InAttend and CMG Solution Engineering Guide

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INATTEND 2.5 SP3

Mitel

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TRADEMARKS

InAttend and CMG Solution Engineering Guideline
November 2018

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1 INTRODUCTION

InAttend is a powerful, user-friendly attendant application designed for handling high volumes of internal and external calls in an efficient way. Call and activity handling, presence and availability with line status information are all integrated into one single application.

The Attendant Connectivity Server (ACS) is the Telephony server providing the telephony functionalities over IP. The InAttend client works in combination with ACS to provide an advanced attendant platform for the supported SIP enabled call managers. See InAttend Compatibility Matrix [3] for a list of the supported call managers.

Note! The Compatibility Matrix document is available on InfoChannel.

This document describes the engineering guidelines for the Mitel InAttend solution, including Contact Management (CMG) and Virtual Reception.

2 SERVER DIMENSIONING

The information in this section is intended as a guideline for dimensioning a typical solution including Contact Management (CMG), InAttend and optionally, Calendar Connection and the Speech products.

2.1 SYSTEM WITH INATTEND AND CMG SERVER

The stated capacity in the table below is the maximum for each server configuration. If any of the capacity values are exceeded, a more powerful server configuration is required. The guidelines assume a CPU core speed of 2.4GHz or faster for all configurations.

The guidelines also include a specification for a typical high usage, which refers to how much load the system is expected to handle while keeping the CPU usage below 40%. It's not recommended to significantly exceed this usage. If a higher usage is expected, a more powerful configuration is required. These figures assume an anti-virus software being installed, but configured with exceptions according to the product documentation.

The guidelines use the following groups of components to indicate how to distribute the software in multi-server deployments:

- **CMG**: Contact Management (CMG) Server, including CMG Web; can also include the Calendar Server, Speech main server, Visit, and Quality Manager.
- **SQL**: Microsoft SQL Server
- **ACS**: All Attendant Connectivity Server (ACS) components (Queue Manager, NeTS and Media server). Can also include Speech Telephony server components, InConference and Nuance.

CMG Visit and Quality Manager can be installed on the CMG Server without having to add additional hardware, as these components do not add any significant load on the server.

System capacity and component distribution

Users	1 - 500	501 - 1000	1001 – 5000	> 5000
CAPACITY				
Concurrent attendants	Up to 4	Up to 6	Up to 20	> 20
Concurrent ASR channels	2	3	11	> 11
SQL Server Express supported [1]	CMG: Yes BSS: Yes	CMG: Yes BSS: Yes	CMG: No BSS: Yes	CMG: No BSS: Yes
TYPICAL HIGH USAGE (PER MINUTE)				
Attendant calls	12	24	60	Please contact your Mitel sales representative for recommendations
CMG Web searches	15	30	90	
Speech Attendant calls	8	16	30	
Calls to listen to / record voice mail	3 / 6	6 / 12	12 / 32	
HARDWARE REQUIREMENTS				
System with CMG and InAttend	**Server 1** CMG, SQL, BSS, ACS 4 CPU cores 8 GB RAM	**Server 1** CMG, SQL, BSS 4 CPU cores 8 GB RAM **Server 2** ACS 2 CPU cores 4 GB RAM	**Server 1** CMG, SQL 6 CPU cores 8 GB RAM **Server 2** ACS 4 CPU cores 8 GB RAM **Server 3** BSS, SQL[2] 2 CPU cores 8 GB RAM	Please contact your Mitel sales representative for recommendations

Users	1 - 500	501 - 1000	1001 - 5000	>5000
Calendar Connection	(included)	(included)	(included)	Please contact your Mitel sales representative for recommendations
Speech Office	Add: 1 CPU core	(included)	Add to ACS: 1 CPU core	
Speech Attendant	Add: 1 CPU core	Add to ACS: 1 CPU core	Add to ACS: 2 CPU core	

2.1.1 NOTES

- CMG Server can use SQL Server Express, except when used in redundancy mode together with SQL Server Failover Clustering.
- If CMG Server is running on the same server as CMG, CMG Server uses the same SQL Server as CMG. If CMG Server is running on a separate server, CMG Server should have a local SQL Server.

2.1.2 SQL SERVER EDITIONS

Microsoft SQL Server is used by multiple components within the InAttend and CMG solution. The solution supports both Microsoft SQL Server Express (for some configurations) and all the full editions of Microsoft SQL Server. The SQL Server Express edition is limited to use up to 4 CPU cores, 1 GB RAM and 10 GB database size, and is for that reason not supported for all components and system sizes.

For CMG (including CMG Speech and all components except CMG Server), SQL Server Express is only supported for installations up to 1000 users. Above 1000 users, SQL Server Standard edition or above is required.

Please refer to the Compatibility Matrix for a complete list of supported versions of Microsoft SQL Server.

2.2 INCONFERENCE

InConference is not included in the server dimensioning guidelines described in the previous section because the dimensioning depends on how many users use the conferencing feature.

The table below gives recommendations for how many additional CPU cores that must be added to the server running the Media server when InConference is used, assuming the G.711 codec is used. The conference participants is the total number of all conference participants across all ongoing conferences.

Additional hardware resources for InConference

CONFERENCE PARTICIPANTS	ADDITIONAL CPU CORES ON MEDIA SERVER
Up to 20	No additional CPU cores required
21 – 100	1 additional CPU core required
101 – 200	2 additional CPU cores required

201 – 400	4 additional CPU cores required
> 400	Please contact your Mitel sales representative for recommendations

2.3 MEDIA SERVER

For small and medium size systems, the media server is installed with the other ACS components as indicated in the main dimensioning table. For very large systems, the media server can be installed on multiple servers for load balancing.

The table below lists the features in the InAttend and CMG Speech solution that requires media sessions.

FEATURE	REQUIRED NUMBER OF MEDIA SESSIONS
Attendant in call	2 sessions per attendant
Calls in queue	1 session per call
Speech Attendant	2 sessions per concurrent user
Speech IVR	1 session per concurrent user
InConference	1 session per conference participant

The table below lists the number of concurrent media sessions the Media server can handle depending on the codec being used. The number of sessions are stated with a significant margin to be able to handle short peaks in usage.

CODEC	MEDIA SESSIONS PER CPU CORE
G.711 / G.722	100 sessions per CPU core
G.729	70 sessions per CPU core

2.4 WEB SERVER

Web applications (e.g., CMG Web), can be deployed on a different web server, separate from the CMG server. For example, CMG Web can be deployed on a web server in the Demilitarized Zone (DMZ) to allow access from the Internet.

The web server should meet the hardware requirements for an IIS server provided by Microsoft. The following table summarizes the dimensioning guidelines for CMG Web running on a separate web server.

Web server hardware requirements

HARDWARE COMPONENT	REQUIREMENTS
CPU	50% of the number of CPU cores required by the CMG Server if the usage is within the typical usage range (see main dimensioning table). Same number of CPU cores required by the CMG Server if the usage is significantly higher than typical usage.

Memory	Same as the CMG Server.

2.5 DISK SPACE

The software footprint is small compared to a complete server installation with Windows Server and SQL Server installed. However, the recommendation is to have at least 30 GB of free disk space before the software is installed. In addition, there must be disk space available for Nuance language packages (if used), log files, voice mail and recordings.

2.5.1 NUANCE LANGUAGE PACKAGES

When using CMG Speech with Nuance, each language requires a Nuance language package. See the table below for the request disk space for each language package.

NUANCE	REQUIRED DISK SPACE PER LANGUAGE
TTS language	Up to 1 GB
ARS language	Up to 0.5 GB

2.5.2 LOG FILES

It is recommended to reserve at least 60 GB of disk space for log files on each server.

2.5.3 VOICE MAIL AND RECORDINGS

Voice mail messages and recordings in InAttend or InConference are stored as .wav files on the disk. The size of the wave files depends on the quality setting, as summarized below:

QUALITY SETTING	REQUIRED DISK SPACE
8 bit, 8 KHz (default)	29 MB per hour
16 bit, 16 KHz	115 MB per hour

2.6 NETWORK BANDWIDTH (INATTEND CLIENT)

The InAttend softphone requires 100 kbit/s when the attendant is in a call. When using hardphone, this bandwidth will not be used by the InAttend client. InAttend also requires at least 100 kbit/s for operations like searching, reading call log and all other features in the client. This bandwidth is not used all the time, only when performing the operations.

InAttend will also require 20 kbit/s (per client) for each 1000 calls per hour that the system is receiving. For example, a system with 2000 calls per hour will require 40

kbit/s for the call traffic. This bandwidth is required to perform directory lookup of queue entries and adding entries to the call log.

CLIENT FEATURE	REQUIRED BANDWIDTH PER INATTEND CLIENT
Softphone	100 kbit/s
Operations	100 kbit/s
Traffic	20 kbit/s per 1000 calls/h

2.7 COMPLEX ENVIRONMENTS

For dimensioning of very large installations or installations with high, please contact your Mitel sales representative for assistance.

3 REDUNDANCY

The InAttend and CMG solution supports two redundancy solutions; Hot-standby servers and VMware High Availability. In both these cases, the redundant servers must be dimensioned in the same way as the primary servers.

4 VIRTUALIZATION

The InAttend solution supports virtualization using VMware. The system requirements for virtual environments are identical to the requirements for environments where the software runs on physical servers.

If the solution is deployed in a virtual environment, enough resources must be dedicated for the virtual servers, as the software requires real-time processing of calls and media. This requirement is especially important when running media servers in a virtualized environment.

If it is not possible to dedicate enough resources to the virtual servers running the media server, the media server can be installed on a physical server outside the virtual environment.

Please refer to the Compatibility Matrix for a list of supported virtual environments.

5 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.

6 REFERENCES

[1] InAttend System Overview

[2] InAttend Installation and Configuration Guide

[3] InAttend Compatibility Matrix (***Note****: Available on InfoChannel*)

[4] InAttend Redundancy