System Overview

JUNE 2017

VIRTUAL RECEPTION

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System Overview - Virtual Reception
June 2017

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1 INTRODUCATION

Virtual Reception is a package in the *Mitel Collaboration Management (CMG)* family, providing additional features and functionality to *CMG*.

CMG is a collaboration and presence management suite. Virtual Reception enhances the features of the CMG Web with Interactive Voice Response functionality, Visitor management an Automatic Attendant feature.

Virtual Reception comprises three individual applications: *CMG Visit*, *CMG Speech Office* and *CMG Speech Attendant*.

This document provides an overview of Virtual Reception. VR is installed using Mitel Installer, from a wizard or the classic package browser.

The following documents are available for the installation and configuration:

- *Virtual Reception Installation Preparation Guide*.
- *Virtual Reception Quick Installation Guide* - describes how to install and configure Virtual reception on a single server.
- *Virtual Reception Installation and Configuration Guide* - a general guide to install and configure Virtual Reception.
- *CMG Speech Installation and Configuration Planning Guide* - a guide to plan installations of CMG Speech IVR and/or Voicemail.
- *CMG Speech Attendant Installation Planning Guide*.
- *CMG Speech ASR/TTS Resources Installation and Configuration Guide* - describes how to install and configure generic ASR and/or TTS resources used by CMG Speech Office and CMG Speech Attendant.
- *InConference Installation and Configuration Guide*.

The following documents are available for verification information:

- CMG Speech Attendant Installation Verification Guide.
- *CMG Speech Office Installation Verification Protocol*.
- *CMG Speech Office Verification Hints and Troubleshooting*.

The following documents are available for Administration information:

- *CMG Speech Attendant Administration and Maintenance Guide*.
- *CMG Speech Configuration Manager Administrators Guide*.
- *CMG Speech Import CMG Tool User Guide*.
- *CMG Speech SQL Express Backup Configuration Guide*.
- *CMG Speech Administration Flow*.

The following documents are available for Maintenance information:

- *CMG Speech System Settings Maintenance Guide*.
- *CMG Speech Office Maintenance Guide*.
- *Visit Maintenance Guide*.

The following user guides are available:

- *CMG Speech Attendant Quick User Guide*.
- *CMG Speech Attendant User Guide*.
- *InConference Quick User Guide*.

The following documents are available for Technical Guide:

- *Enterprise License Manager (ELM) Technical Guide*.

For information about the system and processes, refer to the following document:

- *CMG Acronyms and Abbreviations.*

The user documentation for VR is published on Mitel web page (Knowledge Base) and also bundled with the software package.

2 VIRTUAL RECEPTION OVERVIEW

Virtual Reception includes three applications; CMG Visit, CMG Speech Office and CMG Speech Attendant. These components provide additional features to CMG.

The following picture gives an overview of the included components, further described in the section 2.1

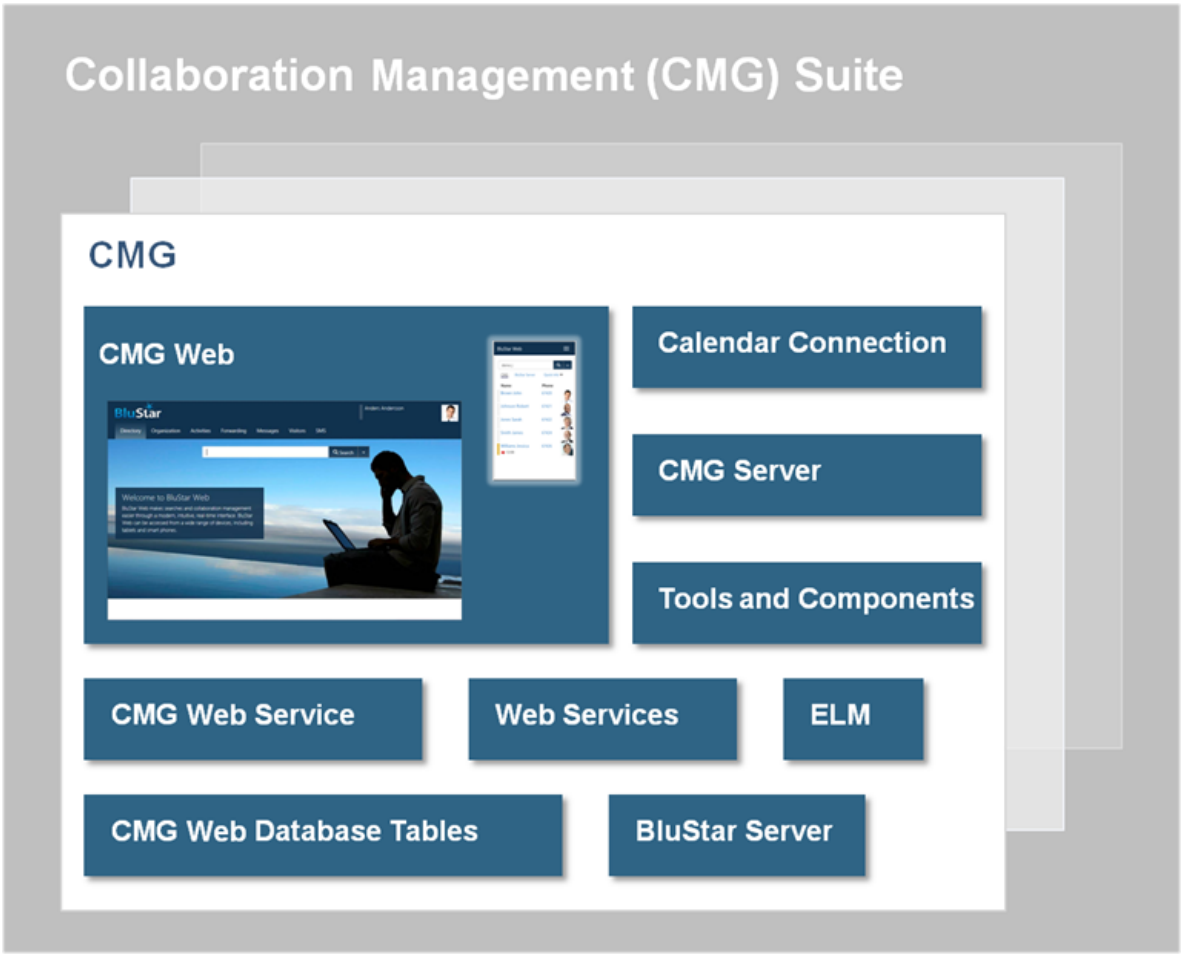

Figure 1 Overview

2.1 CMG VISIT

CMG Visit provides functionality for handling visitors.

Once a visitor is entered in the system, receptionists can see the visitors that are expected. Information on arrival and who to visit is available. Messages of their arrival can either be sent automatically though e-mail or SMS-messages or by using the phone.

When arriving, badges can be printed automatically.

From the receptionist application, lists of expected visitors, visitors currently in the building (for fire/evacuation purposes) and overdue visitors can be generated.

The CMG Visit components are described in the coming sections.

2.1.1 CMG VISIT CORE COMPONENTS

The Visit core components are: database, web service and configuration manager. These are needed for all installations.

2.1.2 CMG OFFICE WEB - VISITOR

CMG Office Web includes a page where office users can manage their own visitors so that they are pre-registered once they arrive to the office.

2.1.3 CMG VISIT RECEPTION (OPTIONAL)

Visit Reception is the receptionist’s daily work tool, handling all tasks regarding visitors such as registering, altering, checking in and checking out visitors.

In Visit Reception, it is possible to view a list of expected visitors and to print out labels. Optionally labels can have an EAN barcode which can be scanned with a barcode reader for faster handling of entry/exit from the company.

Visit Reception can also be used in the *Welcome* mode where a list of expected visitors is displayed in full screen mode, possibly on a big flat screen monitor.

2.1.4 CMG VISIT CHECKIN (OPTIONAL)

Visit CheckIn is a self-service module where the visitors enter their details and searches for their host without the need for a receptionist.

2.2 CMG SPEECH OFFICE

CMG Speech Office enhances the CMG portfolio with functions related to telephony. In practice, when persons in the company cannot answer their phones, CMG Speech Office handles the call in their place.

The telephony interface exposed by CMG Speech Office is provided by the Attendant Call Server (ACS) platform. This is a shared component used by several other Mitel applications, e.g. the attendant console: InAttend.

CMG Speech Office comprises *CMG IVR* and *CMG Voicemail*. Using CMG IVR, the person's activities (as registered in CMG Web) are presented for callers, and a menu with further contact options is presented. With CMG Voicemail, the caller can be offered to leave a voicemail to the searched person.

There is also a generic administration dialog interface, where the user can administer his CMG Speech settings, listen to his Voicemails and register activities.

CMG IVR and CMG Voicemail are licensed features that must be associated to an individual user to take effect. They are traditional Interactive Voice Response applications, based on DTMF interaction by the user.

CMG Speech Office functionality is integrated with CMG. When a user is logged in, he can access his voicemails in CMG Web, and settings applying to CMG IVR can be configured. Through CMG, calendar synchronization is automatically achieved.

CMG Speech Office is available in a subset of the CMG languages. For a list of which languages are supported, refer to *Virtual Reception Compatibility Matrix* [2].

2.2.1 CMG IVR

There are two telephony interfaces to CMG IVR:

- IVR dialog - When not available, the call flow informs callers when the person they searched for will be available. Callers are presented with a menu with configurable contact options, e.g. the possibility to leave a voicemail.
- CMG Speech Admin dialog - This service is called to listen to voicemails, register activities and manage personal settings.

When registering an activity, e.g. in CMG Web, the phone is redirected to CMG IVR. When someone calls a user that has a registered activity, the activity information is played, for example *Tom Johnson is at lunch and is expected back at 12:30*, followed by a menu. The menu alternatives are configurable and could for example contain:

- Voicemail (e.g. CMG Voicemail)
- Transfer to mobile phone
- Send a number on SMS
- Transfer to operator

CMG IVR uses Text-To-Speech (TTS) to play names of people. Information about activities and presence is fetched from the CMG database.

2.2.2 CMG VOICE MAIL

A user that has CMG Voice Mail privileges will be able to receive voice mails, that are accessible in both CMG Web and the CMG Speech Admin dialog. Voice mails that are of particular importance can be saved; other read voice mails are automatically deleted after a configurable number of days.

Each user may configure a set of methods through which he will be notified that he has new voice mails. Typically, these notifications include turning on the message indicator on the phone, and/or an SMS or E-Mail.

2.3 CMG SPEECH ATTENDANT

CMG Speech Attendant is a further, optional, enhancement of CMG Speech Office. It comprises Speech Recognition features that complement the features included in CMG Speech Office.

While CMG IVR is DTMF-based, CMG Speech Attendant is based on Automatic Speech Recognition (ASR) technology. That means that callers interact with the system with regular speech and not by pressing keys on the phone keypad.

As for CMG Speech Office, the telephony interface exposed by CMG Speech Attendant is provided by the Attendant Call Server (ACS) platform. The same ACS installation can be shared between CMG Speech Office and CMG Speech Attendant, and it is common to install these components on the same server.

The main function in CMG Speech Attendant is an automatic attendant through which callers can search persons or departments in the company. When a person is not available, his activity and time of return is presented in the same fashion as in CMG IVR. CMG Speech Attendant also offers an Activity Management function, where users can call in to register or remove current activities in CMG.

It is also possible to retrieve number information for people or departments.

CMG Speech Attendant uses Nuance as Speech Recognition engine.

CMG Speech Attendant is available in a subset of the languages provided by CMG Speech Office. For a list of which languages, refer to *Virtual Reception Compatibility Matrix* [2].

CMG Speech Attendant is integrated with the Collaboration Management (CMG) suite and uses the same configuration tools. CMG Speech and CMG Speech Attendant share a configuration database. The ASR resources are only used by CMG Speech Attendant.

3 FUNCTIONALITY

The Virtual Reception applications offer functionality in the areas of Visitor management, Activity administration and presentation, Voice Mail management and Automatic Attendant.

The chapters below provide high-level descriptions of key features in Virtual Reception.

3.1 CMG VISIT

CMG Visit handles expected and present visitors and keeps track of who arrives to the company, who is in the building at the current time and who was at the building a certain day. In addition, CMG Visit generates and prints badges for the visitors.

3.2 CMG SPEECH OFFICE (IVR AND VOICE MAIL)

This chapter contains a high-level description of the key interfaces of CMG Speech Office, and provides an overview of the key functionality offered in those interfaces.

3.2.1 CMG IVR DIALOG INTERFACE

The IVR call dialog presented for callers to a user is best illustrated with a figure:

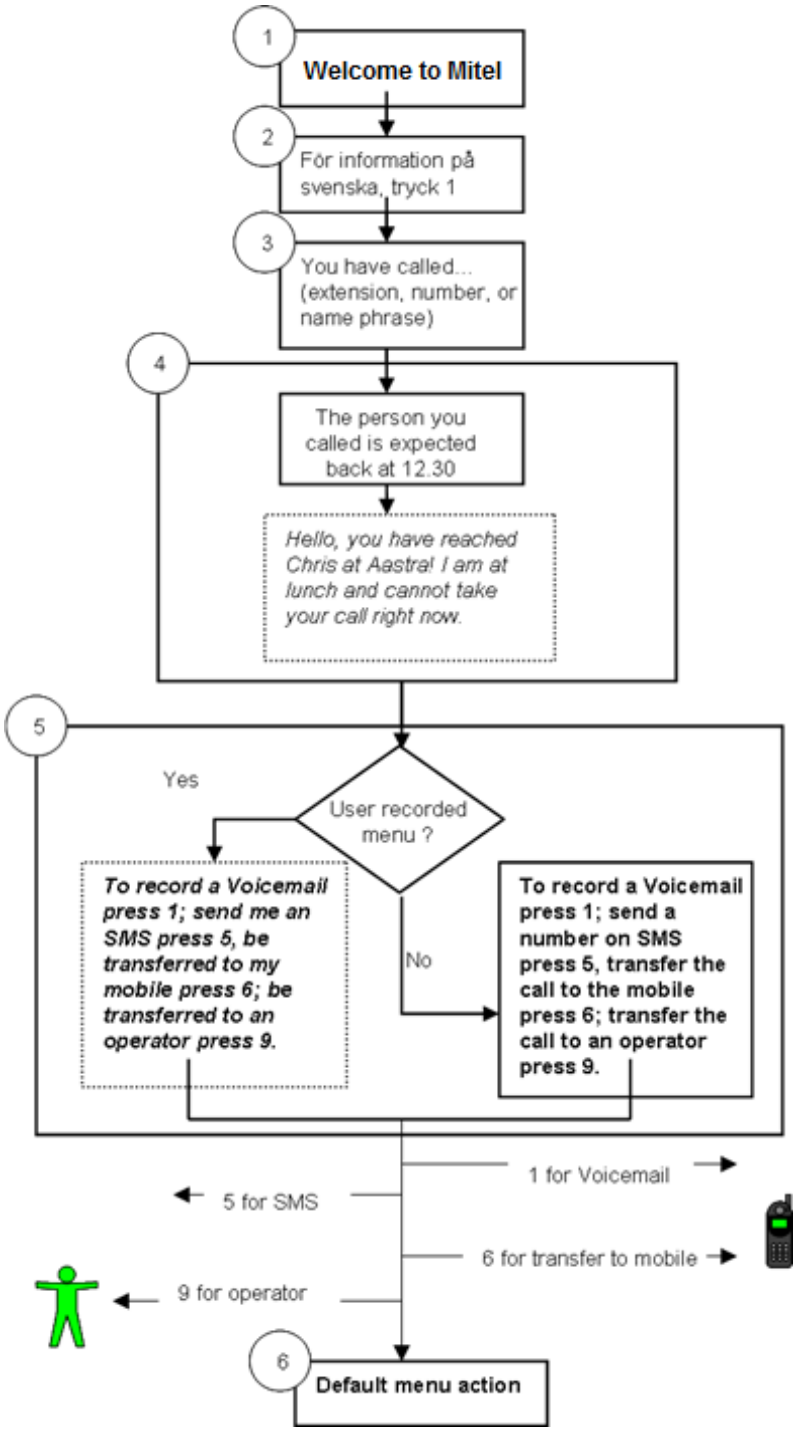

Figure 2 IVR call dialog

The following list describes the steps shown in the figure 2:

1. A welcome phrase is presented.
   This phrase can be recorded for each company, and usually contains your company's name.
2. If configured, alternative languages are presented and the user has the possibility to get the information in another language.
   Single users can offer their callers an alternative language.
3. Receiver Presentation presents a number or name.
   For external calls, the complete number is presented, while for internal calls the extension number is presented.
4. Activity Presentation is constituted by a combination of system voices and the user's own recorded greetings.
   a. First, the activity information is presented.
   b. If configured, a personal greeting is presented.
5. The user menu presentation.
   a. If recorded, the user's own menu is presented.
   b. Otherwise, the system menu is presented. For a description of the menu options, see Table 1.
6. If no menu option is selected, the default option is activated (usually recording a voice mail).

3.2.1.1 Menu Options

If a person is not available, a menu will be presented after the activity has been presented. From this menu, it is, for example, possible to leave a message or to be connected to the mobile phone. For example, when calling John Smith, the user gets a message like the following: "*John Smith is at a meeting and is expected back at four thirty. For voice mail, press 1; Mobile, press 2; Operator, press 9*".

Each menu option is validated before being presented. For example, if a called person does not have a mobile phone number configured in CMG Directory Manager, menu options pertaining to mobile phone number - e.g. to listen to, or transfer to - will not be presented, even if configured.

The menu options are configured in CMG Speech Configuration Manager.

Table 1 Menu Options

MENU OPTIONS	DESCRIPTION
Voice Mail	Record a voice message to the user.
Mobile	Transfer the call to the user's mobile phone
Play the direct number	The user's direct number is played
Play the mobile number	The user's mobile number is played
SMS with direct number	Press your mobile number and the user's direct number is sent to you
SMS with mobile number	Press your mobile number and the user's mobile number is sent to you
Send number on SMS	Press your number and it will be sent to the user via SMS
Send number via e-mail	Press your number and it will be sent to the user via e-mail
New search	Search for somebody else using the AA Name Search service
Activity information	The user's activity information is played, for example "Will smith is at lunch and will be back at 12:30"
Operator	Transfer the call to an operator

3.2.2 CMG SPEECH ADMIN DIALOG INTERFACE

In CMG Speech Admin dialog, a user can listen to voice mails, register activities and manage personal settings. Figure 3 shows the login procedure, and how the user enters each of the following features:

- Voice Mail (provided the caller has CMG Voice mail privileges)
- Settings
- Activity Registration (provided the caller has CMG Speech Office privileges)

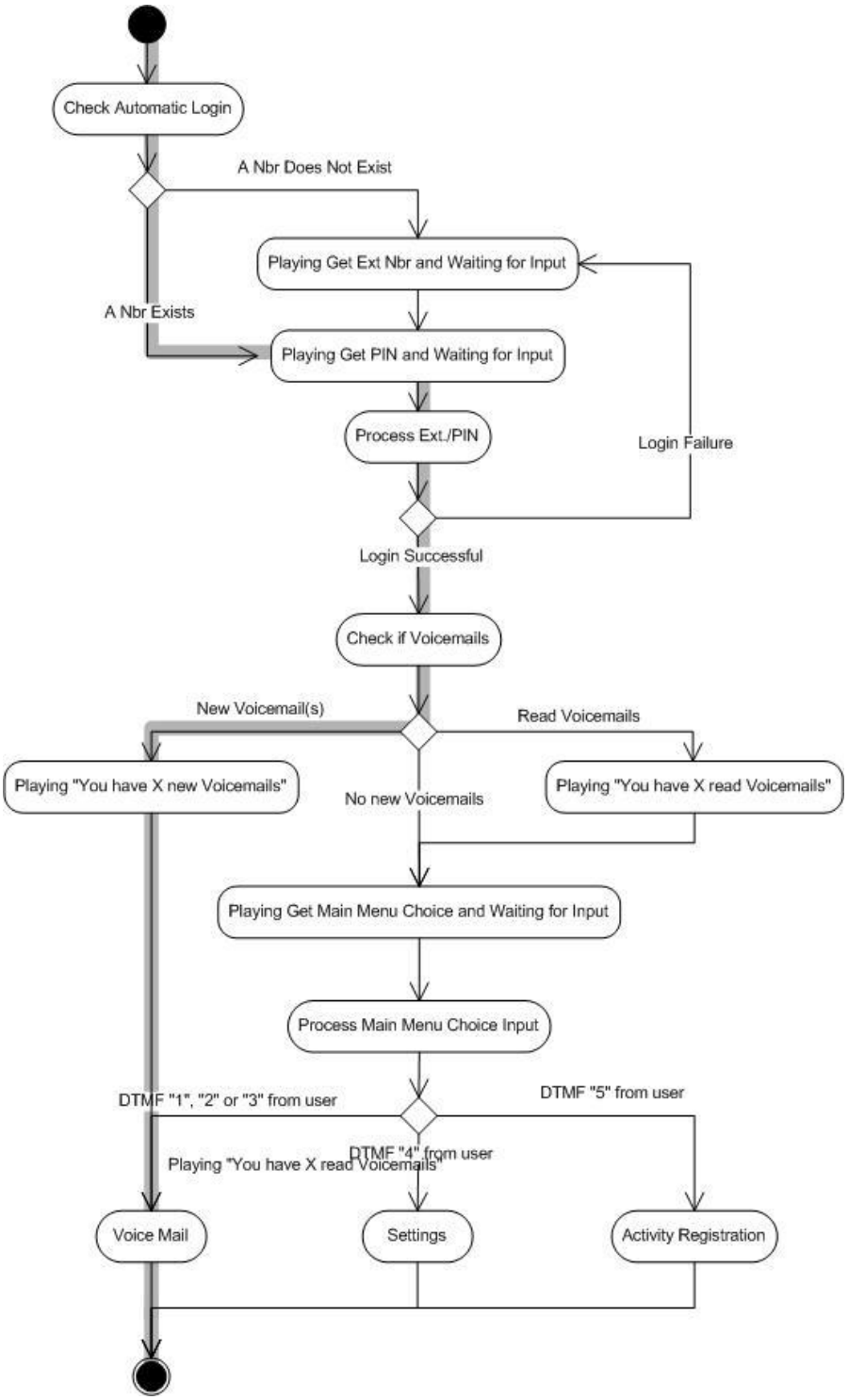

Figure 3 Admin Login and Main Menu

Login

The basic rule for logging in to CMG Speech Admin is that the user must enter extension number and PIN. However, users calling from their office phones only need to enter PIN since the extension number gets identified by the system.

Users calling CMG Speech Admin from unknown phones need to enter both extension number and PIN to login. However, individual users may specify additional numbers in CMG Web, e.g. mobile phone or home numbers. If such additional numbers are specified, the user gets identified and only need to enter PIN when calling CMG Speech Admin.

Note! It is possible to configure the system to log on users automatically (no PIN) when calling from a known number.

After having logged on, if the user has new voice mails, these are immediately presented; otherwise, the administration main menu is presented.

Main menu

In the main menu, the user selects one of the following features:

- Voice Mail management
- Settings
- Activity Registration

Following is an example of a main menu: "*For read voice mails, press 2; Settings, press 4; Activity, press 5*."

- If the user has new voice mails, these are played before the main menu is presented.
- If the user has read messages, the number of read messages is read out before the main menu is presented.

3.2.2.1 Voice Mail management

When a user has received voice mails, he can listen to and administer them in two ways; either in the CMG Speech Admin dialog application, or by using CMG Web.

In the CMG Speech Admin dialog, the user's new, read and saved voice mails are presented. If there are new voice mails, they are presented immediately upon logging in; otherwise, the caller is given a choice of which voice mails to listen to first (e.g. *For new voice mails, press 1; Read, press 2; Saved, press 3*.).

Irrespective of the choice of voice mail type, the number of voice mails of that type is presented before the messages are played. They are played in the order that they arrived, with date and time of reception after each message.

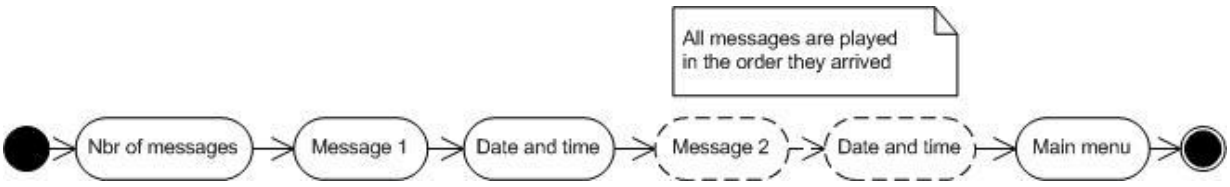

Figure 4 Voice Mail Presentation

Example: "*You have two new messages. <message1>, arrived today at three pm. <message2>, arrived today at five pm*."

After the messages are played, the main menu is presented, for example "*For voice mail, press 2; Settings, press 4; Activity, press 5*."

Note! If there are no messages, or the user has no voice mail privileges, the voice mail menu option is not presented in the main menu.

3.2.2.2 Settings

In the Settings feature the user's settings can be modified. Settings include both the settings that apply to the user and settings that apply to callers.

Language can be modified both for the users and callers. For example, the language used when the user is registering activities may be Swedish, but the activity information for callers can be presented in English.

First users decide about modifying settings for themselves or the settings applying to callers. Description of the Settings call flow:

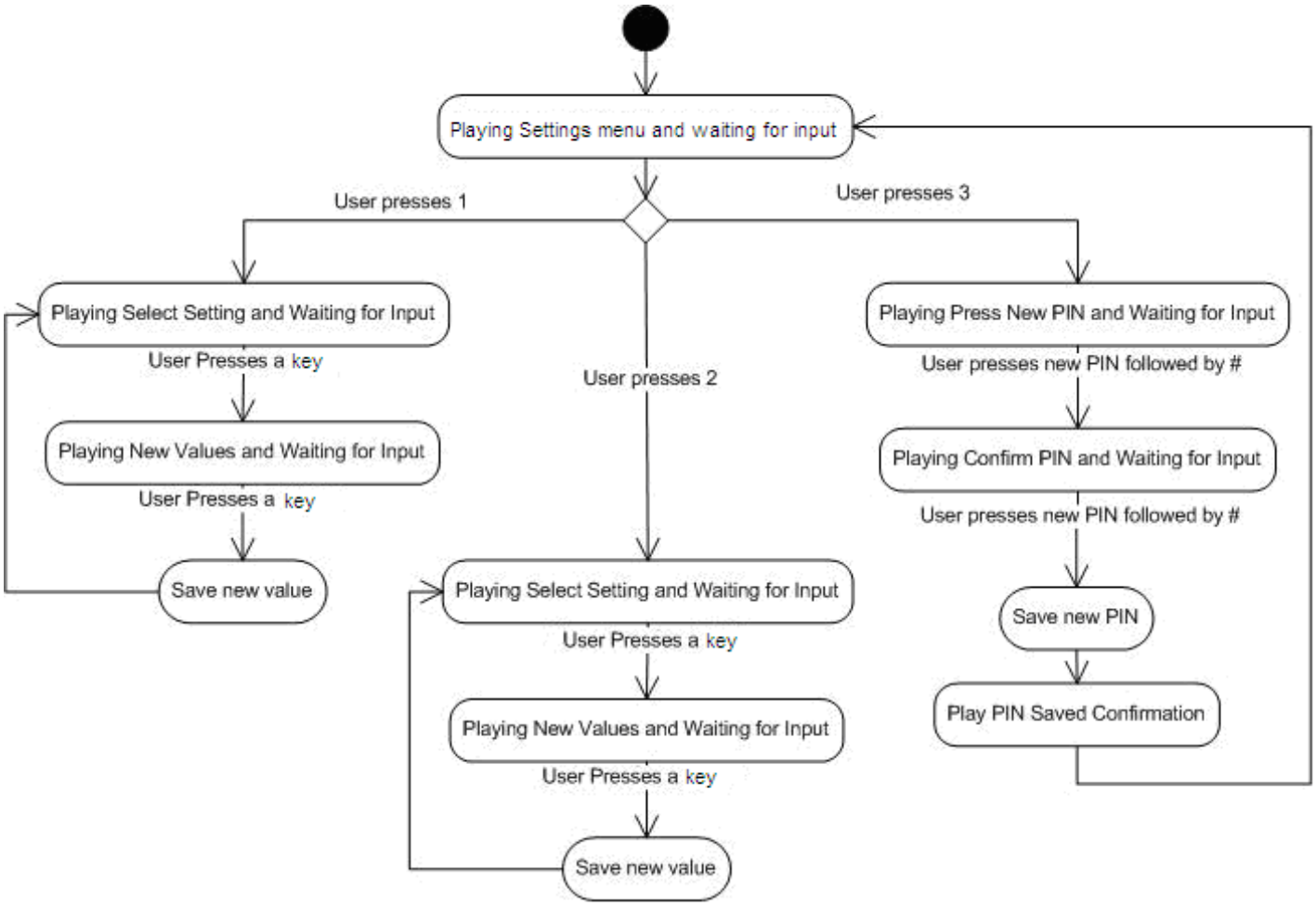

Figure 5 Settings call flow

The *Settings you hear* menu:

- The system plays the settings menu and how to modify a setting.
- The user presses a key for modifying a setting, for example 1 to modify the information level.
- The user may press a new choice for the setting, for example 1 for detailed information level in the example above.
- The system confirms the modification and then plays the Settings you hear menu again.

The *Settings others hear* menu:

- The system plays your settings and how to modify a setting.
- The user presses 2 to modify a setting.
- The system informs how to modify it and the user presses the key corresponds to the value wished for.
- The system confirms the modification and plays the Settings others hear menu again.

Change PIN:

- The user enters a new PIN followed by #.
- The new PIN should be confirmed. Number + #.
- The PIN change is confirmed and the Settings menu is played.

Note! The PIN referred to here is not equal to the password used to log in to CMG Web; this is the PIN code used for Admin dialog login, which is unique for this feature.

3.2.2.3 Activity Registration

The activity registration feature is accessible depending on the logged-in user's privileges. It is reached by pressing 5 in the admin main menu, as shown in Figure 3.

The activity registration call flow is shown below. Highlighted is a short call scenario.

Figure 6 Activity Registration Call Flow

Following is a description of what happens during the call flow shown in Figure 6:

- The current activity information is played and the user gets the opportunity to delete current activities by pressing 1.
- If the user presses 2 to register a new activity, the activities are presented one by one followed by their number, for example "*For lunch, press 0; meeting, 1; visiting a customer, 2*" and so on. The activity code is pressed followed by **#**.
- The Admin service prompts for the start date. The user can press a date or press # for the current date and time.
- The system asks for the activity end date. The user may press a date or press # for the default end date or time.

The end date is calculated by the system and depends on the activity. For example, the default duration for the activity *lunch* is *one hour*, while for the activity *visit to customer* it is *next working day*.

- The user is offered to register the activity, listen to it, or change it. After listening to the activity, the user is returned to the same question and gets all three options again.
- When an activity is registered, a confirmation message is played.
- The main menu is presented.

Table 2 Shortcuts in Activity Registration

SYSTEM ASKS FOR…	SHORTCUT	DESCRIPTION	EXAMPLE
Activity	#	The next activity in the list is played.	When all activities are being read out, press # to get to the next activity in the list, and hence going through the list faster.
Start date	#	The activity will be valid from the current date and time.	Pressing # means that activity is valid from the time and date now.
End date	#	The activity will be valid to the date or time that is the default end time of the activity.	The activity 'Lunch' has a default end time of 1 hour. If the activity is valid from 12:00, the default end time will be 13:00. The activity 'Visiting a customer' is often until next day; if the activity is registered on a Wednesday at 07:00, the default end date will be on Thursday at 07:00.

3.2.3 CMG WEB INTERFACE

CMG Web provides the user with possibility to administer voice mails and manage his own settings.

3.2.3.1 Managing voice mails

When logged in, the user can see his voice messages in a dedicated tab. He can listen to them, save them and delete them, and can also forward them to other users.

3.2.3.2 Configuring personalized notifications

Notifications are messages that are sent to the user when he has received a new voice mail. Using CMG Web, he can configure his own set of notifications and specify, for each type, when it should be launched (e.g. after 3 new voice mails or 20 minutes, or immediately when a new voice mail comes in).

3.2.3.3 Administering general greeting

When logged in, a user has the possibility to manage his general greeting - the phrase played for callers as an additional, personalized greeting. Using CMG Web, the user can record his general greeting.

3.2.3.4 Managing settings

Other speech related settings pertaining to the individual user (e.g. preferred language) can also be altered using CMG Web.

3.3 CMG SPEECH ATTENDANT

The main functions in CMG Speech Attendant, available in all supported languages[1], are:

- *Name Dialer*
- *Number Information*
- *Activity presentation*
- *Menu with contact options*

In some languages, an additional functionality is

- *Activity registration*

These functions are available in the *CMG Speech Attendant* dialog (the first four), and the *Activity Manager* dialog (the last one). All functions will be described further below. More information on the functions of CMG Speech Attendant from a caller's perspective can be found in *CMG Speech Attendant User Guide* [3].

3.3.1 ASR DIALOGS - GENERAL

First a few general notes on interacting with CMG Speech Attendant using speech.

The caller can interrupt prompt presentation anywhere in the dialog, so-called *barge-in*. This barge-in possibility makes the call flow faster for experienced users.

Note: There is one exception for barge-in. This is during playback of the first welcome prompt when the system calibrates against background noise. The calibration works best if barge-in is disallowed during the first few seconds.

If a user barges in somewhere in the dialog the following happens:

- The prompt playback is stopped
- The application's interpretation of the user's utterance is echoed when appropriate
- The next dialog state is executed – possibly call transfer.

If the caller is identified as a CMG user, a shorter initial message is played to speed up the dialog. For example: "*Who would you like to speak with*". This instead of the longer "*Say the name of the person you would like to speak with* …" for unknown callers.

If the system repeatedly fails to interpret what the user says, the call is automatically transferred to an attendant. Failure to correctly interpret a name or department is almost always an indication that the record is missing from the ASR grammar.

[1] See the compatibility matrix for a list of all supported languages.

3.3.2 NAME DIALER

This section shortly describes the name dialer function.

3.3.2.1 Transferring callers to user extensions

Callers can be transferred to a user's office extension by saying the user's name, e.g. *"John Smith, please."*

3.3.2.2 Transferring callers to user mobile phones

Callers can be transferred to a user's mobile phone by saying the user's name and specifying that mobile transfer is desired. For example, *"John Smith on the mobile phone"* or *"John Smith mobile please"*.

3.3.2.3 Preventing mobile phone transfers

A system administrator can disable transfers to mobile phones for groups of user, or the entire system.

3.3.2.4 Transferring calls to a department

Callers may be transferred to a department by saying the name of the department. The department must have a number associated with the department and it must have at least one organization name for voice-controlled search. Both settings are configured in CMG Directory Manager (CMG DM).

3.3.3 NUMBER INFORMATION

This section shortly describes the Number information function.

3.3.3.1 Retrieving a user's extension number

A caller can ask for the extension number of a user, e.g. *"What is the telephone number of John Smith?"* or *"Phone number for John Smith please".*

3.3.3.2 Retrieving a user's mobile phone number

A caller can ask for the mobile phone number of a user. Examples: *"Give me the mobile phone number for John Smith"* or *"I want the mobile number for John Smith please".*

3.3.3.3 Suppressing extension number information

CMG Speech Attendant does not present extensions that are marked as secret in CMG DM.

3.3.3.4 Suppressing mobile phone number information

CMG Speech Attendant does not present mobile phone numbers that are marked as secret in CMG DM.

3.3.3.5 Retrieving a department's number information

A caller can ask for the number to a department within the company.

3.3.4 ACTIVITY PRESENTATION

If CMG Speech Attendant identifies a user with a current activity registered in CMG, this activity is presented for the caller. When it comes to activity presentation, CMG

Speech Attendant does exactly as CMG Speech Office (IVR) would, but in a slightly more compact fashion; for example, "John Smith... lunch, back 12.30."

3.3.5 MENU WITH CONTACT OPTIONS

If the searched person had an activity, a menu appropriate for the situation will be presented. Again, the menu selected is the same as would be presented in CMG IVR, but slightly adjusted since all menu options are not supported by CMG Speech Attendant.

Menu options that are available are the following.

3.3.5.1 Transferring to attendant

Callers can be offered to get transferred to an attendant.

3.3.5.2 Repeating the activity

Callers can be offered to repeat the user's activity (e.g. if the caller wants the time of return repeated).

3.3.5.3 Recording a voice mail

Callers can be offered to record a voice mail. This will initiate a transfer to the regular IVR dialog, where the call is handled as usual.

3.3.5.4 Making a new search

Callers can be offered to return to the main menu to perform a new search for another person.

3.3.5.5 Joining a conference (InConference)

Callers can be offered the option to join an ongoing conference call.

3.3.6 ACTIVITY REGISTRATION

This section shortly describes the main features of Activity Registration.

3.3.6.1 Registering activities

Callers can register CMG Activities using CMG Speech Attendant. Return time or date may or may not be specified (if not, a default will be suggested).

3.3.6.2 Deleting activities

Callers can delete one current activity or all ongoing activities at the same time.

4 ADMINISTRATION

Virtual Reception is administered partly using existing tools in CMG, and partly using dedicated components included in the Virtual Reception package. The interfaces for administering different parts of Virtual Reception are described here.

4.1 CMG CONFIGURATION MANAGER (CMG CM)

CMG Configuration Manager is the main tool to configuring the CMG System. It also covers configuration of the most fundamental pieces of information pertaining to Virtual Reception, namely:

- connection info to the CMG Speech configuration database
- server address to the CMG Speech Service (used as interface by CMG Web)
- current license usage of all licenses in the Collaboration Management suite, including Virtual Reception (display only)

If CMG Visit is available in the system, the server address should be entered in CMG CM.

4.2 CMG DIRECTORY MANAGER (CMG DM)

In CMG Directory Manager, a system administrator may configure CMG users and how they are supported by Virtual Reception applications. For example:

- which CMG Speech Office User Group the user adheres to (User Groups are further described in section).
- the user's preferred language.
- the user's voice mail system (e.g. CMG Voice Mail) and whether or not, it is currently enabled.
- if the user is possible to search in CMG Speech Attendant.
- if the user can self-administer his visitors.

4.3 CMG WEB

Each user can administer his own settings pertaining to CMG IVR, CMG Voice Mail and CMG Visit in CMG Web, after having logged in. Examples of possible tasks include:

- Listening to voice mails and administering them, e.g. saving or deleting.
- Configuring a self-defined menu.
- Administering greetings, e.g. recording the general greeting.

4.4 CMG VISIT CONFIGURATION MANAGER

CMG Visit CM is the main tool used to configure CMG Visit, for example:

- Setting configuration parameters for the Visit System.
- Modifying layout of input fields and result reports in Reception and CheckIn modules.

4.5 CMG SPEECH CONFIGURATION MANAGER

The main application for system configuration of the speech related applications in Virtual Reception - CMG IVR, CMG Voice Mail and CMG Speech Attendant - is CMG Speech Configuration Manager.

CMG Speech Attendant is a web based application.

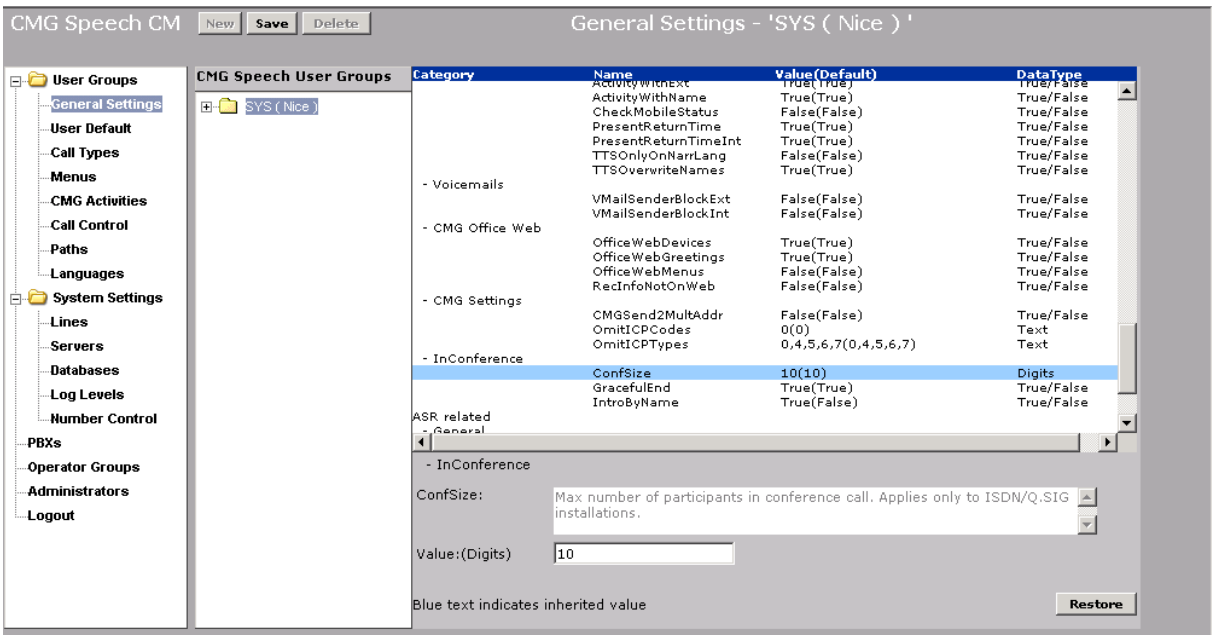

Figure 7 CMG Speech Configuration Manager

To be able to use CMG IVR or CMG Voice Mail, or to be able to be searched by CMG Speech Attendant, a user must exist not only in the CMG database, but also in the CMG Speech Database. In CMG Speech, users are ordered in groups in a tree structure. The nodes of this tree are called User Groups and is a fundamental concept in the CMG Speech Office/Attendant applications.

All CMG Speech users belong to a user group. A CMG Speech system can have many user groups. User groups are related to each other, as shown in Figure 7, where one user group is the parent of another. On all levels, a setting is either explicitly configured, or inherited by the closest parent. If this parent has no configuration either, the next upper level is consulted etc. This is called the *User Group Inheritance structure*.

The User Group inheritance structure is always terminated at the top, where the SYS User Group resides. The SYS User Group is mandatory and cannot be renamed or removed. It is used to define the system's default settings and always has a complete set of configurations. In a simple system, configuration needs only be done once - on the SYS user group level.

A typical User Group structure is illustrated by the figure:

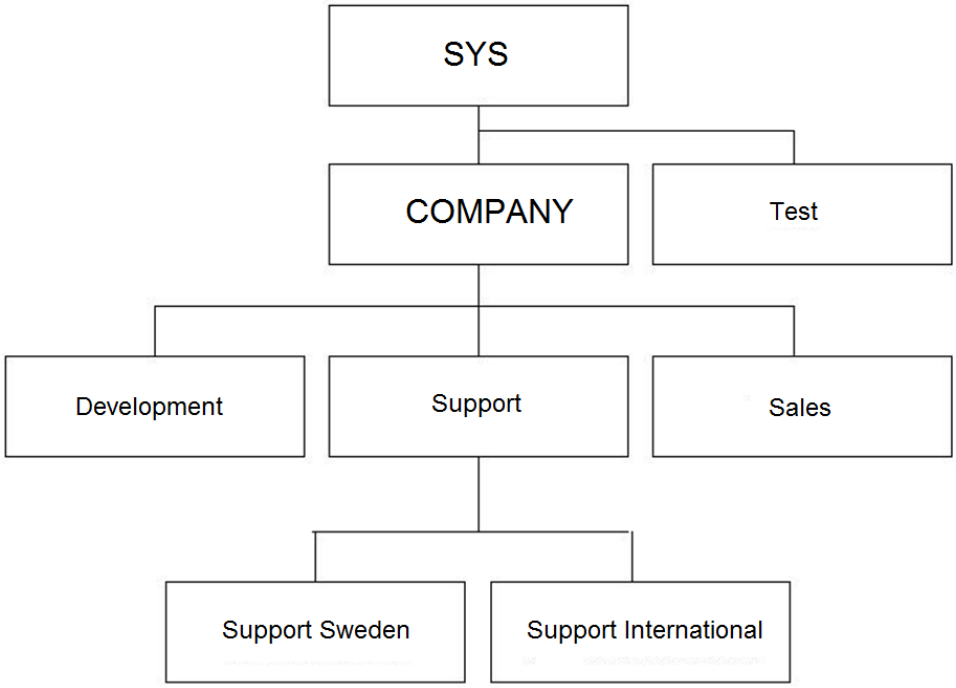

Figure 8 User Group Inheritance Structure

Each user group can be configured separately. In the example in Figure 8, callers to Development personnel will hear only Swedish voices, while callers to Support International department will have English as the primary language, and Swedish, Norwegian and Danish as optional languages.

The settings applicable to the system's behavior are applied to the system's overall parent user group, called the *SYS User Group*. The SYS User Group is used to define the system's default settings. The SYS User Group cannot be renamed or removed.

5 ARCHITECTURE AND DEPLOYMENT

This section describes the physical environment of the applications in Virtual Reception, that is, servers and databases.

Virtual Reception applications support distributed server installations in several fashions, ranging from a single server where Virtual Reception completely coexists with CMG, to distributed solutions spanning multiple servers.

The single server deployment is usually enough for smaller installations, while the distributed solution is the more prudent choice for larger installations with redundancy requirements.

5.1 VIRTUAL RECEPTION ARCHITECTURE OVERVIEW

The components within Virtual Reception can be distributed in a variety of different configurations. In the smallest deployment scenario, all components are placed on the same server. On larger installations, they may be configured on multiple machines with redundant functionality in some places.

Note! The Virtual Reception applications all require a CMG Server, and optionally BluStar Server, as backend servers. A CMG Web is also required.

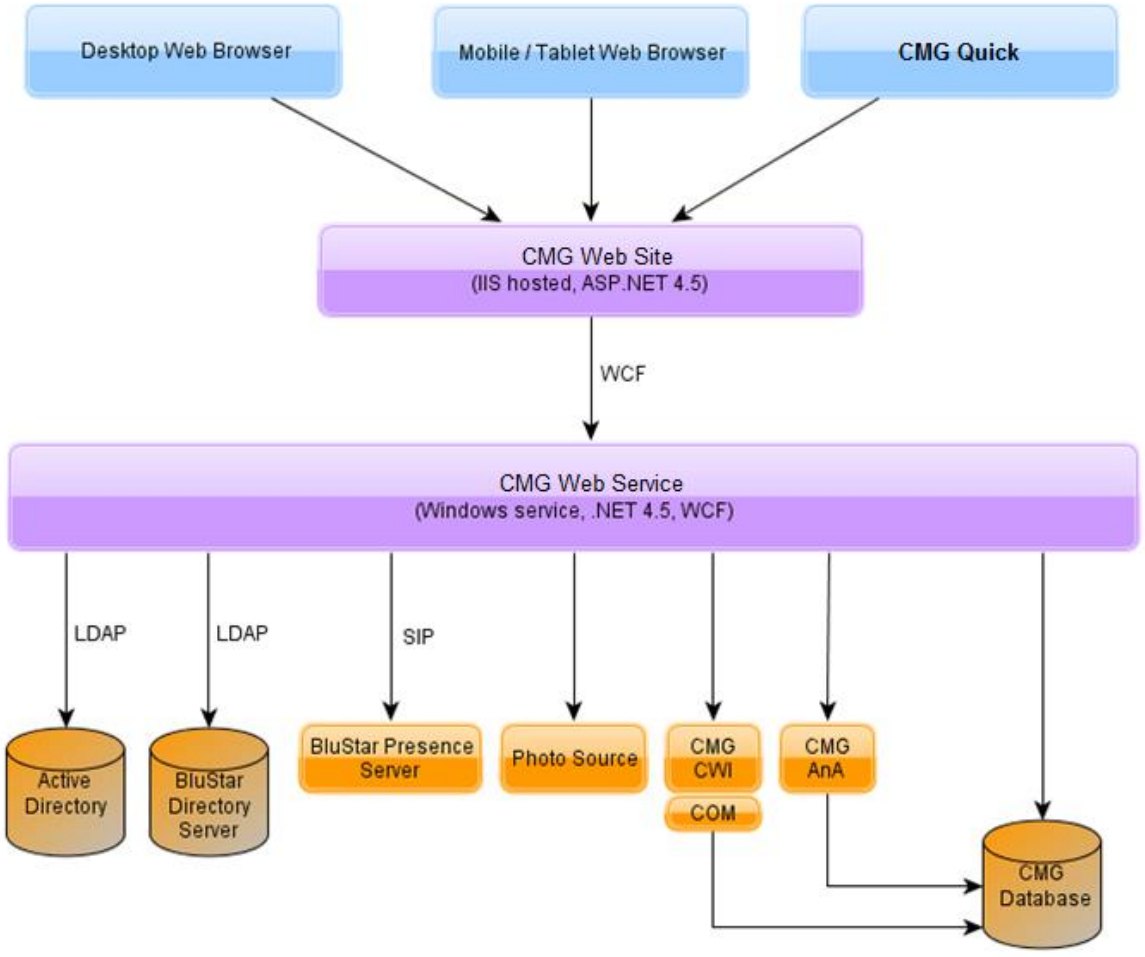

Figure 9 Virtual Reception Architecture Overview

5.2 INCLUDED COMPONENTS

CMG Virtual Reception comprises several software components. Furthermore, being an addition to the CMG package, the components in this package are also required.

The following components are included in the applications in Virtual Reception:

CMG Visit:

- ***CMG Visit Database*** - stores settings and future/current/past visitors.
- ***CMG Visit Service*** - the Web Service that all CMG Visit components communicate with.
- ***CMG Visit Configuration Manager*** - the main configuration tool for system settings pertaining to the CMG Visit components.
- ***CMG Visit Reception*** - an application for the receptionist to manage the visitors.
- ***CMG Visit CheckIn*** - a self-service application for visitors.

CMG Speech Office:

- ***CMG Speech Database*** - a configuration database with settings specific for Virtual Reception's telephony related applications.
- ***CMG Speech Configuration Manager*** - main configuration tool for system settings pertaining to the Virtual Reception speech applications (Speech Office and Speech Attendant), found in the CMG Speech database.
- ***CMG Speech Services*** - used for maintenance and/or specific tasks. Comprises the following services:
    - ***CMG Speech CMG Synchronizer service***- used to synchronize the CMG Speech configuration database with the CMG Database.
    - ***CMG Speech TTS Generator service*** - used to generate text-to-speech files for user's names.
    - ***CMG Speech File Manager service*** - used for file handling, e.g. cleaning log files, on all types of servers
    - ***CMG Voice Mmail Notifier service***- service used to send notifications to users that have received new voice mails.
    - ***CMG Speech Service*** - used by CMG Web to interface the CMG Speech system.
- ***CMG Speech Server software*** - software required on different kinds of CMG Speech Office servers.
- ***CMG Speech State machines*** - the actual dialog specification, in an internal ACS format.
- ***CMG Speech Telephony components***- software dedicated for call handling e.g. implementing the call dialogs.
- ***CMG Speech Office language Packages*** - each language is distributed in a separate package. Hence, only languages that will actually be used should be installed.

CMG Speech Attendant:

- ***CMG Speech Attendant ASR Grammar generator***
- ***CMG Speech Attendant Server***
- ***CMG Speech Attendant Log Converter service***
- ***CMG Speech Attendant Analyzer***
- ***CMG Speech Attendant Language package***
- ***CMG Speech Attendant grammars***

5.3 CONCEPTUAL SERVER TYPES

In any Virtual Reception installation, there are several conceptual server types that are included. These types of servers impersonate a functional unit, performing specific tasks, and though it is often installed on a single physical server, some server types may also be split over two machines. Such limitations will be discussed below.

5.3.1 CMG SERVER

The CMG Server is the backend server for any Virtual Reception installation. It comprises the CMG Database, where all system users are stored, CMG Web and many other required components.

5.3.2 CMG VISIT SERVER

The CMG Visit server contains the CMG Visit database, the CMG Visit Office Web and CMG Visit Configuration Manager. It is always installed on the same physical machine as the CMG Server.

5.3.3 CMG VISIT RECEPTION (CLIENT)

The CMG Visit Reception client is installed on one or several desktop computers physically located at the reception. This client usually has some sort of label/badge printer installed. It may also have a EAN barcode reader for easy scanning in/out of visitors,

5.3.4 CMG VISIT CHECKIN (CLIENT)

The CMG Visit Check-In client is installed on one or several desktop computers physically located at the reception. This client usually has some sort of label/badge printer installed.

5.3.5 CMG SPEECH MAIN SERVER

The CMG Speech Main server is the core of speech applications in Virtual Reception. It contains the CMG Speech database, in which all the system settings and configuration are stored. The main server manages all general tasks, for example TTS generation, synchronization with CMG and handling of Notifications for CMG Voice Mail[2] . It is also the server on which common voice files are stored, e.g. voice mails and user's own recorded greetings. The Main server is also the host of the CMG Speech Configuration Manager web application.

Although usually kept together on a single machine, it is possible to split the Main server over two physical servers. In this case, the database is broken out and placed on a separate server, usually one tuned for optimal database performance.

Note! There can be only one CMG Speech Main (database) server.

[2] Only applicable on installations with CMG Voice Mail

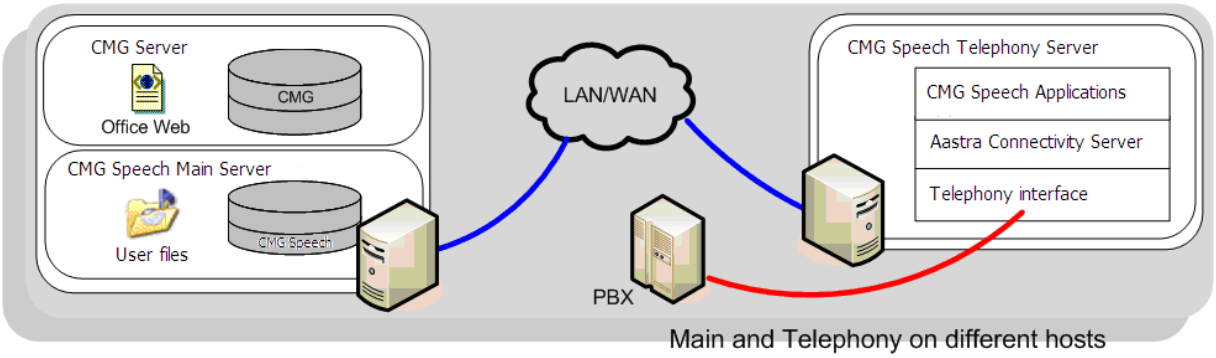

Figure 10 Server Configuration Example

5.3.6 CMG SPEECH TELEPHONY SERVER

A CMG Speech Telephony server is dedicated for call handling using the ACS server platform. There may be one or several telephony servers in a CMG Speech solution. For smaller installations, a single server solution is possible, where the telephony server is installed on the same machine as the Main and CMG server.

Each telephony server has a local path to where system voice files are located. As previously mentioned, common files such as voice mails and user recordings are stored on the main server.

5.3.7 CMG SPEECH ATTENDANT MAIN SERVER

The CMG Speech Attendant Main server comprises ASR specific complements to the CMG Speech Main server. It contains a service for generating ASR grammars, the Log Converter service which is used to compile the distributed call logs to a single unit, and the Call Analyzer tool in which the compiled call logs can be further analyzed.

The CMG Speech Attendant Main server is installed on the same physical server as the CMG Speech Main server.

5.3.8 CMG SPEECH ATTENDANT TELEPHONY SERVER

A CMG Speech Telephony server contains the software that, using the ACS call platform, handles the calls in much the same way as the CMG Speech Telephony Server does. For Speech Recognition purposes, the ASR server (described in the next section) is engaged.

The CMG Speech Attendant Server service installed on this server interfaces the ACS platform's Queue Manager, acting like a regular attendant picking calls from the regular attendant queues.

Each telephony server has a local path to where system voice files, presented by the dialogs, are located. Here, too, common files such as voice mails and user recordings are stored on the Main server.

5.3.9 CMG SPEECH ATTENDANT ASR SERVER

Since Speech Recognition is a CPU- and memory consuming task, the Speech Attendant ASR server is a separate concept, which can be individually installed. A server with adequate memory and CPU for this task should be chosen. Most often, the ASR server is installed on the CMG Speech Attendant Telephony server - but on installations with very large grammars, or many languages supported, it is recommended to choose a separate server dedicated for ASR.

The ASR server must be a machine adequately dimensioned. It is installed with Nuance software for ASR, which is in a separate package installer, and static grammars used for CMG Speech Attendant.

6 TECHNICAL ASSISTANCE

Mitel provides www.mitel.com as a starting point for technical assistance regarding all products, including the CMG application suite. From here, partners can obtain online documentation, FAQs, latest software updates and request further technical assistance.

7 REFERENCES

[1] Virtual Reception Datasheet *(**Note**: Available on Info Channel*)

[2] Virtual Reception Compatibility Matrix *(**Note**: Available on Info Channel*)

[3] CMG Speech Attendant User Guide