MiVoice Office Application Suite & Phone Manager Desktop Installation Guide

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INSTALLATION GUIDE

Mitel

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TRADEMARKS

MiVoice Office Application Suite
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1 Introduction

About this Document

This document is designed for administrators who need to install or upgrade the Mitel Communication Service and Phone Manager applications in association with Mitel MiVoice Office 250.

Chapter 1 provides a brief introduction and overview of the Communication Service and Phone Manager products.

Chapter 2 describes installation procedures for the Communication Service software.

Chapter 3 describes installation procedures for the Phone Manager Client software.

Chapter 4 includes engineering guidelines on configuring Phone Manager Softphone and Remote Connections

Introduction

Mitel Communication Service is a Microsoft Windows © software application that connects to the MiVoice Office 250 PBX Open Architecture Interface (OAI) and, as well as providing various features, is the server for the Phone Manager UC and CTI client software application.

The software maintains a Microsoft SQL© database and can be configured using a browser and automatically maintains sync with the PBX as DB Programming changes are made.

The objective was to design a server application that is simple to install and configure and maintains a low cost of ownership for the end user.

About Mitel Communication Service

The Mitel Communication Service is a server-based software application that provides the following features:

- Supports Phone Manager Desktop and Mobile UC clients
- Manages user's device status using Presence Profiles
- Provides dialer features through MiVoice Office Phone Manager Outbound
- Provides call logging and reporting features through MiVoice Office Call Reporter
- Provides call recording features through MiVoice Office Call Recorder
- Provides real-time call, DND & ACD statistics through MiVoice Office Real-Time Wallboard/Dashboard
- Acts as a configuration server for Mitel 6900 series handsets
- Group Messaging
- Agent Hot Desking
- Alarm Notification

The applications are specifically designed for the MiVoice Office 250 to improve desktop interaction with the telephone system for the user.

Communication Service

The Communication Service runs as a combination of a website, a desktop administration tool, a SQL Server database and seven windows services.

1. Website:
    - Provides an administrative interface for configuring the application features and settings
    - Provides status information and historical event tracking for the solution
2. Desktop Administration Tool:
    - Provides a way to edit the SQL connection details
    - Provides a way to check and perform manual DB updates
3. SQL Server:

    - Stores all configuration information
    - Stores historical call and Chat history for users
4. MCS Watchdog Service:
    - Controls automatic database updates post installation
    - Controls the status of all other services
5. MCS CTI Host Service:
    - Proxies connections for Phone Manager Clients and the Logger Service to the MiVoice Office 250
    - Implements Agent Hot Desking, Group Messaging & Alarm Notification features
6. MCS Logger Service:
    - Logs all internal and external calls made by all devices on the system to the SQL database
    - Handles the recording of telephone calls via RAC and IP/SIP Extension Side port mirroring.
7. MCS DB Service:
    - Manages database archiving and database backups
8. MCS WCF Service:
    - Provides configuration information from the database to all services and the website
9. MCS Gateway Service:
    - Provides integration service support
10. MCS Campaign Manager Processor:
    - Manages the imports, exports and reports for the Phone Manager Outbound
11. MCS SIP Proxy
    - Manages SIP registrations for Phone Manager Mobile Softphones
12. MCS Reporting
    - Processes all reports run through the website or through schedules.
13. MCS Call Archiver
    - Processes all call recording archive routines to local and network shares.
14. MCS Realtime
    - Processes all call/DND/ACD in real-time to provide information to Wallboards & Dashboards
15. MCS Handset
    - Interacts with Mitel 6900 Series handsets, handling firmware, BLFupdates, keymap and configuration profile updates and images.

> Direct connections to the MCS SQL database are not supported. The database structure will change with version upgrades. Customers accessing the database directly will not be supported.

Phone Manager Desktop

Mitel Phone Manager is a windows desktop client application that provides complete control of your MiVoice Office 250 Extension. The application is designed to give users easy access to the core MiVoice Office 250 features and enhance them by providing:

- Real-time status visibility of other users on the system
- Control of personal presence including control of Dynamic Extension Express
- Access to global and personal directories
- Chat between Phone Manager users
- Access to personal and group voicemail boxes

- Integration to Microsoft Outlook and other third party applications
- Access to call history
- Softphone mode that allows Phone Manager to be an extension on the MiVoice Office 250 system

Phone Manager is available in four different license levels; Standard*, Outlook, Professional & Team Leader. Each license level offers an increase in features over the previous level

> * Phone Manager Standard is not currently available to purchase

Phone Manager Mobile

Mitel Phone Manager Mobile for iOS and Android provides the following features:

- Snap-shot status visibility of other users on the system
- Control of personal presence including control of Dynamic Extension Express
- Access to global and personal directories
- Chat between Phone Manager users
- Access to call history
- Softphone mode that allows Phone Manager to be an extension on the MiVoice Office 250 system.

Licensing

The Communication Service is licensed via a software key. The key contains all licenses required for the server application and the Phone Manager Client applications.

To license the software an internet connection is required. The license can either be applied online through the software or offline via file transfer if the server running the Communication Service does not have access to the internet.

For more information please review the Initial Configuration section.

> Offline activations can be completed using a file transfer to the Mitel Communication Service website www.mitelcommunicationservice.com

2 Installation

System Requirements

The server(s) must meet the minimum requirements described here.

Operating Systems

- Windows 7 Pro/Enterprise/Ultimate 64-bit
- Windows 8.1 Pro 64-bit
- Windows 10 Pro/Enterprise 64-bit
- Windows Server 2008 R2 Standard/Enterprise/Datacenter 64-bit
- Windows Server 2012 R2 Standard/Datacenter 64-bit
- Windows Server 2016 Standard/Datacenter 64-bit
- Windows Server 2019 Standard/Datacenter 64-bit

> From release 5.0, Mitel Communication Service is supported on 64-bit operating systems only.

> Windows Server Core installations are not supported.
> Windows Server Small Business/Foundation/Essential versions are not supported.

Hardware Requirements

The minimum required hardware is dependent on the call rate, the number of Phone Manager clients that will be connected and the Application Suite features in use.

Select the size of system which will cover all of the systems limits.

System Limits	Hardware Requirements
Small: • 1,200 calls per hour • 50 Phone Manager Desktop Clients • 50 Phone Manager Mobile Clients (up to 5 softphone calls in progress) • 50 Mitel 6900 SIP Handsets • 8 Concurrent Call Recordings • 2 Concurrent Real-Time Wallboards/Dashboard	• CPU: 1 x Intel Core i3 dual core @ 3.3 GHz • RAM: 4GB • HDD: 100GB + 1GB for each million call records • HDD: 1TB for each 175,000 hours of call audio data (Only applies when using MiVoice Office Call Recorder) • SQL Server: Express
Medium: • 2,400 calls per hour • 100 Phone Manager Desktop Clients • 100 Phone Manager Mobile Clients (up to 10 softphone calls in progress) • 100 Mitel 6900 SIP Handsets • 60 Concurrent Call Recordings • 5 Concurrent Real-Time Wallboards/Dashboard	• CPU: 1 x Intel Xeon quad core @ 3.1 GHz • RAM: 8GB • HDD: 100GB + 1GB for each million call records • HDD: 1TB for each 175,000 hours of call audio data (Only applies when using MiVoice Office Call Recorder) • SQL Server: Express • NIC: 1Gb
Large: • 4,200 calls per hour • 500 Phone Manager Desktop Clients • 250 Phone Manager Mobile Clients (up to 25 softphone calls in progress) • 500 Mitel 6900 SIP Handsets • 250 Concurrent Call Recordings • 10 Concurrent Real-Time Wallboards/Dashboard	• CPU: 2 x Intel Xeon quad core @ 3.1 GHz • RAM: 16GB • HDD: 100GB + 1GB for each million call records • HDD: 1TB for each 175,000 hours of call audio data (Only applies when using MiVoice Office Call Recorder) • SQL Server: Full • NIC: 1Gb

⚠ If a Teamed NIC is present on the server do NOT use this for licensing, Licenses the software against a physical NIC's MAC address only.

Software Requirements

The following software is required to be installed:

- Microsoft .NET Framework 3.5 SP1
- Microsoft .NET Framework 4.5.2
- Windows PowerShell 1.0

The Mitel Communication Service can not be installed on a Domain controller or Small Business Server

Virtualization Environments

Mitel Communication Service is supported in a virtual environment. The supported environments are listed in the table below.

Environment	Supported?
VMWare vSphere ESXi v5.1 or greater	
Hyper-V 2012 R2, 2016	

Co-Hosting with Xarios Call Recorder

If the MCS is being installed on the same server as a Xarios Call Recorder, it is advisable to change the following settings so that there are no clashes between the products:

Website Port

By default, both products will host their websites on port 80. To access the products individually, one of the websites must be reconfigured within IIS to use a different port. The website can then be accessed by appending the port to the URL:

http://[server_name]:81

Be aware that the port will be reset to 80 after by any upgrade applied to the system.

Database Backup & Log Archive Directories

By default, both Xarios Call Recorder and MCS use the same folders for database backups and log archives. Both of these locations need to be changed otherwise files will be overwritten.

PBX Supported Versions

The following Mitel MiVoice Office 250 versions are currently supported:

- Call Processing Version 6.1.x
- Call Processing Version 6.2.x
- Call Processing Version 6.3.x

If Mitel 6900 Handsets are being supported, the Call Processing Version must be 6.3 SP2 or higher.

The following Multi-Node configuration is supported:

- Multiple MiVoice Office 250 nodes via the use of a Mitel CT Gateway(Version 5.0.64 or higher is required).
- Individual connections to multiple Mitel MiVoice Offices are not supported.
- Unique numbering plan across all nodes is required (this includes Trunk devices).

The following pre-requisites must be met on the telephone system:

- System OAI Call Control & 3rd Party Event enabled
- IP Based OAI Connection

The following requirements must be met if using desktop or mobile Phone Manager Softphones:

- Cat F licenses are required for each connected softphone device.

The following requirements must be met if using Mitel 6900 Series Handsets:

- Cat F licenses are required for each connected 6900 handset.

The following requirements must be met if using the MCS Record-A-Call feature:

- SIP Voicemail licenses are required on the MiVO 250 to match the number of concurrent calls to be recorded (Maximum of 8).

⚠ MCS will not connect to CT Gateway Versions below 5.0.64. If it detects the version is lower than this it will fail to start.

⚠ MCS does not support ACD member hunt groups, only ACD Agent hunt groups.

⚠ Only one SIP voicemail can be configured by default on the telephone system. If you are using NuPoint Messaging then the MCS will not be able to be added as a SIP Voicemail.

If using Phone Manager Mobile Softphone then the relevant SIP extensions need to be configured to use G.711

If using Phone Manager Mobile Office Link features then an OfficeLink Assistant Extension needs creating on the telephone system. Also, any user wanting to make use of the feature needs to have at least one external number in their DEE configuration.

Installing the Communication Service

There is a single installation package that contains all components of the Communication Service.

⚠ Do not install the Communication Service from a network share. Copy it to a local drive first to ensure any prerequisites are installed correctly by the operating system.

⚠ If installing MCS on Windows 7 or 8 then .NET 3.5 must be installed prior to installing MCS. If not, the Pre-Requisites installation will fail stating it has been 'interrupted'.

If a previous version of Communication Service is already installed the new version can be installed over the top.

To install the Communication Service:

1. Run the setup file and follow the on screen instructions (As part of the install additional Microsoft elements maybe installed. See software requirements for a detailed list).

   If the setup prompts to restart during the process then allow the restart and re-run the installation afterwards.

2. The first prompt will ask you to select the language preference. Select the country where the server is to be located from the drop down menu and press '*OK*'.

3. If Microsoft SQL Server 2014 is not already installed, the setup will prompt to install. Follow the on screen instructions.

   > At this point please be patient, the installation of SQL Server can take over 30 minutes to complete.

4. Once the SQL installation has completed the installation of the Communication Service will automatically start.
5. Accept the License Agreement and complete the User & Organization section.
6. On the '*Setup Type'* screen select '*Complete'* and press '*Next'* to continue installation.

   > You may be presented with a confirmation form to indicate other applications need to be closed before the setup can continue.

To configure Communication Service once the installer has finished two things will happen:

1. A web page will be displayed to guide you through the initial configuration process.
2. The Watchdog service will start automatically and will begin upgrading the database structure.

> Before the initial configuration process can be started the Watchdog must have finished the database update process. Please wait for this to be completed.

> The default login details for the Communication Service are: engineer / Teleph0ny!

> If a site is being upgraded from a previous release of MCS, it will continue to use SQL Server 2008 R2. There is no requirement to upgrade the version of SQL beyond 2008.

Initial Configuration

The first time the MCS website is accessed it will guide the user through the Installation Wizard. The wizard covers the following configuration options:

- Licensing
- User Creation
- PBX Configuration
- Dial Plans
- Call Recording (If licensed)
- Email

All of these configuration options can be changed at any point after the wizard has been completed, but we always recommend using the wizard for initial setup.

Licensing

Mitel Communication Service needs to be licensed before it can be configured and be made operational.

To license a Mitel Communication Service you will need :

- Site ID and Serial number, this will be provided on the license certificate for the software when purchased.
- Reseller ID

The reseller ID is only requested when the license being installed is a stock license. It is requested so that the license is correctly registered to a reseller account on the Mitel Communication Service portal.

> The reseller ID is the same as a reseller's Mitel SAP number. If you do not know your reseller ID, please contact Mitel or visit www.mitelcommunicationservice.com for more information.

Online Activation

If the server MCS is installed on has an internet connection then the software will attempt to activate the license automatically. On the licensing screen you will be prompted for the following:

- Site ID & Serial Number
- Site name
- MAC Address

The license will be linked to the MAC address of the server which you select. If the software has been installed in a VMWare or Hyper-V environment, make sure the MAC address is static.

If the server that MCS is being installed on is using a proxy then the link to the license server might be blocked.
The license server is accessed by MCS using HTTPS on port 443

Offline Activation

If the server the software is installed on does not have an internet connection then an offline activation will be required. This involves entering the same information required by the online activation but instead of the information being passed automatically to the license server it is saved in a license request file. This file then needs uploading to the Mitel Communication Service license portal (www.mitelcommunicationservice.com). The file can be transferred to another server or PC that does have internet access. Once the license request file has been processed on the portal a license activation file will be provided. This license activation file needs to be loaded into the MCS website to complete activation.

Offline Activation Through Wizard

1. Select the 'Activate offline (no internet connection)' option at the top of the wizard's license page
2. Select the license type as required
3. Enter the required information in the displayed fields
4. Following 'Step 1' by clicking the link to download the license request file. Save the file and make a note of the file name and location
5. Copy the file to a computer with an internet connection and browse to http://mitelcommunicationservice.com/activate and upload the license request file.
6. Save the license activation file returned and copy it back to the server running MCS
7. Follow 'Step 3' and upload the license activation file to complete the activation of MCS

Offline Activation Through License Page

1. On the Server License page press the 'Activate' button
2. Select the license type as required
3. Enter the required information in the displayed fields
4. Click the 'Download file for offline activation' on the bottom right activation form. Save the file and make a note of the file name and location
5. Copy the file to a computer with an internet connection and browse to http://mitelcommunicationservice.com/activate and upload the license request file.
6. Save the license activation file returned and copy it back to the server running MCS
7. On the Server License page press the 'Process files' button and browse to the activation file to complete the activation of MCS

If a Teamed NIC is present on the server do NOT use this for licensing, License the software against a physical

> NIC's MAC address only.

Phone System Configuration

To operate the MCS you must have a System OAI connection to the phone system. To aid in configuring this connection the wizard will broadcast and will try and find any phone systems or CT Gateways on the local network segment. This will appear in a box on the right hand side of the screen. If the broadcast finds a single system or a CT Gateway it will pre populate the connection details on the left hand side.

Once the correct PBX configuration details have been entered, press the *Next* button to test the connection. If the connection is successful the wizard will download the device configuration from the MiVoice Office 250.

For more information on the Phone System settings, please reference the Phone Systems section.

Dial Plans

The dial plans control how Phone Manager clients will initiate external calls on the MiVoice Office 250. The wizard should pre-configure the *Country* selection and the *Outside line* so only the following fields should need to be edited:

- DID Prefix to Add
- Local area codes
- Local override codes

For more information on the dial plan settings, please reference the Dial Plan section.

User Creation

Users are an integral part of the operation of the MCS. They are used for:

- Authenticating Phone Manager clients
- Giving engineers and supervisors access to the MCS website to make configuration changes
- Tracking calls made on the PBX for historical logging purposes

To ensure the system is as easy as possible to use and maintain the correct method for creating users needs to be selected.

For more information please reference the Users section.

Email

Emailing is used when creating manual user accounts, inviting Mobile Client Users and when using the alarm notification features.

For more information please reference the Email section.

Once you have completed the wizard the Mitel Communication Service should be operational.

Network Configuration

The MCS requires a 100Mb/1Gb LAN connection that has access to the telephone system. Phone Manager clients will also need access to the MCS over the network. If the server is installed into a Microsoft Active Directory environment then it should be added to the domain, ideally before the MCS software is configured.

> ⚠ Custom Active Directory Group Policies can adversely affect the system and they should be tested before going live.

To enable users to easily access the server with the website role a valid DNS entry should be created that can then be used when browsing to the server, for example http://communicationserver.

The table below details a list of firewall ports that may need to be opened. Which ports will depend on the

features and system configuration.

Application	Name	Direction	Port
Website access	HTTP	Inbound	TCP 80
	HTTPS/SSL	Inbound	TCP 443
Licensing	HTTPS/SSL	Outbound (service.xarios.com)	TCP 443
SQL Server	SQL Server	Inbound/Outbound	TCP 1433
Phone Manager Desktop	CTI Link	Inbound	TCP 2001
	Client Sessions	Inbound	TCP 8187 & TCP 8186
	Client Personal Wallboard Sessions	Inbound	TCP 8204
	Broadcast location service	Inbound	UDP 8184
	SIP Audio	Inbound/Outbound PM Desktop to MCS	UDP 20000-20500
Communication Gateway	Integration Services	Inbound	TCP 8188
Communication Service	Server Connections	Inbound/Outbound	TCP 8189 TCP 8183
Phone Manager Mobile	Client Sessions	Inbound	TCP 8185
	Audio	Inbound	TCP 8190
	SIP Audio	Inbound/Outbound PBX to MCS	UDP 20000-20500
	Google Push Notification Service	Inbound	TCP 5228, 5229, 5230
	SIP Proxy	Inbound/Outbound	TCP 8196
	Server Connections	Inbound/Outbound	TCP 8190

CTI Link	MiVoice Office 250 OAI	Outbound	TCP 4000
MiVoice Office Call Recorder	MiVoice Office 250 SIP (RAC Call Recording & Phone Manager Mobile Softphones)	Inbound/Outbound	UDP 5060
	MiVoice Office 250 Audio (RAC Call Recording)	Inbound/Outbound	UDP 12000-12100
	Live Streaming	Inbound	TCP 8201
	Server Connections	Inbound	TCP 8197
Handset Service	Server Connections & 6900 Handset Requests	Inbound	HTTPS 8202 HTTP 8203
	6900 Handset Requests	Inbound	TFTP 69
	6900 Handset Multicast DNS	Inbound	UDP 5353
MiVoice Office Real-Time Wallboard/Dashboard	Server Connections	Inbound/Outbound	TCP 8191
	Data Link from client browser	Inbound	TCP 8200

During the installation rules will be added to the in-built Windows Firewall for ports used by the MCS services. When using the Record-A-Call or SIP/RTP recording, the IP address of the PBX (Base server, PEC & PS1) may need to be added to the firewall allowed list to allow traffic into the MCS.

Anti-Virus Recommendations

Anti-virus software can be installed onto the servers, but the following exclusions must be configured:

- Exclude the server logs
  - %ProgramData%\Mitel\Mitel Communication Service\logs
  - File extensions to exclude: *.log
- Microsoft IIS 7.0 Server
  - Web Server log files should be excluded from scanning. By default, IIS logs are saved in C:\inetpub\logs
- Disable real time / on demand scanning
- Microsoft SQL Server 2008 R2
  - %ProgramFiles%\Microsoft SQL Server\MSSQL\Data (File extensions to exclude: *.mdf,*.ldf,

*.ndf, *.bak, *.tm)
    - %ProgramFiles%\Microsoft SQL Server\MSSQL10_50.<Instance Name>\MSSQL\Binn\SQLServr.exe
    - %ProgramFiles%\Microsoft SQL Server\MSSQL10_50.<Instance Name>\Reporting Services\ReportServer\Bin\ReportingServicesService.exe
    - %ProgramFiles%\Microsoft SQL Server\MSSQL10_50.<Instance Name>\OLAP\Bin\MSMDSrv.exe
- Microsoft SQL Server 2014
    - %ProgramFiles%\Microsoft SQL Server\MSSQL12.MCS\MSSQL\Data (File extensions to exclude: *.mdf,*.ldf, *.ndf, *.bak, *.tm)
    - %ProgramFiles%\Microsoft SQL Server\MSSQL12.MCS\MSSQL\Binn\SQLServr.exe

For servers with the call recording role:

- Disable real time / on demand scanning

- Exclude the recording paths (default path shown)
    - C:\Recordings (or D:\Recordings if there is a 'd' drive)
    - Local <Archive Location>

If a support issue is raised then the removal of the anti virus may be required to aid in any diagnostics.

3 Client Installation

Phone Manager / Call Recorder Client Requirements

To be able to install and run Phone Manager the client computer needs to meet the following **minimum** requirements. If installing into a multi user environment where multiple instances of the client will be running, for example Microsoft Terminal Service, Citrix etc. then see the Multi User Computer Requirements section.

> The Call Recorder Client is embedded within the Phone Manager installation. It has the same requirements as Phone Manager.

Operating Systems

- Windows 7 Pro/Enterprise/Ultimate 32-bit/64-bit
- Windows 8.1 Pro 32-bit/64-bit
- Windows 10 Pro/Enterprise 32-bit/64-bit
- Windows 2008 SP2 Standard/Enterprise/Datacenter 32-bit/64-bit
- Windows 2008 R2 Standard/Enterprise/Datacenter 32-bit/64-bit
- Windows 2012 Standard/Datacenter 64-bit
- Windows 2012 R2 Standard/Datacenter 64-bit

> The Windows 2008 or Windows 2008 R2 Server Core installation options are not supported.
>
> The Windows 2012 Foundation and Essential versions are not supported.

Hardware Requirements

Processor	Intel Core 2 Duo 1.8GHz or faster processor (or equivalent)
Memory	Minimum: 1GB RAM Recommended: 2GB RAM or more When Phone Manager is running it will use a minimum of 70MB of RAM per client. (Terminal environments) - this can be significantly more depending on configuration and number of devices and/or users on the system.
Network	IPv4, 100Mb / 1Gb LAN
Hard Disk	Minimum: 20GB free space
Video	Minimum: DirectX v9 compatibly graphics cards with 120MB RAM Recommended:DirectX v9 compatibly graphics cards with 1024MB RAM

Software Requirements

The following software is required to be installed.

- Microsoft .NET Framework 4.5
- Windows Installer 4.5

Multi Users & Virtual Desktop System Requirements

Phone Manager can be run in multi user and virtual desktop environments such as Microsoft Terminal/Remote Desktop Services, Citrix XenApp or VMWare Virtual Desktop Infrastructure (VDI) with the following limitations:

- The 1st Party TAPI drivers is not supported
- Phone Manager Softphone is not supported

When deploying in these environments, the amount of memory, CPU usage and Video resource that Phone Manager will use needs to be determined. As the resources required are dependent on configuration and the number of devices and Users in the system, you must exercise your own due diligence in reviewing, planning, implementing and testing a customer configuration.

There are options available on the Advanced tab in the Client Profiles section that can reduce the performance requirements for Phone Manager.

The Phone Manager installation is available in two versions, 32 bit and 64 bit. Ensure you use the correct version for the operating system you are running.

> ⚠ Do not install Phone Manager from a network share. Copy it to a local drive first to ensure any prerequisites are installed correctly by the operating system.

> ⚠ The installation package may request a restart of the computer depending on the packages that need to be installed.

> ⚠ From release 5.0.12 of Phone Manager a new version of the Plantronics API is used for headset support. If you have previously deployed Phone Manager with Plantronics headset support then the Plantronics Spokes software must be uninstalled before upgrading Phone Manager.

> If a previous version of Phone Manager is already installed the new version can be installed over the top.

1. Run the correct client setup file for the PC and follow the on screen instructions (As part of the installation additional Microsoft elements maybe installed. See software requirements for a detailed list).

   > If the setup prompts to restart during the process then allow the restart and re-run the installation afterwards.

2. Accept the License Agreement, Softphone Agreement and complete the User & Organization section.
3. On the '*Setup Type'* screen make a selection between '*Typical*, *Complete* or *Custom'* and press '*Next'* to continue installation.
   - Typical - Installs most common Phone Manager components, excludes TAPI driver and Headset integration support
   - Complete - Installs all Phone Manager features
   - Custom - Allows the installer to choose which features to install
4. Select the client location options based on whether the PC will be moving around (laptop) and whether the current location is local to the office or remote.
5. If required enter the connection details for the Communication Service and local extension number If the Communication Service is on the same LAN segment this can be left blank, Phone Manager will send a broadcast to attempt to it.

The installation should now complete, all the user has left to do is enter their login credentials to connect.

Call Recorder Client

The Call Recorder Client is contained within the Phone Manager Desktop installation. If the *Typical* setup type is used the Call Recorder Client is NOT installed. The *Complete* or *Custom* setup type must be used to install the Call Recorder Client.

Unattended installations of just the Call Recorder Client are possible, please see the Unattended Installations section for more information.

There are various techniques to enable rapid deployment of Phone Manager or deployment on a large scale:

- Active Directory Group Policy
- Login Script

The choice of deployment method will depend on the customer's infrastructure and experience. Whichever method is

chosen the customer will need to use the setup / msi command-line arguments to perform a silent installation and pass the necessary configuration information for a unattended installation.

The Phone Manager installations are MSI based installations that are embedded inside an executable that will ensure the prerequisites are installed correctly.

Active Directory Group Policy

To roll out Phone Manager using group policy the MSI must first be extracted from the setup executable. To do this the following command-line arguments need to be passed to the executable:

setup_phonemanager_exex64_vX.X.XXXX.X.exe /a /s /v"/qn TARGETDIR=\"C:\Temp\""

The TARGETDIR can be replaced with any location, this will be where the MSI file is extracted to. The executable name in the example above needs to be replaced with the executable version being used.

The extracted MSI is called setup.msi. This process will have to be repeated for both 32bit and 64bit versions if required. Take care to use a different TARGETDIR for the 32bit and 64 bit versions as they will both generate an MSI with the same name, i.e. setup.msi.

When installing using the MSI package, ensure that .NET 3.5 SP1 & .NET 4.0 Extended is installed.

When installing using the MSI package, headset packages for Jabra and Plantronics need to be installed separately

Command-Line Arguments

The following command-line arguments can be passed to the executable or MSI to customize the installation.

Silent Installation

Used to ensure the end-user does not see any part of the installation while it is in progress.

/S /v/qn

Server Location

Used to specify the location of the Communication Service during the installation. This can be the IP address or hostname.

/VXDISCOVERYSERVER=

If no location is passed, Phone Manager will broadcast to find the server on start-up.

Extension Mapping Type

The options detailed in the table below are used to specify one of the three extension mapping types:

Parameter	Description	Usage
dynamicwithendpoint	Use the extension assigned to the computer, each different user that sits at the computer uses the same extension. If no extension is supplied using a '/VXENDPOINT' parameter, then an extension for the computer is prompted for and saved the first time Phone Manager is run.	User of Agent Hot Desking or general ACD users that move between phones.
static	Use the extension assigned to the User on the Communication Service. If no extension has been assigned to a user centrally then they will be	Users of native Hot Desking or people that sit at the same desk every day.

	prompted and have one assigned the first time they log in.	
dynamic	Prompts the user for an extension each time Phone Manager starts up.	Users of Terminal Services or thin clients where there is no correlation between the Phone Manager UI and the extension.

/VXENDPOINTMAP=dynamicwithendpoint

or

/VXENDPOINTMAP=static

or

/VXENDPOINTMAP=dynamic

Extension Number

Used to define the extension number for the computer during installation.

/VXENDPOINT=XXXX

Features

The options detailed in the table below are used to control the various features that can be installed. By default if no features are passed to the installation the features in **bold** will be installed.

Feature Name	Description
Client	Core Phone Manager Software.
Outlook	Phone Manager Outlook plug in Software.
Shortcut_Startup	Shortcut for Phone Manager in the start up folder.
Shortcut_Desktop	Shortcut for Phone Manager on the desktop.
TAPIx64	Phone Manager TAPI driver for 64bit systems.
TAPI	Phone Manager TAPI driver for 32bit systems.
URLProtocolsx64	Sets Phone Manager as the target for “tel://, dial://, callto://, sip://, dialfrompm://” URI’s in the Client PC Registry. When set, any telephone number (formatted with one of the supported URI’s) in a web page will use Phone Manager to dial the number when clicked.
URLProtocols	Sets Phone Manager as the target for “tel://, dial://, callto://, sip://, dialfrompm://” URI’s in the Client PC Registry. When set, any telephone number (formatted with one of the supported URI’s) in a web page will use Phone Manager to dial the number when clicked.
Plantronics	Support for manufacturer specific headsets.
CallRecorderClient	Installs the Call Recorder Client to control muting of recordings

To Add:

/VADDLOCAL=*featurename*

Removing Features:

Features cannot be individually removed once installed. To remove features the entire application must be uninstalled.

> ⚠ All feature names are case sensitive

> On initial install the *Client* feature must always be installed

> If no feature parameter is passed all features are installed except TAPI and headset support

Command-Line Examples: Executable

Silent Installation

Setup.exe /S /v/qn

Silent Installation with TAPI and Jabra Headset on 64bit

Setup.exe /S /v/qn /VADDLOCAL=TAPIx64, JABRA

Silent Installation with Server Location

Setup.exe /S /v/qn /VXDISCOVERYSERVER=192.168.100.2

Silent Installation with Server Location and Extension Mapping

Setup.exe /S /v/qn /VXENDPOINTMAP=static /VXDISCOVERYSERVER=102.168.100.2

4 Engineering Guidelines

The following section provides engineering guides on various aspects of the solution:

- Phone Manager Softphone (Desktop & Mobile)
- Remote Connections (VPN, MBG, Firewall)
- Backup & Restore Procedures
- Using a Certificate Authority Certificate

4.1 SSL Certificate

The SSL certificate configuration section provides access to control the certificate used by Client Applications (Phone Manager Desktop/Mobile, Call Recorder Client) and the web site for HTTPS if required. By default, a self-signed certificate is created by the MCS when it is installed. This is used by clients to communicate back to the MCS. This means the data sent between Phone Manager and MCS is encrypted. Alternatively a certificate may be purchased from a trusted certificate authority and installed on the MCS. When doing this, the DNS name used for the server/certificate must be accessible both internally and externally by the Phone Manager clients.

Optionally, when adding a certificate from a trusted authority, it can also be applied to the website and real-time services so that access to the configuration, Real-Time Dashboard/Wallboard and Call Recorder are all over HTTPS.

Certificate Properties

The properties of the certificate currently in use by the system are displayed on the page.

- Status -> Self-Signed or Trusted
- Certificate Expiry -> The date the certificate will expire
- Hostnames -> The hostnames the certificate is currently supporting
- Usage -> Indicates whether the certificate is just being used for client applications or the website as well

> The hostnames used for the certificate need to match those configured in the Client Locations section. If using a self-signed certificate, the certificate will be regenerated automatically anytime these addresses get updated.

Requesting/Using a Trusted Certificate

To improve security and simplify Phone Manager Mobile client installations, a trusted certificate can be purchased and applied to the server.

Pressing the 'Start Certificate Request' button will start the process of creating a certificate request file. This must be populated with the following information:

Common name	The fully-qualified external domain name of the MCS server. This should be the Client Location Remote 'NAT IP Address/Hostname' address configured on your MCS server If you are requesting a Wildcard certificate, add an asterisk (*) to the left of the common name where you want the wildcard, for example *.<mydomain>.com.
Alternative names	Enter any alternative hostnames or IP addresses that may be used to connect to the server, for example the internal DNS name. This must include the Client Location Local 'IP Address/Hostname' address configured on your MCS server
Organization	The legally-registered name for your business. If you are enrolling as an individual, enter the certificate requestor's name.
Organization unit	If applicable, enter the DBA (doing business as) name.
	Name of the state or province where your organization is located. Do not

State / region	abbreviate.
City / locality	Name of the city where your organization is registered/located. Do not abbreviate.
Country	The country where your organization is legally registered.

The 'Common Name' and 'Alternative Names' fields should match those that the clients are using to connect to the server. They will be pre-populated with the information from the Client Locations section.

Once the fields have been correctly populated, press the 'Download CSR file' button to generate the certificate request. You will be prompted for a location to store the file.

This CSR should be submitted to a certificate authority to request a certificate. Once the certificate has been obtained, it can be uploaded to the system using the 'Complete Certificate Request' button.

Any certificate uploaded will be used for client application connections. Optionally it can also be used for website connections by checking the relevant box.

For more information on enabling HTTPS on the website, please refer to the Enabling HTTPS section.


A restart of the system is required for certificate changes to take effect.


If using a trusted certificate, it must be updated any time the local or remote addresses in the Client Locations section are updated.

4.2 Phone Manager Softphone

Phone Manager Desktop and Phone Manager Mobile both have Softphone capabilities that allow them to become an extension off the telephone system. They connect to the telephone system as a SIP extension. Both products use OAI features to add additional capabilities on top of the SIP features.

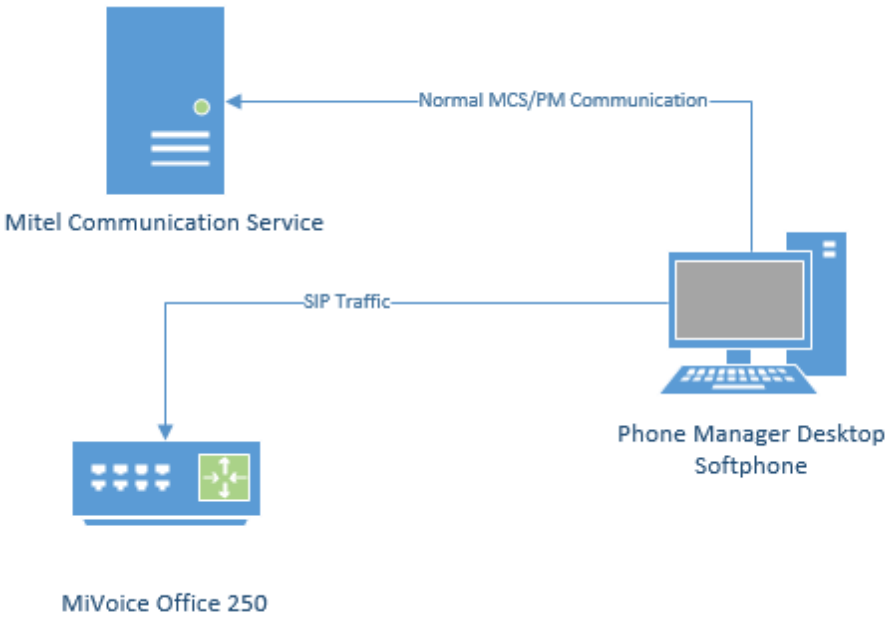
Requirements

The following requirements apply to any use of the Phone Manager Softphone:

- MiVoice Office 250 6.1 or higher (Release 6.3 SP1 or higher is recommended for automatic configuration of authentication details)
- Cat F licenses for each SIP extension on the telephone system Phone Manager will be connecting to
- Phone Manager Softphone Licenses for each Phone Manager Softphone that will be used

Phone Manager Desktop with Softphone

When Phone Manager Desktop connects as a softphone, the SIP traffic goes directly between the Phone Manager Client and the node on which the SIP extension is configured.



For information on connecting Phone Manager Desktop from outside the LAN, refer to the appropriate guide:

- Connecting Phone Manager Desktop using a MiVoice Border Gateway
- Connecting Phone Manager using a Router

Connecting from a Different Subnet

If the Phone Manager Desktop client is located on a different subnet to that of the MiVO 250 it is registering it with, the Auto NAT detection of Phone Manager Desktop can get confused and will use the client PC's public address to connect, not the local address. In this scenario, the softphone will get one way audio.

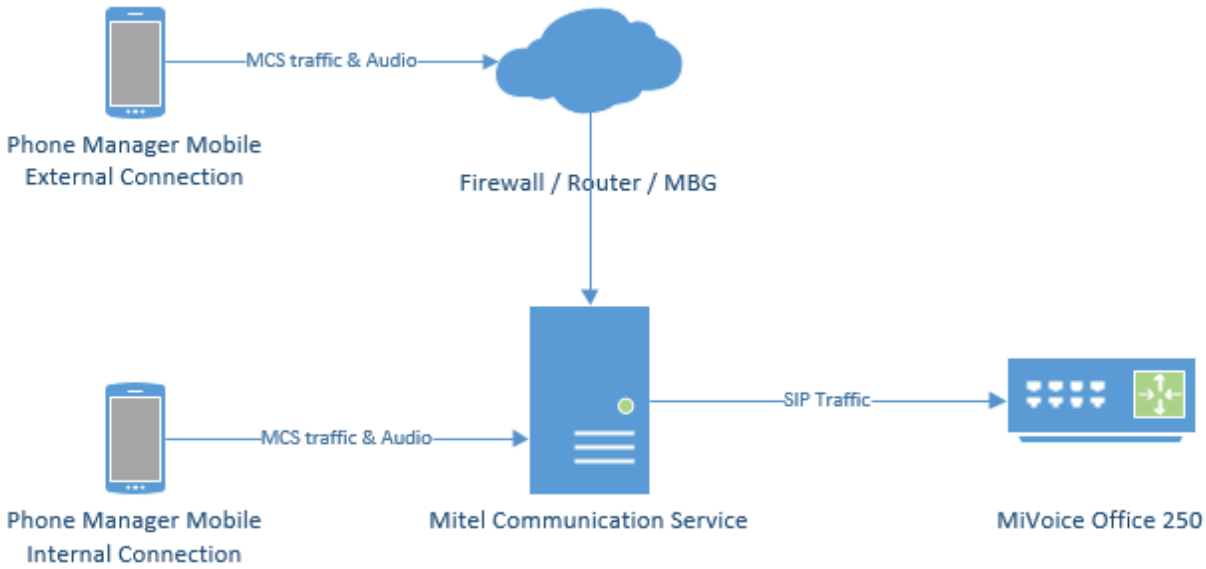
To work around this issue, Auto NAT Detection needs to be disabled on Phone Manager Desktop.

Phone Manager Mobile with Softphone

When using the Softphone features of Phone Manager Mobile the Mitel Communication Service acts as a proxy. The MCS SIP Proxy service manages all SIP extension registration and traffic on the behalf of the Phone Manager Mobile Softphone so that all SIP traffic is kept on the internal network and does not have to be exposed externally.

> ⚠ If the MCS SIP Proxy is restarted all the Phone Manager Mobile clients with a softphone need to reconnect the app to receive call notifications as they will no longer be registered. The easiest way to do this is by restarting the app on the mobile.

All audio connections for the Phone Manager Mobile Softphone are to the MCS SIP Proxy:



The MCS SIP Proxy requires G.711 to be configured against the SIP Endpoint on the telephone system as the audio encoding for making calls.

For information on connecting Phone Manager Mobile from outside the LAN, refer to the appropriate guide:

- Connecting Phone Manager Mobile using a MiVoice Border Gateway
- Connecting Phone Manager using a Router

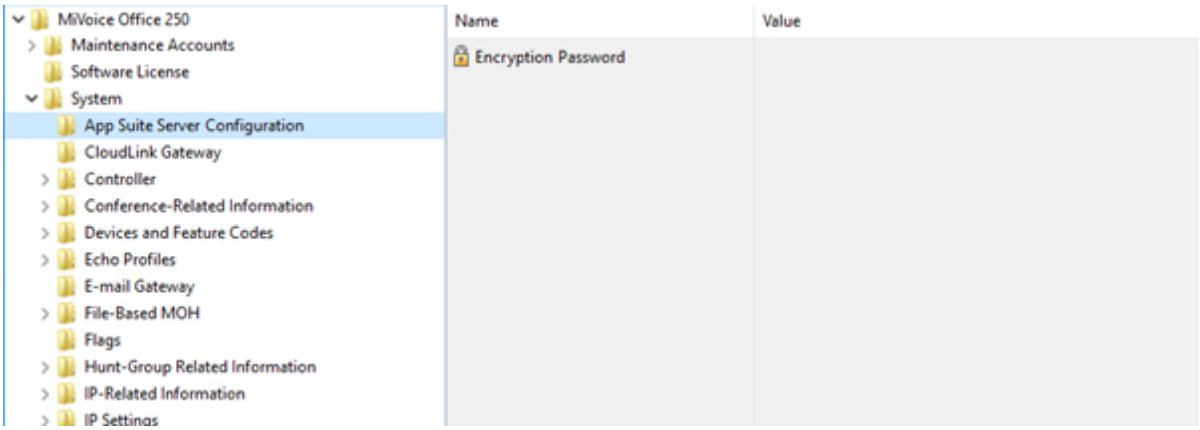
> ⚠ The SIP Proxy service must be on the same network as the PBX with no NAT in between the two.

The Softphone support within Phone Manager and the SIP connectivity of 6900 phones require some configuration to be performed within the PBX and with MiVoice Office Application Suite.

The configuration below applies to 6900 phones, SIP Hot Desk Devices, Phone Manager Desktop Softphone AND Phone Manager Mobile Softphone unless explicitly stated otherwise.

When using release 6.3 SP1 or higher of the MiVoice Office 250, MCS has the ability to query all SIP Authorization Credentials from the telephone system to use with Phone Manager Softphones and 6900 phones. This integration simplifies the process of installing Softphones/6900 phones and minimizes the risk of mis-configuration.

To support this feature, a new configuration section within MiVO 250 Database Programming has been created:



Encryption Password

On each node in the MiVO 250 network, an Encryption Password needs to be configured which will allow MCS to query and decrypt the SIP authorization credentials.

If the password is not configured, MCS will not be able to query the credentials from the PBX and they will have to be configured manually. See the Device Configuration section for more information.

Once the encryption password as been configured on the telephone system(s), it must also be configured in the Nodes section of the MCS configuration website.

> In addition to using requiring 6.3 SP1 or higher, CT Gateway release 5.0.64 or higher is also required for the SIP authorization credential query to work.

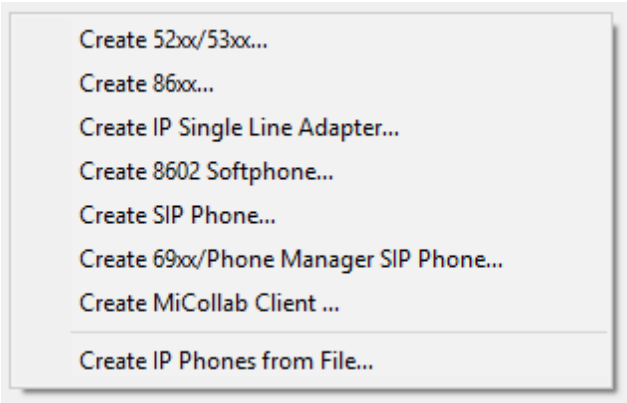
The MCS server needs to provide each 6900 phone and Phone Manager Softphone with the IP address of a SIP server to register with (the MiVoice Office 250). The IP address required will depend on which MiVoice Office 250 node the SIP extension is configured on and whether the phone is local or a teleworker.

For each node on the MiVoice Office 250 network that MCS is connected to, it is important to configure the IP address/port number to be used for SIP registrations.

For information on configuring the IP address(es)/Ports for each node, please refer to the Node Configuration section.

69xx SIP Phone

From release MiVO 250 6.3 onwards, a new SIP phone type called '69xx/Phone Manager SIP Phone' (renamed from '69xx SIP Phone' in 6.3 SP2) is available for creating SIP extensions on the telephone system for use with Phone Manager softphones & 6900 phones.



When SIP extensions are created using this type, the SIP Phone Groups created will automatically be configured with the required settings and will have a default inbound authentication applied with a randomly assigned password.

> If a user is using a 6900 handset and a softphone (on either or both of Phone Manager Desktop & Phone

Manager Mobile) it is important to set them up with separate SIP Endpoints on the phone system.

For release prior to 6.3, the generic SIP Phone type should be used for Phone Manager Softphones. Please review the Phone Group settings under Manual SIP Configuration to check the required configuration.

4.3 Remote/Teleworker Connections

Most installations will have some requirement to run Phone Manager (Desktop or Mobile) or 69xx phones from outside the LAN. Operating remotely will require that IP traffic is routed from outside of the network to inside the network in a secure manner.

There are three different ways to route external traffic to the Mitel Communication Service / MiVoice Office 250:

- VPN (Recommended for Phone Manager Desktop remote connections)
- Port Forwarding (not recommend for remote 69xx phones)
- Proxy through a MiVoice Border Gateway

Once one of the chosen methods has been implemented, the Remote Location and Remote Node IP addresses / hostnames need to be updated so that Phone Manager/69xx phones know how to connect back to the system.

VPN

Using a virtual private network (VPN) is the simplest way of connecting Phone Manager to the MCS / telephone system from outside the local area network. Once a VPN tunnel is in place between the host client (Mobile phone or desktop PC) and the network then Phone Manager will be able to connect as normal with no configuration changes required by the end-user.

VPN is the best way of connecting Phone Manager Desktop from an external computer, especially when using Phone Manager Softphone.

Port Forwarding

Another method of connecting Phone Manager from outside the network is to use port forwarding. Port forwarding involves configuring the customer's existing firewall to forward traffic on the necessary ports through to the MCS / telephone system.

For more information on Port Forwarding please click here.

MiVoice Border Gateway

Mitel provide a dedicated proxy solution for connecting software and devices from outside the local area network. This is the supported method for remote 69xx phones.

For more information on the MiVoice Border Gateway please click here.

4.3.1 Connecting Through Firewalls

Port Forwarding

One method to connect Phone Manager from outside the local network is to use Port Forwarding. This involves reconfiguring the customer's firewall or router to forward traffic on specified ports through to the either the Mitel Communication Service or the MiVoice Office 250 telephone system.

⚠ WARNING - Port Forwarding is a security risk when opening up SIP ports on the telephone system to the outside world. Mitel does not recommend using Port Forwarding for external Softphone connections.

Port Forwarding for Remote Phone Manager Desktop Connections

Configure the ports shown below to be forwarded to the IP address of the MCS server:

Port	Target	Direction	Description
TCP 8187 & 8186	MCS Server	Inbound	Used to communicate to the MCS server to provide configuration, user data, chat etc.
TCP 8188	MCS Server	Inbound	Integration Services, only required if client access to the server-side API is required
TCP 2001	MCS Server	Inbound	Used to provide telephony status and real-time data.
TCP 8204	MCS Server	Inbound	Used to provide Personal Wallboard real-time data.
UDP 5060*	MiVoice Office 250	Inbound/Outbound	SIP connectivity to the telephone system, used by the Phone Manager Desktop Softphone.

* Only required when the Softphone is running

Port Forwarding for Remote Phone Manager Mobile Connections

Configure the ports shown below to be forwarded to the IP address of the MCS server:

Port	Target	Direction	Description
TCP 8185	MCS Server	Inbound	Used to communicate to the MCS server to provide configuration, user data, chat etc.
TCP 8190	MCS Server	Inbound	Softphone Audio

4.3.2 MiVoice Border Gateway

When a MiVoice Border Gateway (MBG) is being used on the telephone system for remote client and/or teleworker connections, there are certain configurations that must be implemented in order to allow Phone Manager Desktop, Phone Manager Mobile, Phone Manager Softphone and/or 69xx Teleworker connections to pass through it.

This section is not designed as an MBG technical guide but as a indication of areas that need to be configured. For more information on the MBG configuration, please refer to the relevant MBG manuals.

MiVoice Border Gateway Requirements

To use MiVoice Office Application Suite with a MiVoice Border Gateway (MBG) for remote connections, the MBG must be running v10 or higher and be configured in Gateway mode.

- Stage 1 Configure AppSuite for MBG IP details
- Stage 2 Configure Port Forwarding on MBG
- Stage 3 Configure MBG ICP connection for PBX
- Stage 4 Configure API integration for automatic provisioning

(All the above are 'one off' configuration items unless the infrastructure changes)

- Stage 5 Configure each device for remote access (this is required for each device that needs remote access)

Stage 1 - Configure MBG IP details in MiVoice Office Application Suite

For the MCS to be able to support teleworker SIP extensions (either Phone Manager Desktop Softphones or 69xx phones), it needs to know two pieces of information:

1. The internal IP Address of the MBG
2. The external IP Address of the MBG

The internal IP address of the MBG needs to be known for two reasons. The first is so that the MCS can identify which 69xx phones it receives requests from are actually Teleworkers. The second is so that it knows how to communicate with the MBG's API for SIP User deployment.

The external IP address of the MBG needs to be known so that it can be passed to Phone Manager Desktop and 69xx phones when they are registering their SIP connections.

Configure the MCS with the MBG's Internal IP Address:

- 'Configuration -> Site Settings -> Phone Systems -> MiVoice Border Gateway', enter the internal IP address of the MBG

Configure the MCS with the MBG's External IP Address:

- 'Configuration -> Site Settings -> Phone Systems -> [Your PBX Name]', enter the external IP address of the MBG into the NAT IP Address property for each node. If the external registration port for SIP has been changed on the MBG, update the NAT SIP Port as well.

Once the MCS has the information above, it will be able to identify teleworker 69xx phones and will be able to pass them the information required to connect to the MBG.

The External IP Address of the MBG should be entered into the remote section of the Client Locations setting on the MCS server.

Stage 2 - Configure Port Forwarding on MBG

There are various ports that are used by the different client elements of MiVoice Office Application Suite. Please review the port forwarding section for the client that requires remote access.

Phone Manager Desktop Port Forwarding on MBG

Phone Manager Desktop uses the following TCP/UDP ports to communicate back to the MCS:

Port	Target	Direction	Description
TCP 8187 & 8186	MCS Server	Inbound	Used to communicate to the MCS server to provide configuration, user data, chat etc.
TCP 8188	MCS Server	Inbound	Integration Services, only required if client access to the server-side API is required
TCP 2001	MCS Server	Inbound	Used to provide telephony status and real-time data.

For Phone Manager Desktop to be able to connect back to the MCS, these ports must be forwarded through the MBG to the server running the MCS.

Configuring Port Forwarding for Phone Manager Desktop

To forward the required Phone Manager Desktop ports, complete the following configuration on the MBG:

- On the 'MBG Security -> Port Forwarding' page, create the following port forwarding rules with the Destination Host IP Address pointing to the IP address of the MCS server:

Protocol	Source Port(s)	Destination Host IP Address	Destination Port(s)	SNAT	Action
TCP	8187	172.19.22.49	8187	Yes	Remove
TCP	8186	172.19.22.49	8186	Yes	Remove
TCP	8188	172.19.22.49	8188	Yes	Remove
TCP	2001	172.19.22.49	2001	Yes	Remove

⚠ Do not Port Forward port 5060. If the Phone Manager Desktop Softphone is being used, follow the Teleworker guide on SIP User configuration.

For more information on configuring Phone Manager Desktop Softphone as an MBG Teleworker, please refer to the MBG Teleworker section.

Phone Manager Desktop Configuration

To connect a the Phone Manager Desktop remotely, open the 'Settings' page within Phone Manager and configure the following settings:

- General
  1. Default Location = Remote Connection

- Remote Connection
  1. Host Address = External IP Address of the MBG
  2. Override login details = true
  3. Username = MCS Username

4. Password = MCS Password
5. Extension details = User Preferred Method

> The External IP Address of the MBG should be entered into the remote section of the Client Locations setting on the MCS server.

Phone Manager Mobile Port Forwarding on MBG

Phone Manager Mobile uses the following TCP/UDP ports to operate:

Port	Target	Direction	Description
TCP 8185	MCS Server	Inbound	Used to communicate to the MCS server to provide configuration, user data, chat etc.
TCP 8190*	MCS Server	Inbound	Softphone Audio

> * Only required when the Softphone is running. Phone Manager Mobile does note require Teleworker licenses or configuration on the MBG.

Configuring Port Forwarding for Phone Manager Mobile

Complete the following configuration on the MBG:

- On the 'MBG Security -> Port Forwarding' page, create the port forwarding rules for TCP 8185 with the Destination Host IP Address pointing to the IP address of the MCS host.

If using a Softphone then configure the following port forwarding:

- On the 'MBG Security -> Port Forwarding' page, create the port forwarding rules for TCP 8190 with the Destination Host IP Address pointing to the IP address of the MCS host.

> For more information on configuring Remote Softphone connections, see here.

Phone Manager Mobile Configuration

No specific configuration is needed on the Phone Manager Mobile client software. Ensure local and remote addresses for the mobile client to connect to have been configured on the server in the Client Locations section.

A trusted certificate is also recommended for Phone Manager Mobile connections.

69xx Phone Port Forwarding on MBG

69xx phones use the following TCP port to communicate to the MCS server:

Port	Target	Direction	Description
TCP 8202	MCS Server	Inbound	Used to communicate to the MCS server to provide configuration, user data etc.

Configuring MBG Port Forwarding for 69xx Phones

Complete the following configuration on the MBG:

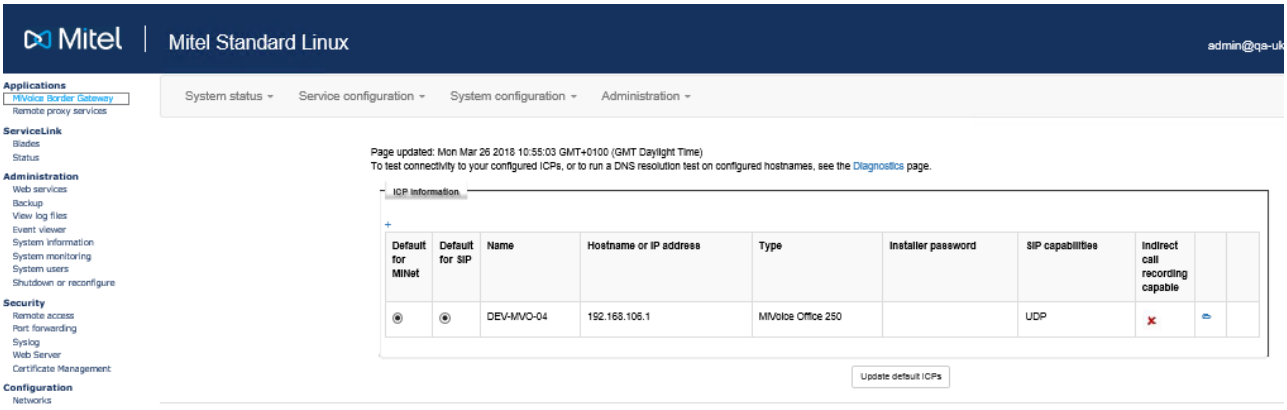
- On the 'MBG Security -> Port Forwarding' page, create the port forwarding rules for TCP 8202 with the Destination Host IP Address pointing to the IP address of the MCS host.

Stage 3 - Configure MBG ICP connection for PBX

To use 69xx or Phone Manager Desktop Softphone remotely through an MBG, a SIP User teleworker needs configuring on the MBG.

Add one or more Nodes as ICPs on the MBG:

- On the 'MiVoice Border Gateway -> Service configuration -> ICPs' page, create an ICP instance for each MiVO 250 node that will be supporting teleworker SIP phones.



Ensure the 'Hostname or IP Address' setting used for the ICP matches the IP Address configured for the Node on the MCS server.

Stage 4 - Configure API integration for automatic provisioning

Automatic Teleworker Provisioning

To simplify the deployment of SIP teleworker phones, the MCS can use an API on the MBG to automatically provision SIP Users for SIP extension. This provides the following benefits:

- The default random credentials created on the MiVO 250 for each SIP extension can be passed to the MBG automatically
- The MCS can use randomly generated set-side credentials for teleworker phones
- There is no need to re-type the authorization credentials into MCS and the MBG, removing a repetitive and time consuming task and reducing the risk of mistakes
- The engineer/administrator deploying the teleworker phone does not need to know the SIP authorization credentials at any stage

For automated provisioning to work end-to-end between the MiVO 250, MiVO App Suite and MBG, the MiVO 250 must be running at least 6.3 SP1 and any CT Gateway must be running at least 5.0.64.

Enabling the Rest API for Automatic Teleworker Deployment

For the MCS to be able to communicate with the MBG and deploy teleworker SIP Users, it requires some connection information as well as a valid API token from the MBG. This section documents how to configure the MBG to accept API requests and the steps involved in setting up the token exchange. To complete this process, access to the MBG

website and the MCS configuration website are required.

> ⚠ Once the Rest API has been enabled on MCS and it has a valid token, the MCS server will take any SIP extension that has been configured with remote authorization credentials and provision it onto the MBG. Any existing credentials configured for SIP Users on the MBG will be overwritten with those configured on the MCS.

Step 1: Create a new web service consumer on the MBG:

- On the MBG 'Administration -> Web services' page, press 'Start' to enable web services then press 'Add a new consumer' and provide the following information:
  - Active = Yes
  - Name = MiVoice Office Application Suite
  - ConsumerID = MiVOAppSuite
  - Permissions:
    - Base/managetoken = Read/Write
    - MBG/v1/icps = Read
    - MBG/v1/devices = Read/Write
- Make a note of the shared secret then save the new consumer.

Step 2: Complete the token request from MCS to MBG:

- On the MCS 'Configuration -> Site Settings -> Phone Systems -> MiVoice Border Gateway' page:
  1. Check the 'Enable Rest API' box.
  2. Press the 'Request Access Token' button to load the 'Request Access Token' form.
  3. Enter the Name, Consumer ID and Shared Secret to match those created on the MBG in step 1
  4. Press the 'Save & Test API Credentials' button to initiate a token request with the MBG server.
- On the MBG 'Administration -> Web services' page:
  1. Locate the 'Temporary tokens' section at the bottom of the page
  2. Press the 'approve' button against the temporary token request.
  3. Highlight and make a copy of the 'Verifier' code (you may need to refresh the page to see the temporary token)
- On the MCS 'Configuration -> Site Settings -> Phone Systems -> MiVoice Border Gateway' page:
  1. Paste or enter the verifier code into the request window
  2. Press the 'Retrieve Final Access Token' button to complete the token request with the MBG server.

If the verifier is correctly entered, the MCS should be able to successfully request an API token from the MBG. This token will allow the MCS to provision SIP Users on the MBG for a period of 12 months. To avoid having to repeat the above process every 12 months, the token's expiry date can be extended on the MBG by pressing the 'Renew' button against the token in the 'Final tokens' section of the web services page.

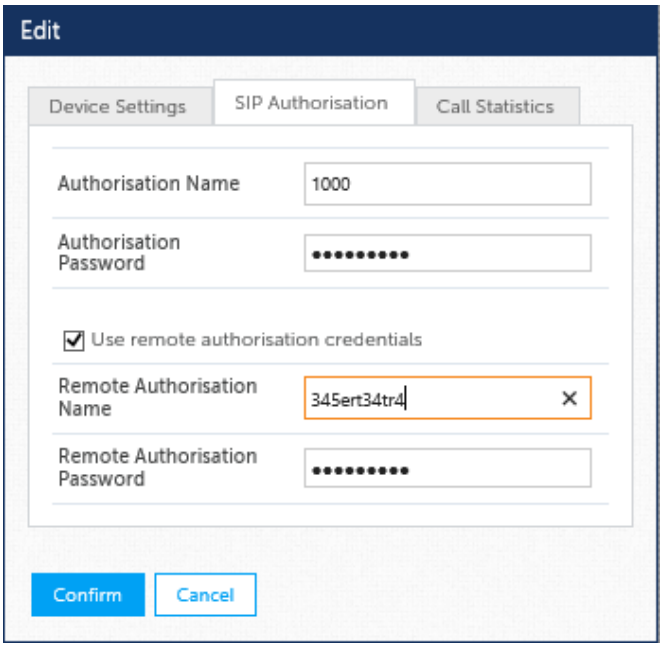
> The internal IP address configured in the Nodes section of the MCS website must match the IP Address configured on the corresponding ICP on the MBG website. If they do not match, the MCS will not be able to find the correct ICP when deploying a teleworker phone.

Stage 5 - Configure each device for remote access

Automatic Teleworker Device Deployment

Once the Rest API has been configured, MCS will automatically provision teleworker SIP extensions on the MBG.

The MCS will provision any SIP extension that has had the 'Use remote authorization credentials' setting configured against it:



Provisioning a SIP Teleworker Extension

To instigate the MCS provisioning of a SIP extension on the MBG, navigate to the 'Configuration -> Site Settings -> Phone Systems -> [Your PBX Name]' page. Edit the required SIP extension and then check the 'Use remote authorization credentials' check box. The MCS will pre-populate the remote authorization name and password with random values. Pressing save will update the credentials stored for the extension and will start the teleworker provisioning process.

Un-Provisioning a SIP Teleworker Extension

To un-provision a SIP extension from the MBG, follow the provisioning process but uncheck the 'Use remote authorization credentials' check box. Once save is clicked it will instigate the MCS removing the SIP User from the MBG.

> This will only work for SIP extensions that were previously provisioned by the MCS. If a SIP User was manually added to the MBG it may need to be manually removed. If a SIP extension has been provisioned on the MBG by the MCS, the MBG's ID for the SIP user will be displayed on the SIP Authorization form of the extension in MCS.

> When using a MiVoice Border Gateway, the internal authorization name must match the extension number of the phone otherwise authentication with the telephone system will fail.

> Any SIP extension provisioned using this method will automatically have a random remote authentication username and password assigned if they do not have them set already.

For information on how to provision SIP Users manually, please refer to the Manual Teleworker Provisioning section.

> Each Teleworker connection on the MBG requires a Teleworker license.

> In addition to configuring SIP Users for teleworker extensions, they must also be configured for any SIP Hot Desk extensions that will be logging into a teleworker phone.

4.3.2.1 MiVoice Border Gateway with Phone Manager Desktop

Phone Manager Desktop Port Forwarding on MBG

Phone Manager Desktop uses the following TCP/UDP ports to communicate back to the MCS:

Port	Target	Direction	Description
TCP 8187 & 8186	MCS Server	Inbound	Used to communicate to the MCS server to provide configuration, user data, chat etc.
TCP 8188	MCS Server	Inbound	Integration Services, only required if client access to the server-side API is required
TCP 2001	MCS Server	Inbound	Used to provide telephony status and real-time data.

For Phone Manager Desktop to be able to connect back to the MCS, these ports must be forwarded through the MBG to the server running the MCS.

Configuring Port Forwarding for Phone Manager Desktop

To forward the required Phone Manager Desktop ports, complete the following configuration on the MBG:

- On the 'MBG Security -> Port Forwarding' page, create the following port forwarding rules with the Destination Host IP Address pointing to the IP address of the MCS server:

Protocol	Source Port(s)	Destination Host IP Address	Destination Port(s)	SNAT	Action
TCP	8187	172.19.22.49	8187	Yes	Remove
TCP	8186	172.19.22.49	8186	Yes	Remove
TCP	8188	172.19.22.49	8188	Yes	Remove
TCP	2001	172.19.22.49	2001	Yes	Remove

⚠ Do not Port Forward port 5060. If the Phone Manager Desktop Softphone is being used, follow the Teleworker guide on SIP User configuration.

For more information on configuring Phone Manager Desktop Softphone as an MBG Teleworker, please refer to the MBG Teleworker section.

Phone Manager Desktop Configuration

To connect a the Phone Manager Desktop remotely, open the 'Settings' page within Phone Manager and configure the following settings:

- General
    1. Default Location = Remote Connection

- Remote Connection
    1. Host Address = External IP Address of the MBG
    2. Override login details = true
    3. Username = MCS Username
    4. Password = MCS Password
    5. Extension details = User Preferred Method

> The External IP Address of the MBG should be entered into the remote section of the Client Locations setting on the MCS server.

4.4 Upgrades, Backups, Restoring & Rollback Procedures

The MCS system has various persistent data stores which should be backed up on a regular basis to minimize the risk of data loss through hardware or software failure.

The following sections outline the places where MCS stores data and the processes that should be followed to:

- Create regular backups of the system.
- Perform pre-upgrade backups.
- Restore to the current or an alternate server using a backup.

The procedures outlined here cover all the data required for the Mitel Communication Service, MiVoice Office Campaign Manager Outbound and MiVoice Office Call Reporter.

For systems using the MiVoice Office Call Recorder features of the solution, only the data associated with calls is backed up using these procedures. Call Archiving must also be implemented to ensure all call recording audio is backed up.

MCS Data Storage Locations

The following elements of the solution need to be backed up, ideally to location which is on different hardware to that which is running the MCS software:

- SQL Databases -> Used to store configuration and Call/Chat history.
- Registry configuration -> Used to store watchdog and database connection settings.
- User files -> User profile images
- 6900 Handset files -> Firmware files, background images etc.

SQL Databases

The MCS solution uses multiple databases to store configuration, call and chat data. The following table describes each of the databases used by the solution and what is contained within it:

Database	Description
CallRecorder	The working database for the MCS solution. Used to store configuration information (User, PBX), chat history and the call data for the current day.
CallRecorderArchive_1	The first archive DB used by the system, stores historical audit and call data.
CallRecorderArchive_N	Additional archive database where is N is a numeric value which increases over time. New archive databases are created if the time or record limit is reached of the current archive database. For more information please refer to the Database Maintenance section.
CampaignManager	The working database for the MiVoice Office Phone Manager Outbound solution. Used to store configuration information (schedules, imports, exports etc.), campaign data and the call/user data for the current day.
CampaignManager_Archive	Used to store historical call and user data.

All of these databases are automatically backed up on a nightly basis to the following location; *C:\DBBackups.*

For further resilience it is advised to keep a copy of these backups on hardware different to that which the MCS is running on.

For more information on Database Backups, please refer to the Database Maintenance section.

Registry

The MCS stores a subset of configuration information in the registry. This information includes:

- Server ID -> The unique ID given to the server if part of an MCS network (*For future use*).
- Roles -> Configuration of which roles the server is implementing.
- Watchdog -> Default configuration for the watchdog.

It is wise to back up the following registry location (including sub keys) after the initial MCS installation:

[HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Mitel\CommunicationService\Roles]

User Files & 6900 Handset Files

MCS stores some data outside the database so as not negatively impact database performance. Currently this is limited to:

- Profile images users upload from Phone Manager Desktop and Phone Manager Mobile clients.
- Firmware files uploaded for 6900 Handsets
- Background images uploaded for 6900 Handsets

To retain these files when restoring an MCS solution, ensure the following folder is backed up:

C:\ProgramData\Mitel\Mitel Communication Service\Net Store

4.4.1 Restore & Rollback Procedures

In some circumstances it may be necessary to restore an MCS installation from backups. Reasons for this include:

- The database has become corrupt
- The hardware MCS is installed has failed
- An upgrade has failed because the system does not have the correct licensing

> ⚠ All of the tasks outlined below require a knowledge of how to use SQL Management Studio. If you are not confident in using this application then please contact Mitel support for guidance.

> To perform any of the database operations outlined here you will need permissions to access the SQL databases. Ensure you connect to the MCS SQL instance using the same user account from which the MCS was first installed.

SQL Management Studio

The processes below refer to the 'SQL Management Studio' application. This is no longer included with MiVoice Office Application Suite installations but can be downloaded and installed manually using the following link:

https://docs.microsoft.com/en-us/sql/ssms/download-sql-server-management-studio-ssms

Restoring MCS Databases

Before restoring the MCS's SQL databases, ensure that all MCS services are stopped. When stopping the MCS services, stop the watchdog service first before stopping any other service. For more information on the services used by MCS, please refer to the 'About Communication Service' section.

Once all the services have been stopped then the database restoring can be started. Using SQL Management Studio, connect to the MCS's SQL instance (usually '127.0.0.1\MCS').

One at a time, click on each for the databases in the SQL instance, right-click and select 'Tasks -> Restore -> Database'.

1. On the form that loads, select the 'Device' radio option and browse to the backup file for this database.
2. Browse to the 'Files' section of the form and double check the database to be overwritten with the backup is the correct one
3. When it has been confirmed that the correct database will be overwritten, browse to the 'options' section for the form and check the box 'Overwrite the existing database (WITH REPLACE)'.
4. Press 'Ok' at the bottom of the screen to start the restore process.
5. Repeat this step for each of the databases in the solution.

> The backups taken by the MCS server are zipped. They will need to be unzipped prior to restoring.

> ⚠ Restoring databases incorrectly can result in data loss. Restoring an SQL database should only be done when backups of all data is in place to restore from. If in doubt, please contact Mitel support for guidance..

> ⚠ Restoring a backup database will result in any new data that have been stored since the backup was taken being lost.

Restoring To A Different Server (if the original server is still accessible)

If the MCS solution needs to be restored to server other than the one it was originally installed then follow these steps:

> ⚠ The next steps involve detaching each of the databases from the original SQL server instance and re-attaching them to the SQL server instance on the new MCS. This can be done using the 'SQL Management Studio' application.

On the existing MCS Server

- On the existing server, make note of the Site ID and Serial number of the software. This can be found on the Server License section of the MCS website.
- Deregister the software, refer to the Server License section for more information
- Make a copy of the contents of the 'C:\ProgramData\Mitel\Mitel Communication Service\Net Store' folder from the old server.

On the new MCS Server

- Install and register MCS on the new hardware (or virtual environment).
- Stop all MCS services on the new server.
- Copy the SQL backups from the old server to the new server
- Follow the restore process above to restore all databases
- Copy the contents of the 'C:\ProgramData\Mitel\Mitel Communication Service\Net Store' from the old server to the new.
- Restart the MCS Watchdog service.

At this point the MCS should be back up and operational as it was on the old hardware.

Restoring To A Different Server (if the original server has failed)

If the server running MCS has failed, follow these stops to re-install the MCS on new hardware:

- Locate the original certificate used to install the MCS (the Site ID / Serial number will be needed)
- Contact Mitel support and explain what has happened. Request that the license be reset so that it can be reused on another server.
- Install the MCS on the new hardware and use the original certificate information to license it

At this point, the MCS should be installed and licensed. If there are backups of the original MCS then the normal restore procedure can be followed from this point. If there are no backups available then the MCS must be reconfigured as a new installation.

Rolling Back An Upgrade

If an upgrade MCS server is not working has required then the software can be rolled back to a previous version (this process assumes that all necessary backups were taken before upgrading). Follow these steps:

- Uninstall the MCS software from the server.
- Re-install the version of MCS software you wish to rollback to.
- Stop all MCS services (stop the watchdog first otherwise it will restart other services).
- Follow the database restore process outline above.
- Start the MCS Watchdog service.

At this point the MCS should be returned to the state it was in before the upgrade.

⚠ When rolling back the software, any data stored since the upgrade will be lost. This includes call recordings.

⚠ Rolling back the software without restoring the database can cause the system to be unstable. This can be because there are new database elements that the rollback version of software does not know about.

4.4.2 Upgrading

The following section outlines the steps that should be taken to successfully upgrade MCS to a later version.

1. Apply license upgrades and Make a note of license details
2. Perform Database Maintenance (including backups)
3. Run the upgrade installation

Applying License Updates

If the version number of MCS is being upgraded then it is important to apply licenses updates before the software is upgraded. This ensures that the license is available and that SWAS is correctly in place before doing any work and will minimize the risk of having to perform a rollback.

A version number upgrade applies to major and minor version of software but not revisions. For example:

4.2 to 4.3 or 4.3 to 5.0 would constitute as a version upgrade.

4.3.1 to 4.3.2 would not constitute as a version upgrade and no license update would be required.

Once any license update has been applied, make a note of the Site ID and Serial number of the solution and the current version that is running. The Site ID and Serial Number can be found on the Server License section of the website. The Site ID and Serial number would be required to re-license the solution if any problems occur with the upgrade. The version number that is running can be found by hovering the mouse of the Mitel icon in the top left hand corner of the MCS website.

Database Maintenance & Backup

Before performing any sort of upgrade it is important that full backups of the solution are taken so that the software can be rolled back to a previous version or restored to another server if required.

Before performing a backup, it is good practice to perform an 'Archive Now' under the Database Maintenance section. This will make sure all call data has been moved to the archive databases.

Once this has been completed, the Backup process can be followed.

Running the Upgrade

When upgrading MCS, it is important to note that the installer will stop all services and all functions of the solution will stop working.

Installation notes:

- There is no need to uninstall a previous version of MCS first, the installation can be run over the top.
- When running the installation, right click on the file and select 'Run as administrator'
- When running the installation, ensure the file is run from the local server and not from a network share.

When running the installation, following the instructions on screen. Once the installation has finished the Watchdog service will automatically be started. The watchdog service will then update the database schema for the solution, this can take some time to complete depending on the size of the MCS databases.

Once the database update process has been completed then the watchdog will restart all the appropriate MCS services and the solution should be operational again.

If for any reason the upgrade fails then the Rollback process can be followed to return the system to it's previous state.

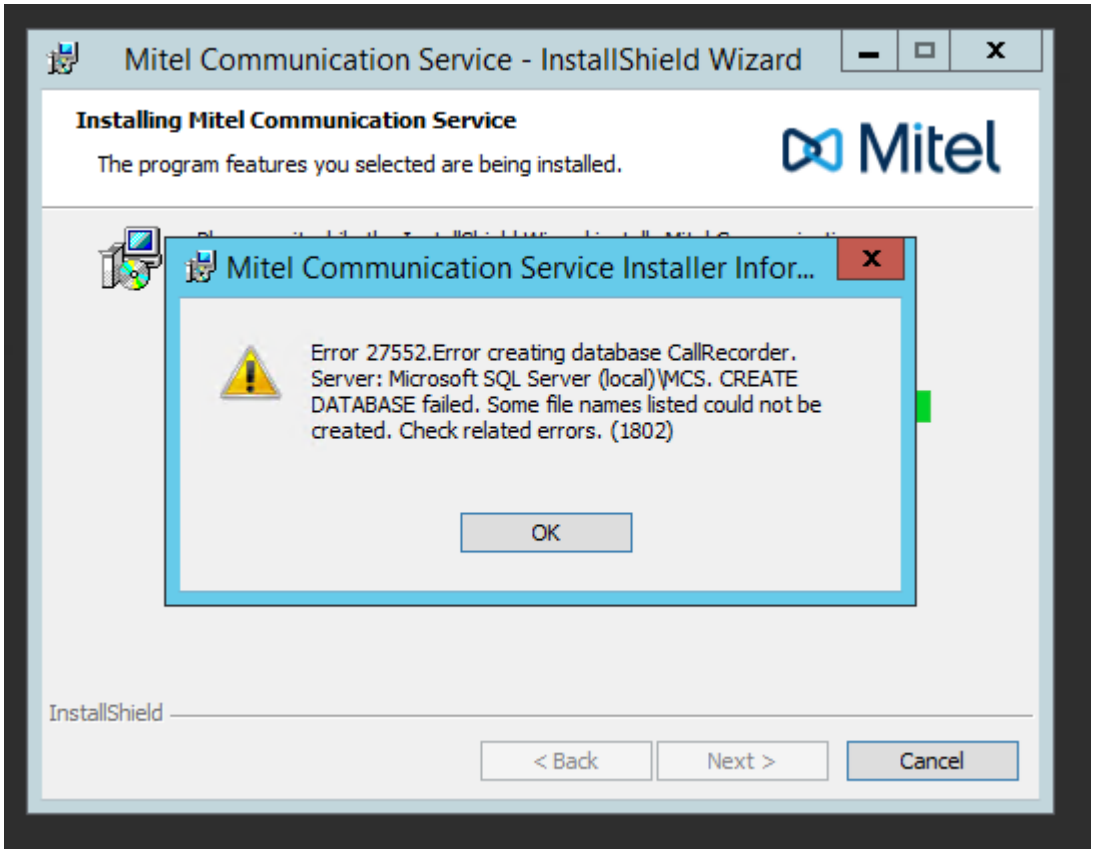
> ⚠ The system will go offline during the upgrade process, no data or call audio will be recorded during this time. It is advised that this process is completed outside of normal operating hours for the system.

Detached Databases

If for some reason the SQL Instance has been removed and re-installed by the MCS setup process then a situation can occur where the setup cannot complete because it cannot create the required databases due to the fact that they already exist on the hard drive.

This occurs because the database was automatically detached when the SQL instance was uninstalled.

The following 'Error 27552' will be seen:



If this occurs then there are two options available to continue installation:

Reattach Database Files

This method will keep any existing data from a previous MCS installation. Exit the installation and start the 'SQL Management Studio' application. Connect to the SQL instance '127.0.0.1\MCS' using windows authentication.

Right click on the 'Databases' menu item and select 'Attach' from the menu. On form that loads, press the 'Add' button and add all CallRecorder & CampaignManager .mdf files found in the following location:

C:\Program Files\Microsoft SQL Server\MSSQL12.MCS\MSSQL\DATA

Re-run the installation process, the install should now be able to see the existing databases and will be able to complete.

> If there is a permission issue when attempting to re-attach databases, ensure you are logged into the

server with the same windows credentials the software was installed with.

Move/Delete Existing Database Files

This method will allow the installation to create new databases when next run. Browse to the location below and move all CallRecorder/CampaignManager .mdf & .idf files to another location. It is recommended the files are moved and not deleted to reduce the risk of data loss.

C:\Program Files\Microsoft SQL Server\MSSQL12.MCS\MSSQL\DATA

Re-run the installation process.

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