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Preface

Documentation for Cisco Validated Designs

Cisco Preferred Architecture (PA) Design Overview guides help customers and sales teams select the appropriate architecture based on an organization's business requirements; understand the products that are used within the architecture; and obtain general design best practices. These guides support sales processes.

Cisco Validated Design (CVD) guides provide detailed steps for deploying the Cisco Preferred Architectures. These guides support planning, design, and implementation of the Preferred Architectures.

Cisco Collaboration Solution Reference Network Design (SRND) guide provides detailed design options for Cisco Collaboration. The SRND should be referenced when design requirements are outside the scope of Cisco Preferred Architectures.

Scope

Organizations want to reap the budgetary and productivity gains that a remote workforce allows, without compromising the benefits of face-to-face interaction. They need a solution that is fast to deploy and easy to manage from a central location, without replicating costly components at their remote sites.

This document details Video Collaboration with Desktop and Multipurpose Room Systems. It covers the following areas of technology and products:

- Video call agent
- Desktop video endpoints
- Multipurpose room systems
- Video Conference Bridge
- Video Conference Management Systems
- Video Conference Scheduling Systems
- Video Recording Systems
- Session Initiation Protocol (SIP) signaling

For more information, see the Design Overview section in this guide.
Proficiency

This guide is for people with technical proficiencies—or equivalent experience in CCNA Collaboration—1 to 3 years in designing, installing, and troubleshooting voice and unified communications applications, devices, and networks.

Comments and Questions

If you would like to comment on a guide or ask questions, please email collab-mm-cvd@external.cisco.com.

Disclaimer

The IP address scheme used in this document is for representational purposes only.
Introduction

Businesses around the world are struggling with escalating travel costs. Growing corporate expense accounts reflect the high price of travel, but travel also takes a toll on the health and well being of employees and their families. Often, the only way to solve a difficult problem is to fly an expert to the location to see the issue and discuss it with the people at the site. When an expert cannot see what is being described, the resolution of a complex problem often takes much longer.

Workers at remote sites often feel isolated from their departments because they do not spend enough face time with their peers and they feel disconnected from the decision-making process. This isolation can lead to lower job performance and less job satisfaction from employees who do not work at the organization’s main location.

Hiring process can be very lengthy and costly, especially when candidates are located in other cities or when multiple people are involved in the interview process. Organizations with video conferencing systems in their offices can reduce expenses and time by bringing candidates into the nearest facility and allowing interviews to be conducted both in person and over video.

Technology Use Case

The face-to-face interaction during video collaboration meetings helps to boost information retention, promotes increased attention span, and reduces participant confusion. The nonverbal cues experienced in a visual meeting are sometimes more important than what is actually spoken.

Use Case: Video Collaboration with Desktop and Multipurpose Room Systems

Organizations want to reap the budgetary and productivity gains that a remote workforce allows—without compromising the benefits of face-to-face interaction. They want to allow the flexibility for an employee to work across remote sites while still maintaining the familiar in-person contact of their peers and managers. They also want to enrich the collaboration experience in their meeting rooms, boardrooms, auditoriums and other shared environments. A solution is needed that is fast to deploy and easy to manage from a central location without replicating costly components at their remote sites.

This design guide enables the following capabilities:

- Single cluster centralized design to simplify deployment and management while saving on infrastructure components.
- URI and numeric dialing to allow video-enabled IP phones to call room systems.
- Provisioning the videoconference bridge for the site.
- Conference resource optimization, management and scheduling.
- Instant, Personal and Scheduled Collaboration Meeting Rooms (CMR) Conferences.
- Captures video and presentations for live streaming and video-on-demand (VoD) viewing.
Design Overview

An end-to-end video-collaboration solution incorporates a full suite of endpoints, infrastructure components, and centralized management tools.

Cisco Preferred Architecture

Cisco Preferred Architectures provide recommended deployment models for specific market segments based on common use cases. They incorporate a subset of products from the Cisco Collaboration portfolio that is best suited for the targeted market segment and defined use cases. These deployment models are prescriptive, out-of-the-box, and built to scale with an organization as its business needs change. This prescriptive approach simplifies the integration of multiple system-level components and enables an organization to select the deployment model that best addresses its business needs.

The Cisco Preferred Architecture (PA) delivers capabilities that enable organizations to realize immediate gains in productivity and add value to their current voice deployments.

Figure 1. High Level Block Diagram
Network Considerations
If you already have an IP network in place for voice, your natural next step is to deploy video over IP. Many organizations run video systems in a mixed environment as they move from older systems to newer ones, based on IP. As older systems migrate off of ISDN, significant quality improvements and cost savings will be seen.

Unified communications running over IP offers lower costs, easier management, remote monitoring, and control from across the network. It also provides higher bandwidth for calls, enabling superior audio and video quality while providing tighter integration into the corporate IT mainstream.

With an IP network, the ongoing costs of running video calls are minimal because you only have to pay for maintenance and technical support. When return on investment (ROI) for the initial deployment is met, any additional costs are essentially free. Because there is no incremental cost involved, employees and managers are more likely to use the technology. As usage goes up, payback times go down, further boosting the ROI.

Solution Details
The Video Conferencing CVD includes the following components:

- Cisco Unified Communications Manager (Unified CM), for call control and SIP endpoint registrations
- Desktop (Cisco 8800 series IP phones, Cisco Jabber and Cisco Desktop Collaboration Experience DX series) and multipurpose (Cisco TelePresence SX 10 and 20 Quick Set) systems for placing and receiving calls
- Cisco TelePresence Server on Virtual Machine, Cisco TelePresence Conductor, Cisco TelePresence Management Suite (TMS) and Cisco TelePresence Management Suite Provisioning Extension (TMSPE) for reservation-less, instant CMR conference (formerly ad-hoc conference), personal CMR conference (formerly rendezvous/static conference) and scheduled CMR conference
- Cisco TelePresence Content server for video and conference recording
- Network Time Protocol (NTP) server for logging consistency
Figure 2. High Level Network Diagram
Cisco Unified Communications Manager

Unified CM serves as the software-based, call-processing component of Cisco Unified Communications. Additional data, voice, and video services, such as unified messaging, rich media conferencing, collaborative contact centers, and interactive multimedia response systems, interact through Cisco Unified Communications Manager open-telephony application program interface (API).

Unified CM is the primary call agent in this CVD. Unified CM supports session initiation protocol (SIP), and the configurations in this document use SIP as the signaling protocol for endpoints.

Cisco Video and TelePresence Endpoints

Cisco video endpoints provide IP video telephony features and functions similar to IP voice telephony, enabling users to make point to point and multipoint video calls. Cisco video endpoints are classified into families based on the features they support, hardware screen size, and environment where the endpoint is deployed.

There are two types of endpoints mentioned in this document:

- **Desktop & Mobile Video endpoints**—Cisco Jabber software-based clients, such as Cisco Jabber for Windows/Mac/Android/IOS and the Cisco 8800 series IP phones and DX650 endpoints are capable of transmitting video by means of the built-in front-facing camera or a USB attached external camera. The Cisco TelePresence System DX70 and 80 endpoints take the personal desktop solution to a next level of experience with support for content sharing, mobile and remote access.

- **Multipurpose Endpoints**—The Cisco TelePresence SX10 and SX20 Quick Sets are flexible integrators that can turn any display into a powerful Cisco TelePresence system. SX20 Quick Sets are designed for HD video and multiparty conferencing, with the flexibility to accommodate various room sizes.

Cisco TelePresence Server on Virtual Machine

The Cisco TelePresence Server is an innovative software solution enabling high-quality standards-based conferencing for mobile, desktop and immersive endpoints. Compatible with a range of hardware platforms, the TelePresence Server is a versatile, highly scalable solution for midmarket and larger enterprise customers. TelePresence Server on Virtual Machine, which runs on the Cisco Unified Computing System (Cisco UCS) or third party specification-based server platforms, offers a virtualized solution.

Instant, personal and scheduled CMR conferences use TelePresence Server on Virtual Machine to ensure that endpoints can communicate in a single conference at the highest possible bit rates and resolutions, without loss of quality.

Cisco TelePresence Conductor

Cisco TelePresence Conductor software simplifies multiparty video communications, orchestrating the different resources needed for each conference as required. It allows the video network to be configured so that conferences can be easily provisioned, initiated, and accessed. TelePresence Conductor simplifies and enhances conference resource management, making conferences easy to join and administer. It uses
knowledge of all available conferencing resources and their capabilities to help ensure dynamic, intelligent conference placement and optimized resource usage. Conductor is a mandatory component when TelePresence Server for Virtual Machine is used for conferencing.

**Cisco TelePresence Management Suite**

Cisco TelePresence Management Suite (Cisco TMS) enables a variety of scheduling features and management functionality within Cisco Unified Communications including Personal and Scheduled Collaboration Meeting Rooms (CMR) Conferences.

CMRs are always-on virtual spaces that have a fixed video address. Users can call in to that address at any time to start a meeting. Creation of a CMR requires deployment of a TelePresence Conductor with a Unified CM, configured with one or more conference bridge pools and Service Preferences. TMS and TMSPE are required to configure Personal and Scheduled CMR Conferences.

**Cisco TelePresence Content Server**

Cisco TelePresence Content Server adds the functionality of recording videos and conferences and then let them be available as video-on-demand (VoD) for later viewing. There are two scenarios that can be achieved by having the TelePresence Content Server in the solution:

- Dial into the TelePresence Content Server and self record
- Record instant CMR conferences

Cisco TelePresence Content Server is trunked to the Unified CM and a dedicated directory number is used for calls towards the TCS.

**Dial Plan**

These design uses, single-cluster, centralized call processing. The endpoints use a seven-digit phone number for dialing, which preserves the capability to receive calls from devices that only support only numeric dialing. The numbers are in the following pattern:

- **800xxxx**

For URI dialing the endpoints are assigned the URI in the following pattern:

- **800xxxx@mmcvd.ciscolabs.com**

The domain used in this document is **mmcvd.ciscolabs.com**.

As your solution grows, you may need to acquire a security certificate from a public certification authority. Choose a domain name in this step with a valid Internet domain suffix (.com, .edu etc) to ensure that your system is ready for this requirement.

For instant CMRs, TelePresence Conductor is added as a media resource on the Unified CM.

For personal CMR conferences, TelePresence Conductor is SIP trunked to Unified CM. Personal CMR conferences can have both numbers and URLs. In this document, every user has a dedicated number and
URI configured on the TelePresence Conductor via the TMS. The CMR numbers and URIs used in the following pattern:

- **851xxxx**
- `<user>.cmr@mmcvd.ciscolabs.com` e.g. `abdey.cmr@mmcvd.ciscolabs.com`

For scheduled CMRs, TelePresence Conductor is SIP trunked to Unified CM. In this document, whenever a user schedules a conference, a number, from a configured range in TMS, is assigned to the scheduled conference for the users to dial in. The scheduled CMR numbers are used in the following pattern:

- **821xxxx**

For recording, TelePresence Content Server is SIP trunked to Unifed CM. For self-video recording the user has to dial a preconfigured DN. For recording an instant CMR conference the user will have to add TCS DN as an additional participant. In this document, this preconfigured DN is in the following pattern:

- **861xxxx**
Deployment Details

This guide is divided into multiple sections: server installations and deploying CMR Premises. Each section has procedures and steps needed to configure the system from the ground up.

For customers who want to deploy both conferencing and recording in their environment, please follow all the procedures in all the process boxes.

For customers who want to deploy only conferencing without the recording capability, please skip the procedures labelled as (recording only).

For customers who want to deploy only recording without the conferencing capability, please follow the procedures labelled as (recording only).

For the installation of Cisco Unified Communications Manager (Unified CM), refer the to the Installing the Cisco Unified CM process in the Installation Guide for Cisco Business Edition 6000.

**Easy Access Configuration Sheet**

<table>
<thead>
<tr>
<th>Element</th>
<th>CVD Configuration</th>
<th>Site-Specific Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domain name</td>
<td>mmcvd.ciscolabs.com</td>
<td></td>
</tr>
<tr>
<td>DNS server</td>
<td>10.106.170.130</td>
<td></td>
</tr>
<tr>
<td>NTP server</td>
<td>10.106.170.130</td>
<td></td>
</tr>
</tbody>
</table>
Installing TelePresence Server

*Easy Access Configuration Sheet*

### Cisco TelePresence Server Installation Requirements

<table>
<thead>
<tr>
<th>Element</th>
<th>CVD Configuration</th>
<th>Site-Specific Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>TelePresence Server Name</td>
<td>vTS3</td>
<td></td>
</tr>
<tr>
<td>TelePresence Server IP Address</td>
<td>10.106.170.169</td>
<td></td>
</tr>
<tr>
<td>TelePresence Server Subnet Mask</td>
<td>255.255.255.128</td>
<td></td>
</tr>
<tr>
<td>TelePresence Server Default Gateway</td>
<td>10.106.170.129</td>
<td></td>
</tr>
</tbody>
</table>

### Cisco TelePresence Server Configuration Requirements

<table>
<thead>
<tr>
<th>Element</th>
<th>CVD Configuration</th>
<th>Site-Specific Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>User for Conductor to log in to TPS</td>
<td>CondAdmin</td>
<td></td>
</tr>
<tr>
<td>User for TMS to log in to TPS</td>
<td>TMSAdmin</td>
<td></td>
</tr>
</tbody>
</table>

**PROCESS**

1. [Configure Cisco Business Edition 6000 Connectivity to LAN](#)
2. [Deploy OVA to Host](#)
3. [Configure the VM Guest](#)
4. [Apply Licenses on Telepresence Server](#)

This process guides you through installing the TelePresence Server Virtual Machine.

**Procedure 1**

**Configure Cisco Business Edition 6000 Connectivity to LAN**

The Cisco Business Edition 6000 is connected to a switch in the data center.

**Step 1.** Using the user account that has ability to make configuration changes, log in to the data center switch.

**Step 2.** If there is a previous configuration on the switch port where BE6000 is connected, bring the port back to its default state by issuing a **no** in front of each command.

**Step 3.** Configure the port as an access port.

```bash
interface GigabitEthernet1/14
description BE6000
```
This procedure represents a typical installation. The Deploy OVF Template wizard dynamically changes to reflect host configuration so your steps may vary.

**Step 1.** Log in to vSphere in order to access the ESXi Host.

**Step 2.** Select **File > Deploy OVF Template**.
Step 3. Click Browse, find the location of the .ova file, click Open, and then click Next.

Step 4. On the OVF Template Details page, click Next.

Step 5. If an End User License Agreement page appears, read the EULA, click Accept then Next.

Step 6. On the Name and Location page, enter vTS3 and the Inventory Location where the virtual machine will reside.

Step 7. On the Deployment Configuration page, select 8 Cores Cisco TelePresence Server and then click Next.

Step 8. If the Host Cluster page comes, select the host or cluster you want to run the deployed virtual machine, and then click Next.

Step 9. If the Resource Pool page comes, select the resource pool with which you want to run the deployed virtual machine, and then click Next.

Step 10. If the Storage page comes, select the datastore onto which the TelePresence Server Virtual Machine Guest will be deployed, and then click Next.
Step 11. On the Disk Format page, ensure that the default disk format of Thick Provision Lazy Zeroed is selected and then click Next.

![Disk Format Page](image)

**Tech Tip**

Because VM performance may degrade during the resizing of a partition, Thin Provision is not recommended.

Step 12. If Network Mapping is listed, configure it and select the network mapping that applies to your infrastructure (the default is VM Network), and then click Next.


The TelePresence Server on Virtual Machine OVA is deployed as a guest on the VM Host.

**Procedure 3**  Configure the VM Guest

Step 1. Right-click the VM guest and click Open Console. The VM guest will take some time to boot.

When the TS: prompt appears, log in and enter the username admin with no password and the TelePresence Server on virtual machine is ready for initial configuration.

Step 2. Configure a static IP address following the format shown in the console and press Enter.

static 10.106.170.169 255.255.255.128 10.106.170.129

You should now be able to access the TelePresence Server via a web browser.

Step 3. Use your browser to navigate to the IP address or host name of the device.
The Cisco TelePresence Server on Virtual Machine application must be managed through the Cisco TelePresence Conductor XC4.0 (or later), or a similar system, or through the TelePresence Server API. For more information about the TelePresence Server API, refer to the latest Cisco TelePresence Server API Reference Guide.

**Step 4.** Click Log in and enter the user name admin with no password. The Login information page appears.

**Tech Tip**
Change the admin account to use a new password as soon as possible. Go to the Login information page, and click Change Password.

The VM guest is configured.

---

**Procedure 4** Apply License on the TelePresence Server

For the scenarios covered in this CVD, the following type of licenses can be installed on the TelePresence Server:

- Virtual Machine Activation key
- Media Encryption Key

**Tech Tip**
For additional licensing details, refer to the Cisco Preferred Architecture for Midmarket Collaboration, Design Overview.

**Step 1.** In your browser, enter the correct IP address and log in as admin.

**Step 2.** Navigate to Configuration > Upgrade.

**Step 3.** On the Feature Management section, enter the following, and then click Add key:

- Virtual machine activation key in the Add key field
- Media encryption key in the Add key field
The required licenses are applied.
## Installing TelePresence Conductor

*Easy Access Configuration Sheet*

### Cisco TelePresence Conductor Installation Requirements

<table>
<thead>
<tr>
<th>Element</th>
<th>CVD Configuration</th>
<th>Site-Specific Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>TelePresence Conductor Name</td>
<td>Cond1</td>
<td></td>
</tr>
<tr>
<td>TelePresence Conductor IP Address</td>
<td>10.106.170.139</td>
<td></td>
</tr>
<tr>
<td>TelePresence Conductor Subnet Mask</td>
<td>255.255.255.128</td>
<td></td>
</tr>
<tr>
<td>TelePresence Conductor Default Gateway</td>
<td>10.106.170.129</td>
<td></td>
</tr>
<tr>
<td>Release Key</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal Multiparty License</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Cisco TelePresence Conductor Configuration Requirements

<table>
<thead>
<tr>
<th>Element</th>
<th>CVD Configuration</th>
<th>Site-Specific Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>User for Unified CM to login into Conductor</td>
<td>CucmAdmin</td>
<td></td>
</tr>
<tr>
<td>User for TMS (CMR) to login into Conductor</td>
<td>CMRAdmin</td>
<td></td>
</tr>
<tr>
<td>User for TMS (scheduled CMR conferencing) to login into Conductor</td>
<td>TMSAdmin</td>
<td></td>
</tr>
<tr>
<td>Conductor hostname</td>
<td>Cond-1</td>
<td></td>
</tr>
<tr>
<td>IP address for Conductor (management)</td>
<td>10.106.170.139</td>
<td></td>
</tr>
<tr>
<td>IP address for TelePresence Conductor (instant CMR conferences)</td>
<td>10.106.170.143</td>
<td></td>
</tr>
<tr>
<td>IP address for TelePresence Conductor (scheduled &amp; personal CMR conferences)</td>
<td>10.106.170.144</td>
<td></td>
</tr>
</tbody>
</table>

### PROCESS

1. [Deploy OVA to Host](#)
2. [Configure the VM Guest](#)
3. [Apply Licenses on the TelePresence Conductor](#)
Procedure 1 Deploy OVA to Host

Step 1. Log in to vSphere to access the ESXi Host.
Step 2. Select File > Deploy OVF Template.
Step 3. Select Source and browse to the location of the .ova file.
Step 4. Click Next.

<table>
<thead>
<tr>
<th>Tech Tip</th>
</tr>
</thead>
<tbody>
<tr>
<td>If the .ova file is already preloaded onto the datastore, you may have to re-enter username and password credentials so that vSphere client can access the web server.</td>
</tr>
</tbody>
</table>

Step 5. On the OVF Template Details page click Next.
Step 6. On the End User License Agreement page read the EULA.
Step 7. If you accept the EULA, click Accept and then Next.
Step 8. On the Name and Location page enter Cond1 as the Name for this TelePresence Conductor VM guest.
Step 9. On the Storage page, select the datastore onto which TelePresence Conductor VM Guest will be deployed, and then click Next.
Step 10. On the Disk Format page, ensure that the default disk format of Thick Provision Lazy Zeroed is selected and then click Next.

<table>
<thead>
<tr>
<th>Tech Tip</th>
</tr>
</thead>
<tbody>
<tr>
<td>Because VM performance may degrade during the resizing of a partition, Thin Provision is not recommended.</td>
</tr>
</tbody>
</table>

Step 11. If Network Mapping is listed, configure it and select the network mapping that applies to your infrastructure (the default is VM network), and then click Next.
Step 13. Select Power on after deployment.
Step 14. Click Finish.

The TelePresence Conductor OVA is deployed as a guest on the VM Host.
### Procedure 2  Configure the VM Guest

**Step 1.** Right-click the VM guest and click **Open Console**. The VM guest will take some time to boot.

**Step 2.** At the login prompt, enter the username **admin**, and the password **TANDBERG**.

**Step 3.** At the Install Wizard prompt, type **y**, and then press **Enter**.

**Step 4.** To enter IP information, follow the Install Wizard. Enter the following in the relevant fields. Configure other entries as required.

- Run Install wizard: **y**
- Do you wish to change the system password: **y**
- Password: [Password]
- IP Protocol: **IPv4**
- IP Address LAN1: **10.106.170.139**
- Subnet Mask LAN1: **255.255.255.128**
- Default Gateway Address: **10.106.170.129**
- Ethernet Speed: **auto**
- Run ssh daemon: **y**

The configuration is applied and TelePresence Conductor logs you out.

**Step 5.** Log into TelePresence Conductor as root and then restart the VM guest by typing **restart**.

**Step 6.** You should now be able to access TelePresence Conductor via a web browser.

The VM guest is configured.
Procedure 3  Apply Licenses on the TelePresence Conductor

For the scenarios covered in this CVD, following are the type of licenses installed on the TelePresence Conductor:

- Release Key
- Personal Multiparty License

For additional licensing details, refer the Cisco Preferred Architecture for Midmarket Collaboration Design Overview.

Step 7.  In your browser, enter the correct IP address and log in as admin.


Step 9.  On the Option Keys page enter the release key provided in the Release key field and then click Set release key.

Step 10. On the Options Keys page, under Multiparty Licensing section, set the Multiparty Licensing for TelePresence Servers as Enabled and click Save.

Step 11. For each option key provided, in the Add option key field, enter the option key value and then click Add option.

The required licenses are applied.
Installing TelePresence Management Suite (TMS) and TelePresence Management Suite Provisioning Extension (TMSPE)

Easy Access Configuration Sheet

| Cisco TMS Installation Requirements  |  |  |
|------------------------------------|  |  |
| **Element**                        | **CVD Configuration** | **Site-Specific Configuration** |
| TMS Name                           | TMS on Win Std 2012   |  |
| TMS/TMSPE IP Address               | 10.106.170.153       |  |
| TMS/TMSPE Subnet Mask              | 255.255.255.128      |  |
| TMS/TMSPE Default Gateway          | 10.106.170.129       |  |
| Release Key                        |  |  |
| IP/ISDN zone name                  | HQ                    |  |
| IP/ISDN zone country/region        | India                 |  |

| Cisco TMS Configuration Requirements |  |  |
|--------------------------------------|  |  |
| **Element**                          | **CVD Configuration** | **Site-Specific Configuration** |
| CMR template name                    | CMR_Template_1        |  |
| DN range for CMRs                   | 8510001-8511000      |  |
| DN range for scheduled conferences  | 8211000-8219999      |  |

**PROCESS**

1. Install Windows Server
2. Install TMS on the Windows Server
3. Install TMSPE on the Windows Server

Installing TMS involves installation of two applications, TMS Core and the TMSPE. Both applications are installed on a Windows Server, which is installed as a VM on the BE6000.

This CVD installs the TMS applications on Windows Server 2012 Standard 64 bit Edition with Microsoft SQL Server 2012 64 bit installed on it. TMS stores all its customer data in its SQL database.

<table>
<thead>
<tr>
<th>Tech Tip</th>
</tr>
</thead>
<tbody>
<tr>
<td>The SQL Server can also be installed off-box for resiliency.</td>
</tr>
</tbody>
</table>
Procedure 1  Install Windows Server

Step 1. Log in to vSphere to access the ESXi Host.


Step 3. On the Configuration page select Custom, and click Next.

Step 4. On the Name and Location page, enter Name as **TMS on Win Std 2012**, select Inventory Location and click Next.

Step 5. On the Storage page select the datastore and click Next.
Step 6. On the Virtual Machine Version page, select **Virtual Machine Version: 8** and click **Next**.

![Virtual Machine Version page](image)

Step 7. On the Guest Operating System page, select **Windows** under Guest Operating System, select **Microsoft Windows Server 2012 (64-bit)** and click **Next**.

![Guest Operating System page](image)

Step 8. On the CPUs page, select Number of Virtual sockets as 1, select Number of cores per virtual socket as 1 and click **Next**.

![CPUs page](image)
Step 9. On the Memory page, select Memory Size as **8 GB** and click **Next**.

![Memory Configuration Diagram]

Step 10. On the Network page, select the How many NICs do you want to connect as 1 and click **Next**.

Step 11. On the SCSI Controller page, select the appropriate settings and click **Next**.

Step 12. On the Select a disk page, select **Create a new virtual disk**, click **Next**.

![Select a Disk Diagram]
Step 13. On the Create a Disk page, select Disk Size as **60 GB**, Disk Provisioning as **Thick Provision Lazy Zeroed** and click **Next**.

![Create a Disk page](image)

**Tech Tip**

Because VM performance may degrade during the resizing of a partition, Thin provision is not recommended.

---

Step 14. On the Advanced Options page, select appropriate options and click **Next**.

Step 15. On the Ready to Complete page, confirm your deployment settings and click **Finish**.

Step 16. Once the VM is created, right click on the newly created VM, select Power and click **Power On**.

Step 17. Install Windows Server 2012 Standard on this newly created VM.

Step 18. To configure the IP information, enter the following in the relevant fields. Configure other entries as required.

- IP address—**10.106.170.153**
- Subnet mask—**255.255.255.128**
- Default gateway—**10.106.170.129**
- DNS server—**10.106.170.130**

Step 19. Complete all critical windows update, close all open applications and disable virus-scanning software and other software that may prevent an installation from completing.
Depending on windows components needing to be added, you may be prompted to reboot the server more than once during the installation. The installer automatically resumes after the server boots.

The Windows server is installed.

**Step 20.** Install SQL Server 2012 on the Windows Server.

### Procedure 2 Install TMS on the Windows Server

For the scenarios covered in this CVD, following are the type of licenses installed on the TMS:

- Release Key

For additional licensing details, refer the [Cisco Preferred Architecture for Midmarket Collaboration](#), **Design Overview**.

**Step 1.** Download the Cisco TMS.zip file from cisco.com.

**Step 2.** Extract the .zip file.

**Step 3.** Run the Cisco TMS executable as administrator.

The installer now checks the hardware and software configuration of the server. A warning or error message may be displayed depending on your server’s configuration. Follow the prompts and install any missing Windows server components.

**Step 4.** Click Yes to continue.
Step 5. On the welcome screen, click Next.
Step 6. On the License Agreement page, click Yes.

Step 7. On the database setting page, select Use Local SQL Server, enter the username, password to allow the installer to create a new database and click Next.
The SQL Server can also be installed off-box for resiliency.

**Step 8.** On **Release** and **Option Keys** page, enter the release key and click **Next**.
Step 9. On the Network and Settings page, enter the following:

- TMS Server IPv4 Address—**10.106.170.153**
- IP Broadcast/Multicast Addresses for system discovery—**10.106.170.255**

![Cisco TelePresence Management Suite](image)

Step 10. Click Next.

Step 11. On the IP/ISDN Zone page, enter the following:

- Name—**HQ**
- Country/Region—**India**

Step 12. Click Next.

Step 13. On the Folder Settings page, specify the TMS installation path and click Next.
**Step 14.** On the **Encryption Key** page, click **Generate** to generate the new encryption key and click **Copy**.

**Step 15.** Click **Next**.

**Step 16.** On the **Start Copying Files** page, verify all the settings.

**Step 17.** Click **Next**.

**Step 18.** On the **HTTPS for the TMS Website** page, click **Create** to generate a self-signed certificate and click **ok**.
Step 19. Click Finish.

The setup wizard is complete and TMS is installed.

Procedure 3  Install TMSPE on the Windows Server

   Step 1. Complete all critical windows update, close all open applications and disable virus-scanning software and other software that may prevent an installation from completing.

   Step 2. Make sure that SQL browser service is running and Java version 8 is installed.

   Step 3. Extract the TMSPE installer from the zip archive to the TMS server.
Step 4. Run the TMSPE installer as administrator.

Step 5. Click Next.

Step 6. On the End-User License Agreement page, select the I agree the terms in the License Agreement checkbox and click Next.
Step 7. On the Custom Setup page, click on the component icons and select the **Will be installed on local hard drive** for all the components and click **Next**.

Step 8. On the TMS Credentials page, enter the TMS Admin credentials and click **Next**.
Step 9. On the SQL Server Credentials page, enter the SQL Server information and click Next.

![SQL Server Credentials](image)

Step 10. On Ready to install page, click Install.

Step 11. After the installation is done, click on the Finish button to complete the setup wizard.

The setup wizard is complete and TMSPE is installed.
Installing Cisco TelePresence Content Server

Easy Access Configuration Sheet

<table>
<thead>
<tr>
<th>Element</th>
<th>CVD Configuration</th>
<th>Site-Specific Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCS Name</td>
<td>TCS2</td>
<td></td>
</tr>
<tr>
<td>TCS IP Address</td>
<td>10.106.170.203</td>
<td></td>
</tr>
<tr>
<td>TCS Subnet Mask</td>
<td>255.255.255.128</td>
<td></td>
</tr>
<tr>
<td>TCS Default Gateway</td>
<td>10.106.170.129</td>
<td></td>
</tr>
<tr>
<td>Virtual Serial No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Release Key</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recording Key</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Live Key</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Cisco TelePresence Conductor Configuration Requirements

<table>
<thead>
<tr>
<th>Element</th>
<th>CVD Configuration</th>
<th>Site-Specific Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recording Alias</td>
<td><a href="mailto:8610002@mmcvd.ciscolabs.com">8610002@mmcvd.ciscolabs.com</a></td>
<td></td>
</tr>
</tbody>
</table>

1. **Deploy OVA to Host (Recording Only)**
2. **Install Windows Server 2012 Standard R2 SP1 (Recording Only)**
3. **Install IIS on the Windows Server (Recording Only)**
4. **Install Window Media Services on the Windows Server (Recording Only)**
5. **Install Windows Server Features on the Windows Server (Recording Only)**
6. **Install TCS on the Windows Server (Recording Only)**

**Procedure 1**

**Step 1.** Log in to vSphere to access the ESXi Host.
**Step 2.** Select **File > Deploy OVF Template**.
**Step 3.** Select **Source** and browse to the location of the .ova file.
Step 4. Click Next.

Step 5. On the OVF Template Details page click Next.

Step 6. On the Name and Location page enter TCS2 as the Name for this TelePresence Content Server VM guest.

Step 7. On the Disk Format page, ensure that the default disk format of Thick Provision Lazy Zeroed is selected and then click Next.

<table>
<thead>
<tr>
<th>Tech Tip</th>
</tr>
</thead>
<tbody>
<tr>
<td>Because VM performance may degrade during the resizing of a partition, Thin Provision is not recommended.</td>
</tr>
</tbody>
</table>

Step 8. On the Ready to Complete page, confirm your deployment settings, select Power on after deployment and click Finish.

The TelePresence Content Server OVA is deployed as a guest on the VM Host.

Procedure 2  
Install Windows Server 2012 Standard R2 (Recording Only)

Step 1. Install Windows Server 2012 Standard R2 in the new VM created in the previous procedure.

Step 2. Create two partitions on the host while installing Windows:
   - C: for program files with a minimum of 50 GB space
   - E: for media files with the remainder of available space

Step 3. Follow the prompts to complete the Windows Server installation.

Step 4. Install VMware Tools.

Step 5. To configure the IP information, enter the following in the relevant fields:
   - IP address – 10.106.170.203
   - Subnet mask – 255.255.255.128
   - Default gateway – 10.106.170.129
   - DNS server – 10.106.170.130

Step 6. Complete all critical windows update, close all open applications and disable virus-scanning software and other software that may prevent an installation from completing.
Depending on windows components needing to be added, you may me prompted to reboot the server more than once during the installation. The installer automatically resumes after the server boots.

Windows is installed.

**Procedure 3**

**Install IIS on the Windows Server (Recording Only)**

1. **Step 1.** Navigate to **Server Manager > Roles > Add Roles**.
2. **Step 2.** On the **Select Server Roles** page, click the **WebServer IIS** check box. A pop-up appears for installing the dependent features. Click **Add Features** to continue, and then click **Next**.
3. **Step 3.** On the **Select Features** page, select **Net framework 3.5 and ASP.Net 4.5** as shown in the following image. Also select **Windows Server backup and Desktop Experience**. A pop-up appears for installing the dependent features. Click **Add Features** to continue, and then click **Next**.
4. **Step 4.** On the **Select Role Services** page, select all the features and sub features on this page under the webserver. Click **Next**.
5. **Step 5.** On the **Confirmation Installation Selection** page, click on ‘specify an alternate source path’. Mount the **Windows Server 2012 R2 standard Edition** image to a drive. On the **Specify alternate source path** page, specify the path `<OS Mounted drive letter>:\sources\sxs`, as shown in the image. Click **OK**.
6. **Step 6.** On the **Confirmation Installation selection** page, click **Install**.
7. **Step 7.** Once the feature installation is complete, click **Close and Restart the system**.

To add the rights to the local administrator account, follow the steps.

8. **Step 8.** Log on to the computer as a user, who has administrative credentials.
9. **Step 9.** Click **Start**. Now click **Run**, type ‘Control admintools’, and then click **OK**.
10. **Step 10.** Double-click **Local Security Policy**. In the **Local Security Settings** dialog box, click **Local Policies**.
11. **Step 11.** Double-click **User Rights Assignment**, and then double-click **Backup Files and Directories**. In the **Backup Files and Directories Properties** dialog box, click **Add User or Group**.
12. **Step 12.** In the **Select User or Groups** dialog box, type the user account that is used for setup, and then click **OK** two times.
**Deployment Details**

### Step 13. Double-click User Rights Assignment, and then double-click Debug Programs. In the Debug Programs dialog box, click Add User or Group.

### Step 14. In the Select User or Groups dialog box, type the user account that is used for setup, and then click OK two times.

### Step 15. Double-click User Rights Assignment, and then double-click Manage auditing and security log. In the Manage auditing and security log dialog box, click Add User or Group.

### Step 16. In the Select User or Groups dialog box, type the user account that is used for setup, and then click OK two times.

IIS is installed on the Windows server.

**Procedure 4  Install SQL Server 2012 Database Server (Recording Only)**

#### Step 1. Under the Installation tab, click New SQL Server stand-alone installation or add features to an existing installation.

#### Step 2. Click I accept the license terms, and then click Next.

#### Step 3. Check the Database Engine Services check box, and then click Next.

#### Step 4. In Instance Name field, select the Named instance radio button and enter the instance name as TCS and then click next.

#### Step 5. In the Service Account field, choose Use the built-in System account (Local system, or Network service).

<table>
<thead>
<tr>
<th>Tech Tip</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQL server collation should be set to Latin1_General_CI_AS, 'Dictionary, case insensitive, 1252 character set'.</td>
</tr>
</tbody>
</table>

#### Step 6. In the Authentication Mode, select Mixed mode, click Enter and confirm the SA (system administrator) password.

SQL server is installed.

**Procedure 5  Install TCS on the Windows Server (Recording Only)**

#### Step 1. Log in to the windows server as a Local Administrator.
You must be logged in as a Local Administrator to install, uninstall, or manage the VM Content Server.

**Step 2.** Copy the S_7_1_TCSBE6K_Bundle.zip file to a folder on your system and extract the files. Launch the command prompt and change the directory to the folder location.

**Step 3.** Run GetTCSVirtualSN.exe as an administrator to generate the virtual serial number (vSN) for your Content Server VM. Copy the virtual serial number.

![GetTCSVirtualSN.exe](image)

**Step 4.** Get TCS licenses from cisco.com.

**Step 5.** In the S_7_1_TCSBE6K_Bundle.zip extracted directory, create a TCSLic.txt file by using the licensing information in this format:

- **Virtual Serial No**
- **Release Key**
- **Recording 1 Key**
- **Live 1 Key**

![TCSLic.txt](image)

**Tech Tip**

In the license text file, make sure that there are no extra spaces before or after the license keys.
Step 6. In the command prompt, run the `PreInstaller.cmd` from the extracted `S_7_1_TCSBE6K_Bundle.zip` directory to configure the Content Server Pre-Installer.

Step 7. Run `S7_1_VM.exe` to install the VM Content Server software on the appliance. Follow the prompts to complete the TCS installation.

Step 8. Run the `PostInstaller.cmd` from the VM Scripts folder in the command prompt to configure the Post-Installer. This will reboot the system.

Cisco TelePresence Content Server is installed.
Configuring Cisco TelePresence Server

1. Create a user for TelePresence Conductor
2. Configure SIP

Procedure 1: Create a User for TelePresence Conductor

For TelePresence Conductor to communicate with the TelePresence Server, it must use credentials of a user account that has administrator rights. We recommend that you create a dedicated administrator-level user for this task.

**Step 1.** On the web interface of the virtual TelePresence Server you want to configure, log in as an administrator.

**Step 2.** Navigate to User > Add New User.

**Step 3.** Enter the following in the relevant fields, configure other entries as required:

- User ID—CondAdmin
- Name—Admin
- Access rights—Administrator

**Step 4.** Click Add user.

**Step 5.** Enable HTTPS by going to Network > Services, enter the following value and click Apply changes:

- HTTPS checked—443

The user is created.
The TelePresence Server needs the ability to dial out to devices, for example, when an auto-dialed participant is associated with a template in TelePresence Conductor. To do this, the TelePresence Server needs to know where to direct signaling requests.

**Step 1.** Go to **Configuration > SIP Settings**.

**Step 2.** Enter the following values into the relevant fields and click **Apply changes**:

- Outbound call configuration—**Call Direct**
- Outbound address—Leave Blank
- Outbound domain—Leave Blank
- Outbound Transport—**TLS**
- Advertise Dual IPv4/IPv6—**Disabled**

SIP is configured.
Configuring Cisco TelePresence Conductor

1. Create a User for Unified CM Access (for Ad-Hoc Conference)
2. Create a User for TMS CMR Access
3. Create a User for TMS-Scheduled Conference Access
4. Change the System Settings
5. Add IP Addresses for Instant, Personal and Scheduled CMR Conference Locations on TelePresence Conductor
6. Create Service Preferences
7. Set up Conference Bridge Pools
8. Add Conference Bridge Pool in Service preference
9. Create a Conference Template for an Instant CMR Conference
10. Create a Conference Template for Personal CMR Conferences
11. Create a Conference Template for Scheduled CMR Conference
12. Create a Conference Alias for an Personal CMR Conferences
13. Create a Conference Alias for an Scheduled CMR Conference
14. Create Locations in TelePresence Conductor
15. Add Locations to Conference Bridge Pools

Procedure 1

Create a User for Unified CM Access (for Ad-Hoc Conference)

For Unified CM to communicate with TelePresence Conductor, you must configure a user with administrator rights on TelePresence Conductor. We recommend that you create a dedicated Read-write user for this task.

Step 1. Log in to the TelePresence Conductor as a user with administrator rights.

Step 2. Go to Users > Administrator accounts.

Step 3. Click New.

Step 4. Enter the following in the relevant fields and click Save:

- Name—CucmAdmin
- Access level—Read-Write
- Password—[Password]
Procedure 2

Create a User for TMS CMR Access

For TMS to communicate with TelePresence Conductor, you must configure a user with administrator rights on TelePresence Conductor. We recommend that you create a dedicated Read-write user for this task.

Step 1. Log in to the TelePresence Conductor as a user with administrator rights.
Step 2. Go to Users > Administrator accounts.
Step 3. Click New.
**Step 4.** Enter the following in the relevant fields and click **Save**:

- **Name**—CMRAdmin
- **Access level**—Read-Write
- **Password**—[Password]
- **Web access**—No
- **State**—Enabled
- **Your current password**—[Password]

![Administrator accounts form]

The user is created.

**Procedure 3**

Create a User for TMS-Scheduled Conference Access

**Step 1.** Log in to the TelePresence Conductor as a user with administrator rights.

**Step 2.** Go to **Users > Administrator** accounts.

**Step 3.** Click **New**.
Step 4. Enter the following in the relevant fields and click Save:

- Name—**TMSAdmin**
- Access level—**Read-Write**
- Password—[Password]
- Web access—No
- API access—Yes
- State—Enabled
- Your current password—[Password]

The user is created.

Procedure 4: Change the System Settings

Step 1. Navigate to **System > DNS**, enter the following values into the relevant fields and click Save:

- System host name—**cond-1**
- Domain name—**mmcvd.ciscolabs.com**
- Address 1—**10.106.170.130**

<table>
<thead>
<tr>
<th>Tech Tip</th>
</tr>
</thead>
<tbody>
<tr>
<td>The FQDN of TelePresence Conductor is <strong>cond-1.mmcvd.ciscolabs.com</strong></td>
</tr>
</tbody>
</table>

**Step 2.** Navigate to System > Time and set NTP server 1 to **10.106.170.130**.
## Deployment Details

### NTP servers

<table>
<thead>
<tr>
<th>NTP server</th>
<th>Address</th>
<th>Authentication</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>NTP server 1</td>
<td>10.106.170.130</td>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td>NTP server 2</td>
<td></td>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td>NTP server 3</td>
<td></td>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td>NTP server 4</td>
<td></td>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td>NTP server 5</td>
<td></td>
<td>Disabled</td>
<td></td>
</tr>
</tbody>
</table>

### Time zone

<table>
<thead>
<tr>
<th>Time zone</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Asia/Kolkata</td>
<td></td>
</tr>
</tbody>
</table>
**Deployment Details**

### Step 3.
Ensure that under the Status section, the State is **Synchronized**. Synchronization can take a couple of minutes.

![Status (last updated: 21:55:25 IST)](image)

System settings are set.

### Procedure 5
Add IP Addresses for Instant, Personal and Scheduled CMR Conference Locations on TelePresence Conductor

#### Step 1.
In **System > Network interfaces > IP**, in the Additional addresses for LAN 1 section click **New**.

#### Step 2.
Add the IP addresses used for instant CMRs (**10.106.170.143**) and click **Add Address**.

<table>
<thead>
<tr>
<th>Tech Tip</th>
</tr>
</thead>
<tbody>
<tr>
<td>These IP addresses must be on the same subnet as the primary TelePresence Conductor IP interface, and they must be reserved for use by this TelePresence Conductor alone.</td>
</tr>
</tbody>
</table>

#### Step 3.
Add the IP addresses used for personal and scheduled CMR conferences (**10.106.170.144**) and click **Add address**.
Step 4. In the Additional addresses for LAN 1 list, verify that the IP addresses are added correctly.

Step 5. Navigate to Maintenance > Restart options, and click Restart. Your network interface changes are applied.

Step 6. Wait for TelePresence Conductor to restart and then verify that the new TelePresence Conductor IP address is active on the network by pinging the IP address from another device.

Procedure 6  
Create Service Preferences

Step 1. Go to Conference configuration > Service Preferences.

Step 2. Click New.
Step 3. Enter the following values into the relevant fields:

- Service Preference name—HQ Service Preference 1
- Conference bridge type—TelePresence Server

Step 4. Click Add Service Preference.

The service preference is created.

Procedure 7 Set up Conference Bridge Pools

To set up a conference bridge pool, you need to create a conference bridge pool and then add the TelePresence Server to it.

Step 1. Navigate to Conference configuration > Conference bridge pools and click New.

Step 2. Enter the following values into the relevant fields, leaving the other fields at their default values:

- Pool name—HQ-Pool1
- Conference bridge type—TelePresence Server

Step 3. Click Create pool.

Step 4. On the Conference bridge pools page, click Create Conference Bridge.
Step 5. Enter the following values into the relevant fields, leaving the other fields at their default values:

- Name—HQ vTS 1
- State—Enabled
- IP address of FQDN—10.106.170.169
- Protocol—HTTPS
- Port—443
- Conference bridge username—CondAdmin
- Conference bridge password—[password for the CondAdmin]
- SIP port—5061

Step 6. Click Create Conference Bridge.

Step 7. Ensure that under the Conference bridges in this pool section, in the Status column, the conference bridge is listed as Active.
The conference bridge pool is created.

**Procedure 8** Add Conference Bridge Pool in Service Preference

**Step 1.** Go to Conference configuration > Service Preferences.

**Step 2.** Click HQ Service Preference 1.

**Step 3.** Select HQ-Pool1 under the Pools section.

**Step 4.** Click Add selected pool.

**Step 5.** Check the radio button stating Pools to use for scheduling and Click Save.

The conference bridge pool is added in the service preference.
Procedure 9  Create a Conference Template for an Instant CMR Conference

Step 1. Navigate to Conference configuration > Conference templates and click New.

Step 2. Enter the following into the relevant fields, leaving other fields at their default values:
- Name—Ad-Hoc Template 1
- Conference type—Meeting
- Service preference—HQ Service Preference 1
- Participant quality—HD
- Optimize resources—Yes
- Content quality—1280 x 720p 5fps

Step 3. Configure other entries as required.

Step 4. Click Create conference template.

The conference template is created.
**Procedure 10**  Create a Conference Template for Personal CMR Conferences

**Step 1.** Navigate to **Conference configuration > Conference templates** and click **New**.

**Step 2.** Enter the following into the relevant fields, leaving other fields at their default values:

- **Name**—**MeetMe Template 1**
- **Conference type**—**Meeting**
- **Service preference**—**HQ Service Preference 1**
- **Participant quality**—**Full HD**
- **Optimize resources**—**Yes**
- **Content quality**—**1280 x 720p 5fps**

![Modify conference template](image)

**Step 3.** Configure other entries as required.

**Step 4.** Click **Create conference template**.

The conference template is created.
Procedure 11  Create a Conference Template for Scheduled CMR Conference

**Step 1.** Navigate to Conference configuration > Conference templates and click **New**.

**Step 2.** Enter the following into the relevant fields, leaving other fields at their default values:

- **Name**—Scheduled Conferences Template 1
- **Conference type**—Meeting
- **Service preference**—HQ Service Preference 1
- **Participant quality**—HD
- **Optimize resources**—Yes
- **Content quality**—1280 x 720p 5fps
- **Scheduled Conference**—Yes

![Modify conference template](image)

**Step 3.** Configure other entries as required.

**Step 4.** Click Create conference template.
The conference template is created.

**Procedure 12** Create a Conference Alias for an Personal CMR Conferences

**Step 1.** Navigate to Conference configuration > Conference aliases and click **New**.

**Step 2.** Enter the following into the relevant fields, leaving other fields at their default values:

- **Name**—*MeetMe for 800xxxx*
- **Incoming Alias (must use regex)**—{851[^@]*}.*
- **Conference name**—*MeetMe_Bridge_\1*
- **Priority**—*0*
- **Conference template**—*MeetMe Template 1*
- **Role type**—*Participant*
- **Allow conference to be created**—*Yes*

![Modify conference alias](image)

**Step 3.** Click **Create conference alias**.

The conference alias is created.
Procedure 13  Create a Conference Alias for an Scheduled CMR Conference

**Step 1.** Navigate to Conference configuration > Conference aliases and click New.

**Step 2.** Enter the following into the relevant fields, leaving other fields at their default values:

- Name—Scheduled Conference Alias (DN)
- Incoming Alias (must use regex)—(821[^@]*).*
- Conference name—Conference_\1
- Priority—3
- Conference template—Scheduled Conferences Template1
- Role type—Participant
- Allow conference to be created—Yes

**Step 3.** Click Create conference alias.

The conference alias is created.
Procedure 14  Create Locations in Conductor

**Step 1.** Navigate to Conference configuration > Locations and click **New**.

**Step 2.** Enter the following into the relevant fields, leaving other fields at their default values:

- Location name—**HQ Location**
- Conference type—**Both**
- Ad hoc IP address (local)—**10.106.170.143**
- Template—**Ad-Hoc Template 1**
- Rendezvous IP address (local)—**10.106.170.144**
- Trunk IP address—**10.106.170.135**
- Trunk port—**5061**
- Trunk transport protocol—**TLS**
### Step 3.

Click Add location.

The location is created.
Procedure 15  Add Locations to Conference Bridge Pools

**Step 1.** Log into TelePresence Conductor as a user with administrator rights.

**Step 2.** Navigate to Conference configuration > Conference bridge pools, and click HQ-Pool1.

**Step 3.** Select the Location as HQ Location.

**Step 4.** Click on Save.

The location is added to the conference bridge pool.

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**Tech Tip**

Configuring Cisco TelePresence Management Suite (TMS)

**PROCESS**

1. Enable TMSPE on TMS  
2. Setup Users on TMS  
3. Add TelePresence Conductor for CMR on TMS  
4. Setup CMRs on TMS  
5. Add TelePresence Conductor for Scheduling on TMS  
6. Create Conference Alias on TMS  
7. Configure Conference Settings on TMS

**Procedure 1**  
Enable TMSPE on TMS

**Step 1.** Log into TMS as a user with administrator rights.

**Step 2.** Navigate to Administrative Tools > Configuration > General Settings and set the Provisioning Mode field as Provisioning Extension and Click Save.

![General Settings]

TMSPE is enabled.
Procedure 2  Setup Users on TMS

Step 1. Navigate to Systems > Provisioning > Users.

Step 2. Click on Root and then click on Add Group.

Step 3. Enter Video_Users (Local) as Display Name when the Add Group dialog comes up and click Save.

Step 4. Click on Add User.
Step 5. Enter the following into the relevant fields, leaving other fields at their default values and click Save.

- Display Name—Abhijit.Local
- Username—abdey
- Password—[Password]
- Email—abdey@mmcvd.ciscolabs.com
- Last Name—Local

The user is created.
Procedure 3  Add TelePresence Conductor for CMR on TMS

**Step 1.** Navigate to Systems > Provisioning > Users.

**Step 2.** Under Collaboration Meeting Room Templates, click TelePresence Conductor Settings.

**Step 3.** Click Add New and enter the following into the relevant fields, leaving other fields at their default values and click Save.

- Hostname/IP—10.106.170.139
- Name—cond-1
- Port—443
- Username—CMRAadmin
- Password—[Password]
- Domain—mmcvd.ciscolabs.com

The TelePresence Conductor is added.
**Procedure 4**  
Setup CMRs on TMS

**Step 1.** Navigate to Systems > Provisioning > Users and click on Video_Users (Local).

![Image of Users interface]

**Step 2.** Under Collaboration Meeting Room Templates, click New Template.

**Step 3.** Enter the following into the relevant fields, leaving the other fields at their default values and click **Save**.

- Template Name—**CMR_Template_1**
- TelePresence Conductor—**cond-1 10.106.170.139 : 443**
- Service Preference—**HQ Service Preference 1**
- Multiparty License Mode—**Personal Multiparty**
- SIP Alias Pattern—**{username}.cmr@mmcvd.ciscolabs.com**
- Numeric Alias Pattern—**Selected**
- Type—**Generate a Number**
- Number Ranges—**8510001-8511000**
- Maximum Conference Quality—**HD (720p 30 fps video, stereo audio)**
- Content Sharing—**Selected**
- Maximum Content Quality—**1280 x 720p 5fps**
- Optimize Resources—**Selected**
Step 4. Select the radio button for CMR_Template_1 under the Collaboration Meeting Room Templates and click Yes.

The CMR template is applied to all the users in Video_Users (Local) group.

Procedure 5 Add TelePresence Conductor for Scheduling on TMS

Step 1. Navigate to Systems > Navigator.

Step 2. Click on Discovered Systems on the left folder view and then click on Add Systems on the right Discovered Systems section.
Step 3. Enter the following into the relevant fields:

- Specify Systems by IP Addresses or DNS Names—10.106.170.139
- ISDN Zones—HQ
- IP Zones—HQ
- Time Zones—(UTC+05:30) Chennai, Kolkata, Mumbai, New Delhi
- Usernames—TMSAdmin
- Passwords—[Password]
- Persistent Template—No Template
- Usage Type—Other

Step 4. Click Next.

Step 5. Click Finish Adding Systems.

The telepresence conductor is added in TMS.
**Procedure 6**  
Create Conference Alias on TMS

**Step 1.** Navigate to **Systems > Navigator**.

**Step 2.** Click on **cond-1** under Discovered Systems and then click on **TelePresence Conductor** tab.

**Step 3.** Click **New**.

**Step 4.** Enter the following into the relevant fields and click **Save**.

- **Name**—**Scheduled Conference**
- **Alias Pattern**—**821%**
- **Priority**—**1**
- **Prefer for Multiscreen**—**No**
- **Allow Booking**—**Yes**

![Alias Configuration Table]

The conference alias is created.
Step 1. Navigate to **Systems > Navigator**.

Step 2. Click on **cond-1** under Discovered Systems and then click on **Settings > Extended Settings** tab.

Step 3. Enter the following into the relevant fields:

   - Numeric ID Base—**1000**
   - Numeric ID Step—**1**

Step 4. Click **Save**.

Step 5. Navigate to **Administrative Tools > Configuration > Conference Settings**.

Step 6. Enter **Preferred MCU Type in Routing** as **Cisco TelePresence Conductor**. And click **Save**.

The conference settings are configured.
Configuring Cisco Unified Communications Manager (Unified CM)

Easy Access Configuration Sheet

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**PROCESS**

1. Configure Region for Video
2. Configure Device Pool for Video and Add the Video Region
3. Configure Unified CM Trunk to TelePresence Conductor for Personal and Scheduled CMR Conferences
4. Configure Unified CM Trunk to TelePresence Conductor for Instant CMR Conferences
5. Configure SIP Trunk Security Profile for TCS (Recording Only)
6. Configure SIP Profile for TCS (Recording Only)
7. Configure Unified CM Directory Number Route Pattern for Personal and Scheduled CMR Conferences
8. Configure Unified CM Directory Number Route Pattern for TCS (Recording Only)
9. Configure Unified CM SIP Route Pattern for Personal CMR Conferences
10. Configure TelePresence Conductor as Conference Bridge
11. Configure MRG and MRGL for Video and Add TelePresence Conductor to this MRG
12. Add this MRGL to the Device Profile for Video
Procedure 1  Configure Region for Video

Step 1. Navigate to System > Region Information > Region, and click Add New in order to create a new Region.

Step 2. In Name, enter Video_Reg, and then click Save.


Step 4. Under Maximum Session Bit Rate for Video Calls, enter 32256 kbps and click Save.

This CVD is using 32256 as the configured video bandwidth for this region.
The region is configured.

Procedure 2  Configure Device Pool for Video and Add the Video Region

Step 1. Navigate to System > Device Pool, and then click Add New in order to add a new device pool.

Step 2. Enter the following into the relevant fields, leaving the other fields at their default values and click Save.

- Device Pool Name—Video_DP
- Cisco Unified Communications Manager Group—Sub1_Pub1
- Date/Time Group—CMLocal
- Region—Video_Reg
The device pool is configured.
A trunk is a communications channel on Unified CM that enables it to connect to other servers. Using one or more trunks, Unified CM can receive or place voice, video, and encrypted calls, exchange real-time event information, and communicate in other ways with call control servers and other external servers.

**Step 1.** Navigate to **Device > Trunk**, and then click **Add New** in order to create a new SIP trunk.

**Step 2.** Enter the following into the relevant fields:

- **Trunk Type**—SIP Trunk
- **Device Protocol**—SIP
- **Trunk Service Type**—None(Default)

**Step 3.** Click **Next**.

**Step 4.** Enter the following into the relevant fields, leaving other fields at their default values:

- **Device Name**—**TR1-Cond1-static-10.106.170.143**
- **Device Pool**—**Video_DP**
- **Destination Address**—**10.106.170.143**
- **Destination Port**—**5060**
- **SIP Trunk Security Profile**—Non Secure SIP Trunk Profile
- **SIP Profile**—Standard SIP Profile for TelePresence Conferencing
- **Normalization Script**—cisco-telepresence-conductor-interop
Step 5. Click Save, and then click Reset.

Step 6. Now click Reset again on the pop-up window that opens up and click close.

The Unified CM trunk is configured to the TelePresence Conductor for personal and scheduled CMR conferences.

Procedure 4: Configure Unified CM Trunk to TelePresence Conductor for Instant CMR Conferences

Step 1. Navigate to Device > Trunk, and then click Add New in order to create a new SIP trunk.

Step 2. Enter the following into the relevant fields:
  - Trunk Type—SIP Trunk
  - Device Protocol—SIP
  - Trunk Service Type—None(Default)

Step 3. Click Next.
Step 4. Enter the following into the relevant fields, leaving other fields at their default values:

- **Device Name**– **TR1-Cond1-adhoc-10.106.170.144**
- **Device Pool**– **Video_DP**
- **Destination Address**– **10.106.170.144**
- **Destination Port**– **5060**
- **SIP Trunk Security Profile**– **Non Secure SIP Trunk Profile**
- **SIP Profile**– **Standard SIP Profile for TelePresence Conferencing**
- **Normalization Script**– **cisco-telepresence-conductor-interop**

Step 5. Click **Save**, and then click **Reset**.

Step 6. Now click **Reset** again on the pop-up window that opens up and then click **Close**.

The trunk is configured.
**Procedure 5**  Configure SIP Trunk Security Profile for TCS (Recording Only)

**Step 1.** Navigate to System > Security > SIP Trunk Security Profile, and then click Add New.

**Step 2.** Enter the following into the relevant fields, leaving other fields at their default values and click Save.

- Name - **SIP trunk security profile for Cisco TCS**
- Accept out-of-dialog refer - checked
- Accept unsolicited notification - checked
- Accept replaces header - checked

The SIP trunk security profile is configured.
Procedure 6  Configure SIP Profile for TCS (Recording Only)

**Step 1.** Navigate to **Device > Device Settings > SIP Profile**, and then click **Find**.

**Step 2.** Click on the **copy** icon on the right side of **Standard SIP Profile**.

**Step 3.** Enter the following into the relevant fields, leaving other fields at their default values and click **Save**.

- Name - **SIP profile for Cisco TCS**
- Early Offer support for voice and video calls – **Best Effort (no MTP inserted)**
- Send send-receive SDP in mid-call INVITE – checked
- Allow Presentation Sharing using BFCP – checked

The sip profile is configured.

Procedure 7  Configure Unified CM Trunk to Cisco TCS (for Recording only)

**Step 1.** Navigate to **Device > Trunk**, and then click **Add New** in order to create a new SIP trunk.

**Step 2.** Enter the following into the relevant fields:

- Trunk Type—**SIP Trunk**
- Device Protocol—**SIP**
- Trunk Service Type—**None**(Default)
Step 3. Click Next.

Step 4. Enter the following into the relevant fields, leaving other fields at their default values:

- **Device Name**—**TR1-TCS2**
- **Device Pool**—**Video_DP**
- **Destination Address**—**10.106.170.203**
- **Destination Port**—**5060**
- **SIP Trunk Security Profile**—**Non Secure SIP Trunk Profile**
- **SIP Profile**—**SIP Profile for Cisco TCS**

Step 5. Click Save.
Step 6. Click Reset.

Step 7. Click Reset on the pop-up window that opens up.

Step 8. Click Close.

The trunk is configured.

Procedure 8 Configure Unified CM Directory Number Route Pattern for Personal and Scheduled CMR Conferences

This procedure describes configuring the Unified CM route pattern to match the SIP trunk to TelePresence Conductor for personal and scheduled CMR conferences.

Step 1. Navigate to Call Routing > Route/Hunt > Route Pattern, and then click Add New in order to create a new route pattern.

Step 2. Enter the following into the relevant fields, leaving other fields at their default values and click Save.

- Route Pattern—8[2-5]XXXXX
- Gateway/Route List—TR1-Cond1-static-10.106.170.143

The route pattern is configured.
Procedure 9  Configure Unified CM Directory Number Route Pattern for TCS (Recording Only)

Step 1. Navigate to Call Routing > Route/Hunt > Route Pattern, and then click Add New to create a new route pattern.

Step 2. Enter the following in the relevant fields, leaving other fields at their default values and click Save.

- Route Pattern—861XXXX
- Gateway/Route List—TR1-TCS2

The route pattern is configured.

Procedure 10  Configure Unified CM SIP Route Pattern for Personal CMR Conferences

The regular Unified CM SIP route pattern routing cannot be used for routing calls to the personal CMR conferences created in this document because Unified CM can route URIs only based on domains (e.g. mmcvd.ciscolabs.com) and not the URIs created for the personal CMR conferences (e.g. cmr@mmcvd.ciscolabs.com).

To route the calls to the personal CMR conference URIs we have to use the ILS (Intercluster Lookup Service) service in the Unified CM and manually import the personal CMR conference URIs into the Unified CM.

The following steps will configure the Unified CM to enable ILS and import the personal CMR conference URLs.
Step 1. Click the Navigation tab on the top right corner of the Unified CM Administration page, select Cisco Unified Serviceability from the dropdown list and click Go.

Step 2. Navigate to Tools > Service Activation.

Step 3. Select CUCM-Pub--CUCM Voice/Video from the drop-down list under the Server field, and click Go.

Step 4. Select the Cisco Bulk Provisioning Service under the Database and Admin Services pane, and click Save.

Step 5. Go back to the Cisco Unified CM Administration page by clicking on the Navigation tab on top right corner of the Cisco Unified Serviceability page. Select the Cisco Unified CM Administration, and then click Go.
ILS has to be enabled and working for the further steps to work. ILS can work either in “Hub Cluster” or “Spoke Cluster” mode. In this CVD we have a single cluster deployment so we will configure this publisher in “Hub Cluster” mode.

**Step 6.** Navigate to Advanced Features > ILS Configuration, select Hub Cluster as the Role under the Intercluster Lookup Service Configuration tab, and then click Save.

![Intercluster Lookup Service Configuration](image)

**Step 7.** Navigate to Call Routing > Global Dial Plan Replication > Imported Global Dial Plan Catalogue, and click Add New.

**Step 8.** Enter the following into the relevant fields:

- Name—Conductor_CMR_DP_Catalog
- Route String—cmr.mmcvd.ciscolabs.com

![Imported Global Dial Plan Catalog Information](image)

**Tech Tip**

The Route String is just a name, it does not represent that the user will have to dial *cmr.mmcvd.ciscolabs.com.

**Step 9.** Click Save.

**Step 10.** Create a cvd_cmr.csv file in the following format for all the personal CMR conference URIs that has to be imported into the ILS of the Unified CM.
Step 11. Navigate to Bulk Administration > Upload/Download Files and click Add New.

Step 12. Enter the following into the relevant fields:
- File—cvd_cmr.csv
- Select The Target—Imported Directory URIs and Patterns
- Select Transaction Type—Insert Imported Directory URIs and Patterns
- Overwrite File if it exists—Selected

Step 13. Click Save.


Step 15. Enter the following into the relevant fields:
- File Name—cvd_cmr.csv
- Imported Global Dial Plan Catalog—Conductor_CM_ DP_Catalog
- Run Immediately—Selected
**Procedure 11** Configure TelePresence Conductor as Conference Bridge

This procedure describes configuring TelePresence Conductor as a conference bridge in Unified CM for instant CMR conferences.

1. Navigate to Media Resources > Conference Bridge, and then click Add New in order to create a new conference bridge.

2. Enter the following into the relevant fields, leaving other fields at their default values:
   - IPv4 Pattern: cmr.mmcvd.ciscolabs.com
   - SIP Trunk/Route List: TR1-Cond1-static-10.106.170.143
- Conference Bridge Type—Cisco TelePresence Conductor
- Conference Bridge Name—MR-cond-1
- SIP Trunk—TR1-cond1-adhoc-10.106.170.144
- Allow Conference Bridge Control of the Call Security Icon—UnSelected
- Override SIP Trunk Destination as HTTP Address—UnSelected
- Username—CucmAdmin
- Password—<password for CucmAdmin created in Conductor>
- HTTP Port—80

Step 3. Click Save.
Step 4. Make sure that the Conference Bridge shows as registered to the Unified CM.
Step 5. Navigate to Media Resources > Media Resource Group, and then click Add New.

Step 6. In Name, enter MRG-1-cond-1.

Step 7. In Available Media Resources, select MR-cond-1 (CFB) and click the down arrow to move it down to the Selected Media Resources.

Step 8. Click Save.

Step 9. Navigate to Media Resources > Media Resource Group List, and then click Add New.

Step 10. In Name, enter MRGL-1-cond-1
Step 11. In Available Media Resources Groups, select MRG-1-cond-1 and click the down arrow to move it down to the Selected Media Resources Groups and click Save.

The telepresence conductor is configured as a media resource.

Procedure 12. Add this MRGL to the Device Profile for Video

Step 1. Navigate to System > Device Pool, and then click Find in order to list all configured Device Pools.

Step 2. Select Video_DP.

Step 3. In Media Resource Group List, select MRG-1-cond-1 and click Save.

The MRGL is added.

Configuring Cisco TelePresence Content Server

1. Configure Site Settings (Recording Only)
2. Configure Recording Alias (Recording Only)
Procedure 1  Configure Site Settings (Recording Only)

Step 1. Navigate to Configuration > Site settings.

Step 2. In SIP settings, enter the following in the relevant fields and click Save.

- SIP enabled – checked
- SIP display name – TCS2
- Registration – Trunk
- Server Address – 10.106.170.135
- Transport – TCP

![SIP settings configuration](image)

The site settings are configured.

Procedure 2  Configure Recording Alias (Recording Only)

Step 1. Navigate to Recording setup > Recording Aliases and click Add Recording Alias.

Step 2. Enter the following in the relevant fields and leave the other fields at their default values and click Save.

- Name – Recording Alias 1 (Admin)
- SIP address (URI) – 8610002@mmcvd.ciscolabs.com
The recording alias is configured.
Configuring Endpoints

1. Configure Unified CM for Endpoints
2. Configure SX20

Procedure 1: Configure Unified CM for Endpoints

Step 1. Navigate to Device > Phone, and then click Add New.

Step 2. In Phone Type, select Cisco TelePresence EX60, and then click Next:

Step 3. Click Next.

Step 4. Enter the following into the relevant field, leaving the other fields at their default values:
   - MAC Address—00506005246F
   - Device Pool—Video_DP
   - Phone Button Template—Standard Cisco TelePresence EX60
   - Common Phone Profile—Standard Common Phone Profile
   - Device Security Profile—Cisco TelePresence EX60—Standard
   - SIP Profile—Standard SIP Profile for TelePresence Endpoint

Step 5. Click Save.

Step 6. Click Line [1]—Add a new DN.
Step 7. In Directory Number, enter **8001001**, and then click **Save**.

Step 8. Under Directory URIs, enter **8001001@mmcvd.ciscolabs.com** as the URI and click **Add Row**.

The endpoint is added.
Step 1. Navigate to Home > Settings > Administrator Settings > Advanced Configuration > Provisioning > External Manager > Address.

Step 2. In External Manager, enter 10.106.170.135, and then click Save.
The endpoint is added.

## Recording Self Video

**PROCESS**

1. **Dial TCS URI (Recording Only)**

**Procedure 1**

Dial `8610002@mmcvd.ciscolabs.com` and wait till the countdown finishes and is 0. Now the call to the TCS is recorded till the call is put to an end.
Initiating Conferences

1. **Initiate Instant CMR Conference**
2. **Create Personal CMR Conferences**
3. **Initiate Personal CMR Conference**
4. **Create Scheduled CMR Conference**

**Procedure 1**   Initiate Instant CMR Conference

- **Step 1.** Call 8001002 from 8001001.
- **Step 2.** After the call is connected, press on the Add+ button.
- **Step 3.** Call 8001003 from 8001001.
- **Step 4.** Press the Merge button.

   The instant CMR conference should be connected.

**Procedure 2**   Create Personal CMR Conferences

- **Step 1.** Open a browser, type https://10.106.170.153/tmsagent/tmsportal/#home in the navigation space, click Go and login as user.
- **Step 2.** Click on Open Collaboration Meeting Room.

   ![Collaboration Meeting Room](image)

- **Step 3.** Click Set up your CMR.
Step 4. Enter the personal CMR conference name as **abdey** and click **Next**.
Step 5. On the Set your CMR PIN page, click Finish.

The Personal CMR conference is created.
Procedure 3  Initiate Personal CMR Conference

**Step 1.** Call abdey.cmr@mmcvd.ciscolabs.com from 8001001.

**Step 2.** Call abdey.cmr@mmcvd.ciscolabs.com from 8001003.

**Step 3.** Call abdey.cmr@mmcvd.ciscolabs.com from 8001003.

The personal CMR conference should be connected.

Procedure 4  Create Scheduled CMR Conference

**Step 1.** Open a browser, type https://10.106.170.153/tmsagent/tmsportal/#home in the navigation space, click Go and login as user.

**Step 2.** Click Open Smart Scheduler.

**Step 3.** Click New Meeting.
Step 4. Add Video and/or audio Call-in.

Step 5. Enter Meeting 1 as Title.

Step 6. Click Save.


Step 8. Navigate to Booking > List Conferences.
Step 9. Click **Meeting 1**.

![Connection Settings](chart.png)

Step 10. Click on **Connection Settings** tab.

The number displayed in braces is the scheduled CMR conference dial-in number that the users have to dial at the scheduled time.
Recording Instant CMR Conferences

1. **Join TCS as an Instant CMR Conference Participant (Recording Only)**

**Procedure 1** Join TCS as an Instant CMR Conference Participant (Recording Only)

**Step 1.** In the instant CMR conference, click on the Add button and dial **8610002@mmcvd.ciscolabs.com** and wait till the countdown finishes and is 0.

**Step 2.** Click the Merge button. Now the call to the TCS is recorded till the call is put to an end.
## Appendix A: Product List

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