrieves the user privileges and stores the information in a shared memory area.

When other MiCC Enterprise applications are launched, they will retrieve the user privileges from the shared memory and adapt the application behavior accordingly, that is, certain functions within the application will be enabled or disabled depending on the user privileges.

DATABASE MAINTENANCE TOOL

Database Maintenance Tool communicates with the SQL database through ODBC. Database Maintenance Tool is used to configure scheduled backup and restore, to expand the size of the MiCC Enterprise database, and to delete contact center data from the MiCC Enterprise database.

Database Maintenance Tool is also used to configure actions to be taken when the database is full. Two thresholds are used — 80% and 95% full.

When Database Maintenance Tool is launched in a MiCC Enterprise NOC environment it is not possible to use Database Maintenance Tool with any of the managed MiCC Enterprise systems. Database Maintenance Tool will in this case only use the Centralized Database of the MiCC Enterprise NOC for backup and restore operations. The managed MiCC Enterprise systems are not involved in any of these operations.

SCRIPT MANAGER CONFIGURATION

Script Manager Configuration is used to configure Script Manager Services.

SPY TRACER

Spy Tracer is a debugging tool that can be used to debug scripts and to see what happens in real-time in an application.

When an application is created using Script Designer, even though it was successfully compiled, it might contain some logical errors. In order to test the newly created script and see if the logical flow is correct, SpyTracer can be used to see visually how the blocks are being executed. This is the first step to debug the logic of the script, for more information, please refer to *Debugging Applications*.

SMS GATEWAY CONFIGURATION

The SMS Gateway Configuration application allows the user to configure the SMS Gateway Service. The configuration application is installed on the same server as the SMS Gateway services. It allows the user to configure the SMS Center and GSM modems. Both configurations are allowed, but only the configuration with licenses installed will be able to receive SMS messages at run time. See document SMS Gateway or the online help *SMS Gateway Configuration* for more information.

MICC ENTERPRISE INTERFACES

This section lists interfaces in MiCC Enterprise.

TRAFFIC EVENTS

Traffic events are passed through TSAPI with extensions to the router and then from the Router Service to Event Service for redistribution to subscribing components with the Event Channel concept. In this model there are providers and subscribers. Router Service is the only provider of traffic events to Event Service. This means that for calls that are under the control of MiContact Center Agent, Script Manager Service, or Agent Service, the controlling component will send the event to Router Service, which will use the information in the routing rules as well as pass the event to Event Service. The subscribers of traffic events are:

- Information Manager — to update the real-time display.
- MiContact Center Agent — to update the real-time display.
- Archive Service — to process and archive the information in the database.

CAMPAIGN EVENTS

Campaign Service distributes campaign events within MiCC Enterprise. Providers are:

- Configuration Manager — the main provider of configuration changes.
- Router Service — updates call status.

Subscribers are:

- Configuration Manager
- Router Service

CONFIGURATION EVENTS

Configuration Service distributes configuration events within MiCC Enterprise. It also uses the Event Channel model for this task.

Providers are:

- Configuration Manager — the main provider of configuration changes.
- Router Service — when service access status has changed.
- MiContact Center Agent — when agent skills configuration has been changed.
- Agent Service — when new call qualification codes have been entered.
- MiContact Center Agent Service — when MiContact Center Agent skill configuration has been changed.

Subscribers are:

- Configuration Manager
- Information Manager
- Report Manager
- Router Service
- Event Service
- Archive Service
- Report Service
- Agent Service
- Real Time Interface Service

CMG

MiContact Center Agent can be integrated with the CMG directory. This is configured from the MiCC Enterprise Setup application.

When an agent receives an incoming call a directory lookup is performed in the CMG directory matching the telephone number.

For integration instructions, see document *Initial Configuration*.

OPEN APPLICATION SERVER

The following MiCC Enterprise components interact with OAS through TSAPI with extensions:

- Router Service monitors all configured service accesses as well as Phone Agents in the contact center. It receives events when calls enter and leave the service accesses and sends deflect requests to OAS when calls are distributed to agents.
- Agent Service starts monitoring on the supervisor and agent telephones when a MiContact Center Agent (supervisor) requests to do a continuous monitoring on an agent. Additionally, Agent Service will send a request for intrusion whenever the agent enters speech state.
- Script Manager Service uses the TSAPI with extensions to request call control and media control requests on calls to service accesses configured to use Script Manager.
- Configuration Service maintains a connection to the OAS Configuration Service (OCS) to keep track of the changes in the OAS configuration and distributes these changes to subscribing MiCC Enterprise components. It also maintains a connection to the OAS Event Channel Service (ECS).
- The Call Control Service monitors the agent telephone and receives events for all status changes on the agent's telephone device for MiContact Center Agents. Call control requests are sent to the switch using TSAPI with extensions. It also monitors virtual extensions used by the Campaign Service for progressive campaign dialing.

LOCALIZATION

MiCC Enterprise has built in support for localized resource files based on Windows regional settings. The following table lists the applications and the languages that are available within the MiCC Enterprise solution.

Table 2: Localized resources in MiCC Enterprise

LANGUAGE/ APPLICATION	AR*	DA	DE	ES	FI*	FR*	NL*	PTB	SE	RU*	IT*	EU*
Configuration Manager	x		x	x		x		x		x	x	
Information Manager			x	x	x	x		x		x		
Report Manager			x	x	x	x		x		x		
Script Builder			x	x		x		x		x		
MiContact Center Agent	x	x	x	x	x	x	x	x	x	x	x	x
Web Manager	x		x	x	x	x	x	x	x	x	X	
Web Agent	x	x	x	x	x	x	x	x	x	x	X	

AR = Arabic, DA = Danish, DE = German, ES = Spanish, FI = Finnish, FR = French, NL = Dutch, PTB=Brazilian Portuguese, SE=Swedish, RU=Russian, IT = Italian, EU = Basque

All applications have translated online help except for languages marked "*". Note that Configuration Manager online help is available only in English.

For an overview of supported languages in voice, automatic speech recognition and text to speech, refer to the following documents: ASR and TTS Overview, Message Files, and System Prompts.

CAPACITIES

General capacities for a MiCC Enterprise system are described in Table 3. Specific feature and component capacities are described in Table 4.

Table 3: System capacities

Session handling capacity	60,000 sessions per hour regardless of whether the system is a Virtual Contact Center or not
Maximum number of logged on agents	6,000
Maximum number of logged on Phone agents	6,000
Maximum number of concurrent users	6,000
Maximum number of user records	10,000

Table 4: MiCC Enterprise objects, features and components capacities

Maximum number of managed MiCC Enterprise systems in a MiCC Enterprise NOC Using RTI to network the ten systems and the Network Operations Center to consolidate real time and historical data of the ten sites.	10
Maximum number of displayed real time windows in Information Manager	32
Maximum number of preferred layouts for real time windows in Information Manager (per user)	10
Maximum number of Service Accesses	1000
Maximum number of Service Groups	2000
Maximum number of User Types	100
Maximum number of Skills	2000
Maximum number of Skill Templates	50
Maximum number of Not Ready Reasons	500
Maximum number of Call Qualification Codes	5000
Maximum number of Caller ID entries configured in Tenant Properties	200
Maximum number of service groups that can be displayed in the Real Time Statistics window of MiContact Center Agent	20
Maximum number of GSM modems for the SMS Gateway	4
Maximum number of Session Information (IVR Info) fields for a session	10
Maximum length of Session Information label field	100
Maximum length of Session Information data field	100

Wall display:

Maximum number of displayed messages per user per PC	32
Maximum number of data segments per message	8
Maximum number of data segments total	64
Maximum length of Wall Display messages (in characters)	80
Maximum number of months that can be generated in Report Manager for one-time report generation	12
Outbound Call: For agent outbound calls, the system will support 100 concurrent campaigns with no limit on the number of customers per campaign.	
Maximum number of Script Manager nodes in a distributed Script Manager system	10
Maximum number of IVR sessions per Script Manager node	500

DIMENSIONING

Follow the guidelines below to decide the type and amount of servers needed for a MiCC Enterprise solution.

Table 5: Guidelines for dimensioning

UP TO	WORKS WITH
50 agents and 1,000 calls/h	MiCC Enterprise and OAS/TAS co-hosted on an Application Server Unit (ASU)
250 agents and 6,000 calls/h	MiCC Enterprise and the OAS or TAS co-hosted on a single server.
10,000 calls/h	All of OAS or TAS on a single dedicated server.
500 agents	All of MiCC Enterprise on a single dedicated server
6,000 agents	MiCC Enterprise distributed over two or more servers: - One or more for traffic processing services - One or more for data storage (SQL) and processing
60,000 calls/h	One MiCC Enterprise system with 6 OAS or TAS servers
OAS Media Server: -60 IP media ports -100 IP media ports -500 IP media ports	-All of OAS on a single server -One host dedicated to the Media Server of the OAS -6 servers for one OAS: - 1 for CTI link, NRM and OAS basic services - 5 IP media servers
TAS (ACS) Media Server: -Up to 500 connection points	-An active call for an agent using a desk phone requires 2 connection points (soft phone agents only use one connection point), and each queued call requires 1 connection point.
-Number of Media Servers per TAS	-5 (no hard coded limit but 4+1 has been tested and validated under full traffic load)

Note: The maximum capacity of a MiCC Enterprise system is 60,000 sessions per hour. A session is a phone call, e-mail/SMS, chat or Open Media session.

NETWORK DELAY

The one-way network delay on network paths listed below should typically be:

- 50 ms or less for a good user experience and little or no perceived slowness.
- 250 ms or less for an acceptable user experience, where system response is at times slow, but still functional.

The delay limits apply to each of the following network paths:

- MiContact Center Agent - MiCC Enterprise Server
- MiCC Enterprise Server – OAS/TAS
- OAS/TAS - MX-ONE (or other call manager)
- Accumulated MiContact Center Agent – MiCC Enterprise Server – OAS/TAS

For VoIP media streams, the network delay must be less. For advice on VoIP requirements on the network, see document *MX-ONE System Planning* in the latest MX-ONE documentation library.

LIMITATIONS

General limitations associated with different MiCC Enterprise and MiCC Enterprise NOC objects, features and components are:

- Servers must be using US English Version of Windows. Clients can use localized versions of Windows.
- If using the Attendant Agent feature together with OAS then the CTI server must be configured to use X-Link (CSTA III). CSTA I via AppLink is not supported and will not work.
- If the call_list feature is activated on the agent's extension, the X-link service must be initiated with the D2 parameter for serv set to 1. Please refer to the OAS/MX-ONE Configuration User Guide.

  In addition, the Ring Time Supervision defined in MiCC Enterprise must be less than the configured time for the MX-ONE call_list feature to divert the alerting call to another location.
- Phone Agents cannot have number presentation restricted.
- The frequency of Repeat Queue messages will affect the system performance, since media resources must be allocated and used for each call playing a message. For larger contact centers with higher call volume, it is recommended to enter a larger value for the repeat queue interval in the Service Group Properties Queue settings from the Configuration Manager application.
- For the Attendant Agent feature on OAS based systems, calls cannot be transferred to CTI Group numbers due to the fact that calls are diverted with the "Maintain Queue" option and this is not supported when diverting to CTI Group numbers.
- The display of e-mails in right-to-left languages such as Arabic is not supported. Text will be displayed; however, it will not be displayed in the correct order.
- Scripts with filenames containing extended ASCII characters like æ, ø, å fail to open if the Windows Regional format is set to English (XX) where XX represents another country other than the United States or the United Kingdom. To correct this problem, set the Windows Regional format to English (United States) or English (United Kingdom), or use only ANSI characters in the script file name.
- Using custom Windows scaling settings with MiCC-E Agent may result in the application toolbars displaying incorrectly. This is due to limitations in a third-party component used within the Agent application.
- MiCC-E Agents are able to logon to multi-terminal devices and select the device which they would like to use. This feature is supported when logging on to MiCC Agent and Web Agent, but not Mobile Agent and as Phone Agent.
- The CSTA port in MX-ONE must not be configured to send name information. That means that the D1 value must be 0 for the *csta-session-serv* parameter in the *csta_authentication* command in MX-ONE. Note that OAS is always using the *default* application-id whereas TAS can be configured to use any application-id by using the TAS Config utility.
- When starting and stopping recordings from Web Manager, if recording is also started or stopped from the Agent application then the recording status in Web Manager can get out of sync. This will be looked at to be improved in a future release.

- When using the feature “Force Status” in Web Manager to log on a Phone Agent, the agent will in a multi-OAS system always be logged on to the first OAS server. The automatic load balancing of agent logons is only available in TAS based systems.
- The Web Agent WebRTC feature for softphone integration is supported for Chrome and Microsoft Edge browsers only.

MX-ONE

The following are limitations in MX-ONE that affect MiCC Enterprise:

- **Maximum number of calls in Queue per CTI group**

For information regarding current values, see document MX-ONE Feature Matrix in the MX-ONE documentation.

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