Cisco TelePresence Conductor with Cisco VCS (Policy Service)

Deployment Guide

TelePresence Conductor XC3.0
Cisco VCS X8.x

Revised January 2015
## Contents

**Introduction** .................................................................................................................. 5
About the Cisco TelePresence Conductor ........................................................................... 5
About this document ............................................................................................................... 5
Related documentation .......................................................................................................... 6
Call flow with the TelePresence Conductor .......................................................................... 7
TelePresence Conductor conference bridge selection process ........................................... 8

**Example network deployment** ......................................................................................... 10
Cisco TelePresence network elements ................................................................................. 10
   Cisco VCS .......................................................................................................................... 10
   Conference bridges ........................................................................................................... 10
   Endpoints .......................................................................................................................... 11

**Deploying TelePresence Conductor with Cisco VCS** ......................................................... 12
Prerequisites .......................................................................................................................... 12
Designing a dial plan .............................................................................................................. 12
Configuring the TelePresence MCUs .................................................................................... 13
   Task 1: Resetting TelePresence MCU configuration to default ....................................... 14
   Task 2: Creating a user ...................................................................................................... 14
   Task 3: Installing an encryption key .................................................................................. 15
   Task 4: Configuring SIP .................................................................................................... 16
   Task 5: Configuring H.323 ............................................................................................... 17
   Task 6: Changing miscellaneous settings .......................................................................... 18
Configuring the TelePresence Server ................................................................................... 19
   Task 7: Creating a user ...................................................................................................... 19
   Task 8: Installing an encryption key .................................................................................. 19
   Task 9: Configuring SIP .................................................................................................... 21
   Task 10: Configuring H.323 ............................................................................................. 22
   Task 11: Configuring the operational mode ...................................................................... 23
Configuring the Cisco VCS .................................................................................................... 23
   Task 12: Creating a new user on the TelePresence Conductor .......................................... 23
   Task 13: Adding the TelePresence Conductor as a policy service ................................... 24
   Task 14: Adding each conference bridge as a neighbor zone ......................................... 26
   Task 15: Configuring a search rule with the TelePresence Conductor policy service as the target ................................................................. 28
   Task 16: Configuring a Cisco VCS search rule for each conference bridge .................... 29
Configuring the TelePresence Conductor ............................................................................. 30
   Task 17: Changing the administrator password ............................................................... 31
   Task 18: Changing the root password ............................................................................. 31
   Task 19: Changing the system settings ............................................................................ 31
   Task 20: Setting up conference bridge pools .................................................................... 32
   Task 21: Creating Service Preferences .......................................................................... 37
   Task 22: Creating conference templates for Meeting-type conferences ......................... 40
   Task 23: Creating conference templates for Lecture-type conferences .......................... 44
   Task 24: Creating the auto-dialed participants ................................................................ 48
   Task 25: Creating conference aliases for the Meeting-type conferences ....................... 52
   Task 26: Creating conference aliases for the Lecture-type templates ............................. 55

**Testing system configuration** ............................................................................................ 60
Creating a Meeting-type conference ..................................................................................... 60
Adding an auto-dialed participant ................................................................. 60
Creating a Lecture-type conference ............................................................. 60
Testing cascading ......................................................................................... 60

Creating a system backup ............................................................................. 61

Troubleshooting ............................................................................................. 62
Tracking a call from Cisco VCS to TelePresence Conductor ......................... 62
Tracking a conference on the TelePresence Conductor ..................................... 62
Specific issues ................................................................................................. 62
  Unable to enable more than one conference bridge ..................................... 62
  TelePresence Conductor does not communicate with any conference bridges ... 62
  Call does not connect .................................................................................. 63
  Conference does not get created ............................................................... 63
  Auto-dialed participant not dialed ............................................................... 64
  Guests are disconnected when hosts remain on the cascade MCU only .......... 64
  Conference bridges not registering with Cisco VCS ..................................... 64
  Pre-configured endpoint cannot join conference ......................................... 65
  Only one screen of a multiscreen endpoint is used ....................................... 65
  Conference name displayed on conference bridge is different from conference name that was configured ................................................................. 66
  Alarm "Invalid JSON found" raised for valid JSON string .............................. 66

Error messages ............................................................................................... 67
Regular expression match and replace .......................................................... 67

Appendix 1: Configuring TelePresence Conductor and Cisco VCS to support numeric dial strings ................................................................. 68
Adding a transform to add a domain when none exists ................................... 68
Adding a search rule for numeric dial strings .................................................. 69
Adding numeric conference aliases for Meeting-type conferences ................. 70
  Creating a conference alias for the TelePresence MCU hosted ‘HD Meeting’ template ................................................................. 70
  Creating a conference alias for the TelePresence MCU hosted ‘SD Meeting’ template ................................................................. 71
  Creating a conference alias for the TelePresence Server hosted ‘HD TS Meeting’ template .............................................................. 72
  Creating a conference alias for the TelePresence Server hosted ‘SD TS Meeting’ template .............................................................. 73
Adding numeric conference aliases for Lecture-type conferences .................. 74
  Creating a conference alias for the TelePresence MCU hosted ‘Lecture’ template with a role of ‘Host’ ......................................................... 74
  Creating a conference alias for the TelePresence MCU hosted ‘Lecture’ template with a role of ‘Guest’ ......................................................... 75
  Creating a conference alias for the TelePresence Server hosted ‘Lecture - TS’ template with a role of ‘Host’ ......................................................... 76
  Creating a conference alias for the TelePresence Server hosted ‘Lecture - TS’ template with a role of ‘Guest’ ......................................................... 77

Appendix 2: Identifying dedicated content ports on a Cisco TelePresence MCU .......... 78

Appendix 3: Example call flows ..................................................................... 79
H.323 call flow ................................................................................................. 79
Cascade creation call flow .............................................................................. 80

Appendix 4: Call policy mode ....................................................................... 81
Configuring call policy on the TelePresence Conductor ................................. 83
  Configuring call policy for an existing template ........................................ 83
  Configuring the call policy prefix .............................................................. 83
Introduction

About the Cisco TelePresence Conductor

Cisco TelePresence Conductor manages video conference bridge resources, providing resiliency and increased capacity across your video conferencing network. The TelePresence Conductor integrates tightly with the call control devices Cisco TelePresence Video Communication Server (Cisco VCS) and Cisco Unified Communications Manager, as well as with the conference bridges Cisco TelePresence MCU and Cisco TelePresence Server.

The TelePresence Conductor enables endpoints with sufficient privileges to create and enter a conference by dialing a single number or URI (known as rendezvous conferences). It also supports Multiway conferences, which are initiated when two endpoints already in a call together add another endpoint.

The TelePresence Conductor performs conference bridge resource management and calls are routed to appropriate conference bridges by the Cisco VCS under instructions from the TelePresence Conductor. If the size of the conference grows beyond the capacity of a single conference bridge, the conference is cascaded to additional conference bridges. TelePresence Server version 4.0(1.57) or later is required for cascading to work.

The TelePresence Conductor is capable of preferentially selecting conference bridges for conferences based on their properties. For example, conference bridges could be selected based on geographic location or on video quality (such as HD or SD).

This version of the TelePresence Conductor supports the Cisco VCS in the following two types of deployments:

- Using the Cisco VCS’s external policy service interface
  This method may be discontinued in future versions of the TelePresence Conductor software.

- Using the TelePresence Conductor's back-to-back user agent (B2BUA)
  This method requires a SIP trunk between the Cisco VCS and the TelePresence Conductor. It is the preferred method to use.

This document describes the deployment method using the Cisco VCS’s external policy server interface. For more information on the deployment using the TelePresence Conductor’s B2BUA, see Cisco TelePresence Conductor with Cisco VCS (B2BUA) Deployment Guide.

The TelePresence Conductor supports the Cisco VCS in standalone and clustered modes.

You can configure up to 20 TelePresence Conductors or TelePresence Conductor clusters per Cisco VCS or Cisco VCS cluster using a suitable non-overlapping dial plan.

About this document

This document describes how to configure a Cisco VCS (or Cisco VCS cluster), a TelePresence Conductor and the conference bridges that are used by the system. Following the steps in this deployment guide will allow you to configure the above devices to provide the following functionality:

- An endpoint user can call the rendezvous conference alias `meet.<meeting name>.HD@vcs.domain`. If they are the first person to call this alias, TelePresence Conductor creates a new conference and they are routed to it. The conference is created preferentially on a conference bridge with high definition ports, if there are not any ports available on the HD conference bridge then the conference will be created on the SD conference bridge. Alternatively, if the conference already exists then the alias is routed to it.
An endpoint user can call the rendezvous conference alias `meet.<meeting name>.SD@vcs.domain`. If they are the first person to call this alias, a new conference is created by TelePresence Conductor and they are routed to it. The conference is created preferentially on a conference bridge with standard definition ports; if there are not any ports available on this conference bridge then the call is rejected. If the conference already exists then they are routed to it.

An endpoint user can dial the conference `meet.boss@vcs.domain` and arrive at a conference and have the endpoint `boss@vcs.domain` automatically dialed into the conference.

An endpoint user can call the alias `teach.<lecture name>@vcs.domain` and create or join a Lecture-type conference as a host on a conference bridge with SD ports or, if there are no SD ports available, a conference on the HD conference bridge.

An endpoint user can call the alias `learn.<lecture name>@vcs.domain` and create or join a lecture-type conference as a host on a conference bridge with SD ports or, if there are no SD ports available, a conference on the HD conference bridge.

If the size of a `meet.<meeting name>.HD@<domain>` conference or a `teach.<lecture name>@vcs.domain` conference grows to a point where the resources required exceed those available on the conference bridge on which it is being hosted, and ports are available on a second conference bridge, then the TelePresence Conductor will direct new conference participants to the second conference bridge and set up a cascade between the conference bridges, provided there are available resources there.

This document also describes how to check that the system is working as expected.

Detailed descriptions of system configuration parameters for the Cisco VCS, TelePresence Conductor and conference bridges can be found in the Administrator Guides and online help for each product. Both the Cisco VCS and the TelePresence Conductor web interfaces offer field help (accessed by clicking the `i` icon next to each input field) and a context-sensitive help system (accessed by clicking the `?` icon in the top right corner of each page).

**Related documentation**

This document focuses on the use of a single TelePresence Conductor. For more details on how to deploy a cluster of TelePresence Conductors see *Cisco TelePresence Conductor Clustering with Cisco VCS (Policy Service) Deployment Guide*.

This document describes how to configure the TelePresence Conductor with regex conference aliases using the web interface. If you are using Cisco TMSPE to provision CMRs (Collaboration Meeting Rooms), omit the tasks that set up conference templates, conference aliases and auto-dialed participants on the TelePresence Conductor and instead follow *Cisco TelePresence Management Suite Provisioning Extension with Cisco VCS Deployment Guide*.

For details on how to deploy TelePresence Conductor with Unified CM see *Cisco TelePresence Conductor with Cisco Unified Communications Manager Deployment Guide*. 
Call flow with the TelePresence Conductor

To better understand the configuration steps taken in this document it is useful to understand how the call flows through the different parts of the video network:

When these parts of the call flow are complete, the call is set up and media flows between the endpoint and the conference bridge.
TelePresence Conductor conference bridge selection process

- VCS matches search rule with Conductor policy service as the target. VCS sends CPL request to Conductor.
- Does the conference exist already?
  - Yes: Matched alias maps to a template with conference name and role.
  - No: Go through the list of pools within the Service Preference in priority order.
- Is there sufficient resource on the existing bridge?
  - Yes: Is there sufficient resource on a bridge in the pool?
    - Yes: Participant is added to existing conference or new conference is created on the chosen bridge.
    - No: Conductor returns CPL to the VCS, instructing VCS to reject the call.
  - No: Are there free cascade resources on the bridge?
    - Yes: Conductor returns CPL to the VCS, specifying the destination alias as one which is routed to the conference on the chosen bridge.
    - No: Has the entire list of pools been searched?
      - Yes: Conductor returns CPL to the VCS, instructing VCS to reject the call.
      - No: Is there sufficient resource on a bridge in the pool?
        - Yes: Participant is added to existing conference or new conference is created on the chosen bridge.
        - No: Conductor returns CPL to the VCS, specifying the destination alias as one which is routed to the conference on the chosen bridge.
In a simplified format the set of steps for a conference to be created when the TelePresence Conductor receives an individual valid conference request is:

![Conference diagram]

The dotted line indicates an optional step that occurs concurrently with the normal conference request processing.
Example network deployment

The example network shown below is used as the basis for the deployment configuration described in this document.

Elements on the internal network have an internal network domain name. This internal network domain name is not resolvable by a public DNS.

For example, the Cisco VCS is configured with an internally resolvable name of vcs.internal-domain.net (which resolves to an IP address of 10.1.2.3 by the internal DNS servers).

Cisco TelePresence network elements

Cisco VCS

The Cisco VCS acts as a SIP registrar, SIP proxy, and H.323 gatekeeper for devices that are located on the internal network.

Conference bridges

Conference bridges are network devices that enable multiple video calls to come together in a multipoint video conference. TelePresence Conductor version XC3.0 supports the conference bridge types...
TelePresence MCU and TelePresence Server.

**Endpoints**

These are devices that receive and make video calls. They can be software clients on PCs and Macs such as Jabber Video (Movi), desktop endpoints such as the EX90 and 9971, or room systems such as the MX300.
Deploying TelePresence Conductor with Cisco VCS

Prerequisites

Before starting the system configuration, ensure you have met the following criteria:

- The Cisco VCS (or Cisco VCS cluster) must be running version X7.0 or later and must already be configured to act as an H.323 gatekeeper, a SIP registrar and proxy. Ensure that the system has been tested by registering at least three endpoints to it and that they are all capable of calling each other. For more information, see VCS Administrator Guide.
- The TelePresence Conductor must be powered on, running version XC3.0 and accessible over the network. For assistance in reaching this stage, see Cisco TelePresence Conductor Administrator Guide.
- One or more conference bridges are powered on and accessible over the network. Basic configuration for the conference bridge should be completed as described in the relevant Installation Guide. These bridges must be dedicated for use by TelePresence Conductor – no other devices must try to route calls to them except via the TelePresence Conductor.
- The following Cisco TelePresence MCUs are supported by the TelePresence Conductor:
  - MCU 4200 series version 4.2 or later
  - MCU 4500 series version 4.2 or later
  - MCU 5300 series version 4.3(2.17) or later
  - MCU MSE 8420 version 4.2 or later
  - MCU MSE 8510 version 4.2 or later
  **Note:** For all TelePresence MCUs we recommend that you install the latest software version (4.5), otherwise some features will not be supported.
- The following Cisco TelePresence Servers are supported by the TelePresence Conductor:
  - TelePresence Server 7010 version 3.0(2.46) or later
  - TelePresence Server MSE 8710 version 3.0(2.46) or later
  - TelePresence Server version 3.1 or later on Virtual Machine
  - TelePresence Server version 3.1 or later on Multiparty Media 310/320
  **Note:** For all TelePresence Servers we recommend that you install the latest software version (4.1), otherwise some features will not be supported. TelePresence Server version 4.0(1.57) or later is required for cascading to work.
- This guide assumes the conference bridges are connected to the network on their port A.
- A web browser is available with access to the web interfaces of the Cisco VCS, TelePresence Conductor and conference bridges that are being configured.

Designing a dial plan

A dial plan defines all the aliases and call routes within your network.

Before you add the Cisco TelePresence Conductor to your network, you will need to consider as part of your dial plan:

- The types of conferences required (see Cisco TelePresence Conductor Administrator Guide for more information).
- The form of the conference aliases that users will dial in order to create or join conferences.
The prefixes that you will use to route calls from the Cisco VCS to the conference bridges in the TelePresence Conductor’s conference bridge pool (the Cisco VCS is neighbored to each conference bridge). Each conference bridge has a unique prefix.

If you are integrating the TelePresence Conductor into an existing deployment it is important that the elements of your dial plan that are used by the TelePresence Conductor are complementary to, and do not conflict with, those elements that are already in use in your deployment. This ensures that the dial plan is easy for an endpoint user to understand, and for administrators to manage.

TelePresence Conductor is compatible with the dial plan specified in the reference design, after additional aliases have been included for users to dial to reach conferences.

It is a good idea in a large video network to distribute the registrations of conference bridges across different Cisco VCSs or Cisco VCS clusters to increases the resiliency of conference bridge dial out calls (to endpoints or during cascading) against Cisco VCS failure.

This deployment guide uses the following dial plan elements and configures the TelePresence Conductor and Cisco VCS accordingly:

<table>
<thead>
<tr>
<th>Element</th>
<th>Format</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conference aliases for lecture hosts on TelePresence MCUs</td>
<td>teach.&lt;name of lecture&gt;@vcs.domain</td>
</tr>
<tr>
<td>Conference aliases for lecture guests on TelePresence MCUs</td>
<td>learn.&lt;name of lecture&gt;@vcs.domain</td>
</tr>
<tr>
<td>Conference aliases for high definition meeting participants on TelePresence MCUs</td>
<td>meet.&lt;meeting name&gt;<a href="mailto:.HD@vcs.domain">.HD@vcs.domain</a></td>
</tr>
<tr>
<td>Conference aliases for standard definition meeting participants on TelePresence MCUs</td>
<td>meet.&lt;meeting name&gt;<a href="mailto:.SD@vcs.domain">.SD@vcs.domain</a></td>
</tr>
<tr>
<td>Conference aliases for lecture hosts on TelePresence Servers</td>
<td>teachts.&lt;name of lecture&gt;@vcs.domain</td>
</tr>
<tr>
<td>Conference aliases for lecture guests on TelePresence Servers</td>
<td>learnts.&lt;name of lecture&gt;@vcs.domain</td>
</tr>
<tr>
<td>Conference aliases for high definition meeting participants on TelePresence Servers</td>
<td>meetts.&lt;meeting name&gt;<a href="mailto:.HD@vcs.domain">.HD@vcs.domain</a></td>
</tr>
<tr>
<td>Conference aliases for standard definition meeting participants on TelePresence Servers</td>
<td>meetts.&lt;meeting name&gt;<a href="mailto:.SD@vcs.domain">.SD@vcs.domain</a></td>
</tr>
<tr>
<td>Conference bridge prefixes for the TelePresence MCUs</td>
<td>HDMCU, SDMCU</td>
</tr>
<tr>
<td>Conference bridge prefixes for the TelePresence Servers</td>
<td>HDTs, SDTS</td>
</tr>
</tbody>
</table>

**Configuring the TelePresence MCUs**

These tasks can be skipped, if only TelePresence Servers are used as conference bridges in your deployment.
**Task 1: Resetting TelePresence MCU configuration to default**

To ensure that all TelePresence MCUs used by this TelePresence Conductor have the same configuration settings applied, reset the TelePresence MCU configuration to its default values:

1. Create an xml file that only contains the following text:
   ```xml
   <configuration/>
   ```
2. Go to the web interface of the TelePresence MCU you want to configure and log in as an administrator.
3. Go to **Settings > Upgrade**.
4. In the **Restore configuration** section ensure that the **Overwrite settings - Network settings** and **User settings** - are NOT checked.
5. Next to **Backup file to be restored** click on **Choose File** and select the xml file you created earlier.
6. Click **Restore backup file**.
7. Go to **Settings > Shutdown** to shut down and subsequently restart the TelePresence MCU.

**Task 2: Creating a user**

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

1. On the TelePresence MCU go to **Users** and click **Add new user**.
2. Enter the following in the relevant fields:

<table>
<thead>
<tr>
<th>User ID</th>
<th>Enter a username for the TelePresence Conductor to use.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Enter a name for this user.</td>
</tr>
<tr>
<td>Password</td>
<td>Enter a password for the TelePresence Conductor to use.</td>
</tr>
<tr>
<td>Force user to change password on next login</td>
<td>Uncheck.</td>
</tr>
<tr>
<td>Privilege level</td>
<td>Select <strong>administrator</strong>.</td>
</tr>
</tbody>
</table>

3. Click **Add user**.
Task 3: Installing an encryption key

The TelePresence MCU has the ability to use a secure connection for communications. These security features are enabled with the Encryption option key. You are recommended to install this option key for this deployment.

To verify that the key is installed or to install the key:

1. Go to Settings > Upgrade.
2. Go to the Feature Management section and verify that the Encryption key is installed. If the key is not installed, enter the Activation code and click Update features.

To enable the use of encryption on the TelePresence MCU:

1. Go to Settings > Encryption.
2. Set Encryption status to Enabled.
3. Set SRTP encryption to Secure transport (TLS) only.
4. Click Apply changes.
5. Go to Network > Services.
6. Ensure that Secure web (port 443) is checked.
7. Ensure that Encrypted SIP (TLS) is checked. SIP (TLS) must also be configured on the Cisco VCS.
8. Ensure that SIP (TCP) is unchecked.
9. Ensure that SIP (UDP) is unchecked.
10. Ensure that Incoming H.323 is checked.
11. Click Apply changes.
12. Repeat the steps for any other TelePresence MCUs

**Task 4: Configuring SIP**

1. Go to **Settings > SIP**.
2. Enter the following in the relevant fields, leave other fields as their default values:

<table>
<thead>
<tr>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIP registrar usage</td>
<td>Select <em>Enabled</em>.</td>
</tr>
<tr>
<td>SIP registrar domain</td>
<td>Enter the Cisco VCS’s SIP domain.</td>
</tr>
<tr>
<td>Username</td>
<td>Enter <em>sdmcu</em> for example.</td>
</tr>
<tr>
<td>Allow numeric ID registration for conferences</td>
<td>Uncheck.</td>
</tr>
<tr>
<td>SIP proxy address</td>
<td>Enter the Cisco VCS’s IP address.</td>
</tr>
<tr>
<td>Maximum bit rate from Microsoft OCS/LCS clients</td>
<td>Select <em>limit disabled</em>.</td>
</tr>
<tr>
<td>Outgoing transport</td>
<td>Select TCP or TLS. We recommend that you use TLS.</td>
</tr>
<tr>
<td>Use local certificate for outgoing connections and registrations</td>
<td>Uncheck.</td>
</tr>
</tbody>
</table>
3. Click **Apply changes**.
4. Repeat the steps for any other TelePresence MCUs.

**Task 5: Configuring H.323**

1. Go to **Settings > H.323**.
2. Enter the following in the relevant fields, leave other fields as their default values:

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>H.323 gatekeeper usage</strong></td>
<td><strong>Select Enabled.</strong></td>
</tr>
<tr>
<td><strong>H.323 gatekeeper address</strong></td>
<td><strong>Enter the Cisco VCS’s IP address.</strong></td>
</tr>
<tr>
<td><strong>Gatekeeper registration type</strong></td>
<td><strong>Select MCU (standard).</strong></td>
</tr>
<tr>
<td><strong>Ethernet port association</strong></td>
<td><strong>Check Port A IPv4.</strong></td>
</tr>
<tr>
<td><strong>Mandatory H.323 ID to register</strong></td>
<td><strong>Enter hdmcu@&lt;VCS SIP domain&gt;.</strong></td>
</tr>
<tr>
<td><strong>Use Password</strong></td>
<td><strong>Uncheck.</strong></td>
</tr>
<tr>
<td><strong>Prefix for MCU registrations</strong></td>
<td><strong>Make blank.</strong></td>
</tr>
<tr>
<td><strong>MCU service prefix</strong></td>
<td><strong>Make blank.</strong></td>
</tr>
<tr>
<td><strong>Allow numeric ID registration for conferences</strong></td>
<td><strong>Uncheck.</strong></td>
</tr>
<tr>
<td><strong>Send resource availability indications</strong></td>
<td><strong>Uncheck.</strong></td>
</tr>
</tbody>
</table>
3. Click **Apply changes**.
4. Repeat the steps for any other TelePresence MCUs.

**Task 6: Changing miscellaneous settings**

On all conference bridges:

1. Go to **Network > Services**.
2. Ensure that the protocol settings match those of the Cisco VCS, using either **SIP(TCP)**, **Encrypted SIP (TLS)** or **Incoming H.323** (if supported).
   
   > We recommend that you use encryption and follow the steps in Task 3: Installing an encryption key [p.15].

   > The protocol on the Cisco VCS is configured in Task 14: Adding each conference bridge as a neighbor zone [p.26].

3. Go to **Settings > Conferences**
4. Under **Conference Settings** ensure **Media port reservation** is set to **Disabled**.

3. Click **Apply changes**.
4. Go to **Gatekeeper > Built in Gatekeeper**.
5. Under **Configuration** ensure **Status** is set to **Disabled**.
   
   **Note:** The MCU 5300 series does not have a built-in Gatekeeper.

6. Click **Apply changes**.

7. Repeat the steps for any other TelePresence MCUs.

### Configuring the TelePresence Server

These tasks can be skipped, if only TelePresence MCUs are used as conference bridges in your deployment.

#### Task 7: Creating a user

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

1. Go to the web interface of the TelePresence Server you want to configure and log in as an administrator.
2. Go to **User > Add New User**.
3. Enter the following in the relevant fields:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>User ID</td>
<td>Enter a username for the TelePresence Conductor to use.</td>
</tr>
<tr>
<td>Name</td>
<td>Enter a name for this user.</td>
</tr>
<tr>
<td>Password</td>
<td>Enter a password for the TelePresence Conductor to use.</td>
</tr>
<tr>
<td>Access</td>
<td>Select <strong>Administrator</strong>.</td>
</tr>
</tbody>
</table>

4. Click **Add user**.

#### Task 8: Installing an encryption key

The TelePresence Server has the ability to use a secure connection for communications. These security features are enabled with the **Encryption** option key. You are recommended to install the option key for this deployment.
To verify that the *Encryption* key is installed or to install the key, perform the following tasks:

1. Go to **Configuration > Upgrade**.
2. Go to the **Feature management** section and verify that the *Encryption* key is installed. If the key is not installed, enter the key into the **Add key** field and click **Add key**.

![Feature management](image)

To verify that TLS is enabled on the TelePresence Server:

1. Go to **Network > Services**.
2. Ensure that **Encrypted SIP (TLS)** is checked.
3. Ensure that **SIP (TCP)** and **SIP (UDP)** are not checked.
4. Ensure that HTTPS is enabled on port 443.

5. Click **Apply changes**.

**Task 9: Configuring SIP**

Perform the following steps to enable SIP registration to a SIP registrar:

1. Go to **Configuration > SIP settings**.
2. Enter the following values into the relevant fields:

<table>
<thead>
<tr>
<th><strong>Outbound call configuration</strong></th>
<th>Select <em>Use trunk</em> from the drop-down list.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Outbound address</strong></td>
<td>Enter the IP address or FQDN of the Cisco VCS.</td>
</tr>
<tr>
<td><strong>Outbound domain</strong></td>
<td>Enter the appropriate domain name, for example <code>vcs.domain</code>.</td>
</tr>
<tr>
<td><strong>Username</strong></td>
<td>Enter for example <code>TelePresence_Server</code>.</td>
</tr>
</tbody>
</table>
Task 10: Configuring H.323

Perform the following steps to enable use of an H.323 gatekeeper (for out-dial calls):

**Note:** TelePresence Servers that do not support H.323 do not require this configuration.

1. Go to Configuration > H323 Settings.
2. Enter the following values into the relevant fields:

   **Use gatekeeper**
   - Check the box.

   **Address**
   - Enter the IP address or FQDN of the Cisco VCS that is the gatekeeper.

   **H.323 ID to register**
   - Enter the H.323 registration ID for this TelePresence Server.

   **Password**
   - Leave blank unless required by your Cisco VCS policy.
3. Click **Apply changes**.
4. Repeat the steps for any other TelePresence Servers.

**Task 11: Configuring the operational mode**

(This task is not relevant for Cisco TelePresence Server on Virtual Machine or Cisco TelePresence Server on Multiparty Media 310/320.)

1. Go to **Configuration > Operation mode**.
2. Select **Remotely managed** from the drop down list. This enables the TelePresence Conductor to manage the TelePresence Server.

3. Click **Apply changes**.
4. For the changes to take effect, the TelePresence Server must be restarted. Go to **Configuration > Shutdown**.
5. Click **Shutdown TelePresence Server**.
6. Click **Confirm TelePresence Server shutdown**.
7. Click **Restart TelePresence Server**.
8. After about 3 minutes, the TelePresence Server will be available to the TelePresence Conductor.

**Configuring the Cisco VCS**

Before configuring the Cisco VCS you must create a new user on the TelePresence Conductor, as described in the task below.

**Task 12: Creating a new user on the TelePresence Conductor**

We recommend that you set up an administrator account on the TelePresence Conductor that has API access only. This account will be used for all communications between the Cisco VCS and TelePresence Conductor.

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

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Enter a name for this user.</td>
</tr>
<tr>
<td>Access level</td>
<td>Select Read-write.</td>
</tr>
<tr>
<td>Password</td>
<td>Enter a password for this account.</td>
</tr>
<tr>
<td>Web access</td>
<td>Set to No.</td>
</tr>
<tr>
<td>API access</td>
<td>Set to Yes.</td>
</tr>
<tr>
<td>State</td>
<td>Set to Enabled.</td>
</tr>
</tbody>
</table>

![Configuration](image)

**Task 13: Adding the TelePresence Conductor as a policy service**

A policy service is in essence a location to which the Cisco VCS can send HTTP or HTTPS requests that contain various details about a call. CPL (Call Policy Language) is returned by the call policy service and governs what should be done with that call. The TelePresence Conductor’s policy service either rejects calls or routes them to the appropriate conference bridge.

To configure the Cisco VCS with the TelePresence Conductor as a policy service:

1. Go to the Cisco VCS web interface and log in as an admin user.
2. Go to Configuration > Dial plan > Policy services.
3. Click New to create a new policy service pointing at the TelePresence Conductor.
4. Enter the following in the relevant fields, leave other fields as their default values:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Enter a name for the policy service, for example Conductor Policy Service.</td>
</tr>
<tr>
<td>Protocol</td>
<td>Select HTTPS.</td>
</tr>
</tbody>
</table>
If you have configured the Cisco VCS with a Root CA that is valid for the certificate on the TelePresence Conductor, you can select On. Otherwise select Off. Certificates can be loaded onto the TelePresence Conductor through the web interface at Maintenance > Security certificates > Server certificate.

**Note**: Setting Certificate verification mode to Off makes HTTPS communication highly insecure and is not recommended for production systems.

Select Off.

Enter the TelePresence Conductor’s IP address.

Enter api/conference_controller/conference/conference_factory.cpl

Enter the username of the TelePresence Conductor administration user. This appears on the TelePresence Conductor’s Administrator accounts page (Users > Administrator accounts).

Enter the password of the TelePresence Conductor administration user.

Enter <reject status='504' reason='Conductor policy service unavailable'/>

5. Click Create policy service.

Until the Cisco VCS updates its TelePresence Conductor status the status of the TelePresence Conductor policy service under Configuration > Dial plan > Policy services will list as ‘Checking’. When the Cisco
VCS queries the TelePresence Conductor for status this will change to 'Failed'. This is expected behavior. The TelePresence Conductor policy service will only list itself as active when the following criteria are met:

- The TelePresence Conductor has its root and admin passwords changed from their default values. This is a security feature.
- The TelePresence Conductor has at least one conference bridge configured and with a ‘usable’ status. This is to ensure no requests are sent to members of a TelePresence Conductor cluster that have lost connectivity with the conference bridges.

**Task 14: Adding each conference bridge as a neighbor zone**

To configure the Cisco VCS with neighbor zones for all conference bridges:

1. Go to Configuration > Zones > Zones.
2. Click Create new zone.
3. Enter the following in the relevant fields, leave other fields as their default values:

<table>
<thead>
<tr>
<th>Name</th>
<th>Enter 'HD TS' for example.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Select Neighbor.</td>
</tr>
<tr>
<td>H.323 mode</td>
<td>Select Off if the conference bridge does not support H.323, otherwise, if H.323 is supported, leave as On.</td>
</tr>
<tr>
<td>SIP transport</td>
<td>We recommend that you select TLS and set the port to '5061'. Note: If you have selected a SIP transport of TLS, the conference bridge to which this zone is pointing needs to have the TLS encryption option key enabled. If you are using UDP or TCP, the port must manually be changed to 5060 on both the Cisco VCS and enabled on the conference bridge.</td>
</tr>
<tr>
<td>Peer 1 address</td>
<td>Enter the conference bridge's IP address.</td>
</tr>
<tr>
<td>Zone profile</td>
<td>For TelePresence Server select Custom. Set Monitor Peer status to No. For TelePresence MCU select Infrastructure device. These zone profiles perform no aliveness checking. Therefore, an 'Active' status given by this zone cannot be relied upon to indicate that Cisco VCS to conference bridge communication is possible.</td>
</tr>
</tbody>
</table>
### Create zone

#### Configuration
- **Name:** HD-LS
- **Type:** Neighbor
- **Hop count:** 15

#### H.323
- **Mode:** On
- **Port:** 1719

#### SIP
- **Mode:** On
- **Port:** 5061
- **Transport:** TLS
- **TLS verify mode:** Off
- **Anonymous proxy registrations:** Allow
- **Mobile encryption mode:** AUTO
- **ICE support:** Off

#### Authentication
- **Authentication policy:** DO NOT CHECK CREDITIBILITY
- **SIP authentication trust mode:** Off

#### Location
- **Peer 1 address:** 10.1.2.10
- **Peer 2 address:**
4. Click **Create zone**.
5. Repeat the steps for all other conference bridges.

**Task 15: Configuring a search rule with the TelePresence Conductor policy service as the target**

Search rules define where the Cisco VCS routes calls. In this case we want calls matching the format of our conference aliases to be sent to the TelePresence Conductor.

To configure the search rule:

1. Go to **Configuration > Dial plan > Search rules**.
2. Click **New**.
3. Enter the following in the relevant fields, leave other fields as their default values:

<table>
<thead>
<tr>
<th>Rule name</th>
<th>Enter 'To Conductor Policy Service' for example.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Priority</td>
<td>Enter '10' for example.</td>
</tr>
<tr>
<td></td>
<td>The priority for this search rule must be higher (have a lower priority number) than the priority for the local zone.</td>
</tr>
</tbody>
</table>
Task 16: Configuring a Cisco VCS search rule for each conference bridge

To configure the Search rule:

1. Go to Configuration > Dial plan > Search rules.
2. Click New.

4. Click Create search rule.
3. Enter the following in the relevant fields, leave other fields as their default values:

<table>
<thead>
<tr>
<th><strong>Rule name</strong></th>
<th>Enter a name for the rule, for example <strong>To HD MCU</strong>.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Priority</strong></td>
<td>Enter ‘15’ for example. The priority for this search rule must be higher than the priority for the local zone.</td>
</tr>
<tr>
<td><strong>Mode</strong></td>
<td>Select <strong>Alias pattern match</strong>.</td>
</tr>
<tr>
<td><strong>Pattern type</strong></td>
<td>Select <strong>Prefix</strong>.</td>
</tr>
<tr>
<td><strong>Pattern string</strong></td>
<td>Enter <strong>HDMCU</strong>.</td>
</tr>
<tr>
<td><strong>Pattern behavior</strong></td>
<td>Select <strong>Strip</strong>.</td>
</tr>
<tr>
<td><strong>On successful match</strong></td>
<td>Select <strong>Stop</strong>.</td>
</tr>
<tr>
<td><strong>Target</strong></td>
<td>Select <strong>HD MCU</strong>.</td>
</tr>
</tbody>
</table>

4. Click **Create search rule**.

5. Repeat the steps for any other conference bridges.

**Configuring the TelePresence Conductor**

This section of the guide assumes that the TelePresence Conductor is reachable over the network. For assistance in reaching this stage, see [Cisco TelePresence Conductor Administrator Guide](#).
The TelePresence Conductor policy service only lists itself as active when the following criteria are met:

- The TelePresence Conductor has its root and admin passwords changed from their default values. This is a security feature.
- The TelePresence Conductor is configured with at least one conference bridge with a ‘usable’ status. This is to ensure that requests are not sent to members of a TelePresence Conductor cluster that have lost connectivity with the conference bridges.

**Task 17: Changing the administrator password**

1. Log into the TelePresence Conductor as the user ‘admin’ and with the default password ‘TANDBERG’.
2. Go to **Users > Administrator accounts**.
3. Click **View/Edit** for the ‘admin’ user.
4. Enter a new password.
5. Click **Save**.

**Note:** The TelePresence Conductor will not handle conference requests if it has the administrator password set to its default value.

**Task 18: Changing the root password**

1. Log in to the TelePresence Conductor as root (default password = ‘TANDBERG’). By default you can only do this using SSH or a serial connection.
2. Type **passwd**.
3. Enter the new password, and when prompted, retype the new password.
4. You will receive the message: **passwd: password updated successfully**
5. Type ‘exit’ to log out of the root account.

**Note:** The TelePresence Conductor will not handle conference requests if it has the root password set to its default value.

**Task 19: Changing the system settings**

1. Log into the TelePresence Conductor as a user with administrator rights.
2. Go to **System > DNS**.
3. Enter the following in the relevant fields:

<table>
<thead>
<tr>
<th><strong>System host name</strong></th>
<th>Enter the hostname of your TelePresence Conductor.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Domain name</strong></td>
<td>Enter the domain for your TelePresence Conductor.</td>
</tr>
<tr>
<td></td>
<td>This must match the domain that is configured on the Cisco VCS. To see the list of domains, go to <strong>Configuration &gt; Domains</strong> on your Cisco VCS.</td>
</tr>
<tr>
<td><strong>Address 1</strong></td>
<td>Enter the IP address of the DNS server.</td>
</tr>
<tr>
<td><strong>Address 2</strong></td>
<td>Enter the IP address of your backup DNS server.</td>
</tr>
</tbody>
</table>
4. Click Save.
5. Go to System > Time if the default servers are unreachable then it may be necessary to enter alternate NTP servers.
6. Ensure that under the Status section the State is Synchronized. This can take a couple of minutes.

**Task 20: Setting up conference bridge pools**
To set up a conference bridge pool, you need to create a conference bridge pool and then add one or more conference bridges to it. The following examples show how to set up conference bridge pools for:

- TelePresence MCU hosted HD conferences
- TelePresence MCU hosted SD conferences
- TelePresence Server hosted HD conferences
- TelePresence Server hosted SD conferences

**Note:** We strongly recommend that all conference bridges within a pool have the same capacity, so that conferences can be distributed efficiently across conference bridges. If there are conference bridges with different capacities in the same pool, this may lead to unbalanced conference placement in some scenarios.

**Creating a TelePresence MCU HD conference bridge pool**

1. Go to **Conference configuration > Conference bridge pools**.
2. Click **New**.
3. In the **Pool name** field enter a name for the conference bridge pool, for example **HD MCU pool**.
4. Choose the correct **Conference bridge type**, in this case **TelePresence MCU**.
5. Leave the **Location** set to **None**.
6. Click **Create pool**.

**Adding a TelePresence MCU to the HD conference bridge pool**

1. From the **Conference bridge pools** page click **Create conference bridge**.
2. Enter the following in the relevant fields:

<table>
<thead>
<tr>
<th>Name</th>
<th>Enter a name for the conference bridge, for example <strong>HD MCU</strong>.</th>
</tr>
</thead>
<tbody>
<tr>
<td>State</td>
<td>Select <strong>Enabled</strong>.</td>
</tr>
<tr>
<td>IP address or FQDN</td>
<td>Enter the IP address of the HD conference bridge.</td>
</tr>
<tr>
<td>Protocol</td>
<td>Select HTTPS.</td>
</tr>
<tr>
<td>----------</td>
<td>---------------</td>
</tr>
<tr>
<td>Port</td>
<td>Enter ‘443’.</td>
</tr>
<tr>
<td>Conference bridge username</td>
<td>Enter the conference bridge admin username, for example conductoradmin. (This is created in Task 2: Creating a user [p.14].)</td>
</tr>
<tr>
<td>Conference bridge Password</td>
<td>Enter the conference bridge password for this user.</td>
</tr>
<tr>
<td>Dial plan prefix</td>
<td>Enter HDMCU.</td>
</tr>
<tr>
<td>Dedicated content ports</td>
<td>Enter the appropriate value for your TelePresence MCU. To discover if a TelePresence MCU has any dedicated content ports follow the steps given in Appendix 2: Identifying dedicated content ports on a Cisco TelePresence MCU [p.78].</td>
</tr>
<tr>
<td>SIP port</td>
<td>Enter the SIP port on which the conference bridge listens for SIP TLS traffic, typically this is ‘5061’.</td>
</tr>
<tr>
<td>H.323 cascade call routing</td>
<td>Select Gatekeeper routed.</td>
</tr>
</tbody>
</table>

3. Click **Create conference bridge**.
4. Ensure that under the **Conference bridges in this pool** section, under the **Status** header the conference bridge is listed as **Active**.
5. Repeat the steps to add any further TelePresence MCUs to the conference bridge pool.
Creating a TelePresence MCU SD conference bridge pool.
Repeat the steps under Creating a TelePresence MCU HD conference bridge pool [p.33] to create a TelePresence MCU SD conference bridge pool. Enter the same values for the fields, apart from the Pool name, which should be SD MCU pool, for example.

Adding a TelePresence MCU to the SD conference bridge pool
Repeat the steps under Adding a TelePresence MCU to the HD conference bridge pool [p.33] to add a TelePresence MCU to the SD conference bridge pool. Enter the same values for the fields, apart from:

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pool name</td>
<td>SD MCU pool</td>
</tr>
</tbody>
</table>

Creating a TelePresence Server HD conference bridge pool
1. Go to Conference configuration > Conference bridge pools.
2. Click New.
3. In the Pool name field enter a name for the conference bridge pool, for example HD TS pool.
4. Choose the correct Conference bridge type, in this case TelePresence Server.
5. Leave the Location set to None.
6. Click Create pool.

Adding a TelePresence Server to the HD conference bridge pool
Before adding a TelePresence Server to the conference bridge pool, ensure that the Operation mode on the TelePresence Server is set to Remotely managed (see Task 11: Configuring the operational mode [p.23]).
1. Click Create conference bridge.
2. Enter the following in the relevant fields:

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Enter a name for the conference bridge, for example HD TS.</td>
</tr>
<tr>
<td>State</td>
<td>Select Enabled.</td>
</tr>
<tr>
<td>IP address or FQDN</td>
<td>Enter the IP address of the HD conference bridge.</td>
</tr>
<tr>
<td>Protocol</td>
<td>Select HTTPS.</td>
</tr>
</tbody>
</table>
Port
Enter '443'.

Conference bridge username
Enter the conference bridge admin username, for example conductoradmin. (This is created in Task 7: Creating a user [p.19].)

Conference bridge Password
Enter the conference bridge password for this user.

Dial plan prefix
Enter HDTs.

SIP port
Enter the SIP port on which the conference bridge listens for SIP TLS traffic, typically this is '5061'.

3. Click Create conference bridge.

4. Ensure that under the Conference bridges in this pool section, under the Status header the conference bridge is listed as Active.

5. Repeat the steps to add any further TelePresence Servers to the conference bridge pool.

Creating a TelePresence Server SD conference bridge pool

Repeat the steps under Creating a TelePresence Server HD conference bridge pool [p.35] to create a TelePresence Server SD conference bridge pool. Enter the same values for the fields, apart from the Pool name, which should be SD TS pool, for example.

Adding a TelePresence Server to the SD conference bridge pool

Repeat the steps under Adding a TelePresence Server to the HD conference bridge pool [p.35] to add a TelePresence Server to the SD conference bridge pool. Enter the same values for the fields, apart from:

<table>
<thead>
<tr>
<th>Name</th>
<th>Enter a name for the conference bridge, for example SD TS.</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP address or FQDN</td>
<td>Enter the IP address of the SD conference bridge. This must be a different IP address from the HD conference bridge.</td>
</tr>
<tr>
<td>Dial plan prefix</td>
<td>Enter SDTS.</td>
</tr>
</tbody>
</table>
Task 21: Creating Service Preferences

A Service Preference is a prioritized list of conference bridge pools that defines the order in which resources are used for conferences. During the configuration process, the conference bridge type is chosen as either TelePresence MCU or TelePresence Server. You cannot mix the two types of conference bridges. A conference can be cascaded from one conference bridge to another, taking into account the prioritized list of conference bridge pools.

The following examples show how to create Service Preferences for:

- TelePresence MCU hosted HD conferences
- TelePresence MCU hosted SD conferences
- TelePresence Server hosted HD conferences
- TelePresence Server hosted SD conferences

Creating a Service Preference for TelePresence MCU hosted HD conferences

1. Go to Conference configuration > Service Preferences.
2. Click New.
3. In the Service Preference name field enter Prefer HD with SD fallback.
4. In the Conference bridge type field, choose TelePresence MCU.
5. Click Add Service Preference.
6. In the Pools section of the page under Pool name select HD MCU pool.
7. Click Add selected pool.
8. In the Pools section of the page under Pool name select SD MCU pool.
9. Click Add selected pool.
10. Click **Save**.

**Creating a Service Preference for TelePresence MCU hosted SD conferences**

1. Go to **Conference configuration > Service Preferences**.
2. Click **New**.
3. In the **Service Preference name** field enter **Prefer SD with HD fallback**.
4. In the **Conference bridge type** field, choose **TelePresence MCU**.
5. Click **Add Service Preference**.
6. In the **Pools** section of the page under **Pool name** select **SD MCU pool**.
7. Click **Add selected pool**.
8. In the **Pools** section of the page under **Pool name** select **HD MCU pool**.
9. Click **Add selected pool**.

10. Click **Save**.

**Creating a Service Preference for TelePresence Server hosted HD conferences**

1. Go to **Conference configuration > Service Preferences**.
2. Click **New**.
3. In the Service Preference name field enter Prefer HD TS.
4. In the Conference bridge type field, choose TelePresence Server.
5. Click Add Service Preference.
6. In the Pools section of the page under Pool name select HD TS pool.
7. Click Add selected pool.

8. Click Save.

Creating a Service Preference for TelePresence Server hosted SD conferences

1. Go to Conference configuration > Service Preferences.
2. Click New.
3. In the Service Preference name field enter Prefer SD TS.
4. In the Conference bridge type field, choose TelePresence Server.
5. Click Add Service Preference.
6. In the Pools section of the page under Pool name select SD TS pool.
7. Click Add selected pool.

8. Click Save.
Task 22: Creating conference templates for Meeting-type conferences

A Meeting-type conference template provides all its participants with the same privileges and requires one or more conference aliases. The following examples show how to create conference templates for:

- 'HD Meetings' hosted on TelePresence MCUs
- 'SD Meetings' hosted on TelePresence MCUs
- 'HD Meetings' hosted on TelePresence Servers
- 'SD Meetings' hosted on TelePresence Servers

Creating a conference template for an 'HD Meeting' hosted on TelePresence MCUs

This template uses a Service Preference that prioritizes HD pools over SD pools for TelePresence MCU resources.

1. Go to **Conference configuration** > **Conference templates**.
2. Click **New**.
3. Enter the following in the relevant fields, leave other fields as their default values:

<table>
<thead>
<tr>
<th>Name</th>
<th>Conference type</th>
<th>Service Preference</th>
<th>Maximum number of cascades</th>
<th>Limit number of participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enter a name for the conference template, for example <strong>HD Meeting</strong>.</td>
<td>Select <strong>Meeting</strong>.</td>
<td>Select <strong>Prefer HD with SD fallback</strong>.</td>
<td>To enable cascading enter ‘1’ or, if you want to cascade to more than one conference bridge, a higher number. To disable cascading, enter ‘0’.</td>
<td>Specify a limited number of participants, if required. The number includes any auto-dialed participants. <strong>Note:</strong> No preference is given to participants who have organized a conference. If the maximum number of participants is reached before the participant who organized the conference has dialed in, this participant is rejected.</td>
</tr>
</tbody>
</table>
4. Click **Create conference template**.

**Note:** If you would like to make changes to the advanced template parameters, which change settings on the conference bridges, see the section **Adding and editing advanced template parameters** within the current Cisco TelePresence Conductor Administrator Guide.

**Creating a conference template for an 'SD Meeting' hosted on TelePresence MCUs**

This template uses a Service Preference that prioritizes SD pools over HD pools for TelePresence MCU resources.

Enter the following in the relevant fields, leave other fields as their default values:

<table>
<thead>
<tr>
<th>Name</th>
<th>Enter a name for the conference template, for example <strong>SD meeting</strong>.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conference type</td>
<td>Select <strong>Meeting</strong>.</td>
</tr>
<tr>
<td>Service Preference</td>
<td>Select <strong>Prefer SD with HD fallback</strong>.</td>
</tr>
<tr>
<td>Maximum number of cascades</td>
<td>To enable cascading enter ‘1’ or, if you want to cascade to more than one conference bridge, a higher number. To disable cascading, enter ‘0’.</td>
</tr>
</tbody>
</table>

**Creating a conference template for an ‘HD Meeting’ hosted on TelePresence Servers**

The following steps demonstrate how to create an HD meeting template for a TelePresence Server.

1. Go to **Conference configuration > Conference templates**.
2. Click **New**.
3. Enter the following in the relevant fields, leave other fields as their default values:

<table>
<thead>
<tr>
<th>Name</th>
<th>Enter a name for the conference template, for example <strong>HD TS meeting</strong>.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conference type</td>
<td>Select <strong>Meeting</strong>.</td>
</tr>
<tr>
<td><strong>Call Policy mode</strong></td>
<td>We recommend that you do not use this feature to define which participants can create a conference and that you use the field <em>Allow conference to be created</em> on the <em>Conference aliases</em> page instead. If you still want to use the feature, select <em>On</em> and see Appendix 4: Call policy mode [p.81] for more information.</td>
</tr>
<tr>
<td>----------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Service Preference</strong></td>
<td>Select <em>Prefer HD TS</em>.</td>
</tr>
<tr>
<td><strong>Maximum number of cascades</strong></td>
<td>To enable cascading enter '1' or, if you want to cascade to more than one conference bridge, a higher number. To disable cascading, enter '0'. TelePresence Server version 4.0(1.57) or later is required for cascading to work.</td>
</tr>
<tr>
<td><strong>Limit number of participants</strong></td>
<td>Specify a limited number of participants, if required. The number includes any auto-dialed participants. <strong>Note:</strong> No preference is given to participants who have organized a conference. If the maximum number of participants is reached before the participant who organized the conference has dialed in, this participant is rejected.</td>
</tr>
<tr>
<td><strong>Participant quality</strong></td>
<td>Choose one of the HD choices from the drop-down box. When using a CTS3000 or TX9000 you must select <em>Full HD (1080p 30fps / 720p 60fps video, multi-channel audio)</em> or a custom quality setting that has an audio quality level of multi-channel, otherwise insufficient resources will be allocated to display multiple screens.</td>
</tr>
<tr>
<td><strong>Allow multiscreen</strong></td>
<td>Decide whether this conference will support multiscreen systems, or whether it will only display single screen systems and the center camera of a multiscreen system. The default is <em>No</em>. If <em>Yes</em> is selected, the endpoint does not support TIP (Telepresence Interoperability Protocol) and the expectation is for multiscreen systems to have all three screens active, then create a pre-configured endpoint to match each multiscreen system in the call. (To do this go to Conference configuration &gt; Pre-configured endpoints). For more information on pre-configuring endpoints see <a href="#">Cisco TelePresence Conductor Administrator Guide</a>.</td>
</tr>
<tr>
<td><strong>Content quality</strong></td>
<td>Select the maximum content quality allowed for this conference.</td>
</tr>
</tbody>
</table>
4. Click **Create conference template**.

**Note:** If you would like to make changes to the advanced template parameters, which change settings on the conference bridges, see the section **Adding and editing advanced template parameters** within the current *Cisco TelePresence Conductor Administrator Guide*.

**Creating a conference template for an 'SD Meeting' hosted on TelePresence Servers**

Repeat the steps under **Creating a conference template for an 'HD Meeting' hosted on TelePresence Servers** on page 41 to create a conference template for an ‘SD Meeting’ hosted on TelePresence Servers. Enter the same values for the fields, apart from:

<table>
<thead>
<tr>
<th>Name</th>
<th>Enter a name for the conference template, for example <strong>SD TS meeting</strong>.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Preference</td>
<td>Select <strong>Prefer SD TS</strong>.</td>
</tr>
</tbody>
</table>
| Participant quality | Choose one of the SD choices from the drop-down box.  
CTS3000 endpoints require the audio level to be set to multi-channel to be allocated sufficient resources to display three screens. The pre-defined SD setting does not have an audio level of multi-channel, which will result in only the center screen of the CTS3000 to be displayed. |
Task 23: Creating conference templates for Lecture-type conferences

A Lecture-type conference template defines two role types, host and guest, with different privileges and requires at least one conference alias per role type. The following examples show how to create conference templates for:

- Lecture-type conferences hosted on TelePresence MCUs
- Lecture-type conferences hosted on TelePresence Servers

Creating a conference template for a Lecture-type conference hosted on HD TelePresence MCUs

The following steps set up a 'Lecture' template that uses an TelePresence MCU Service Preference:

1. Go to Conference configuration > Conference templates.
2. Click New.
3. Enter the following in the relevant fields, leave other fields as their default values:

<table>
<thead>
<tr>
<th>Name</th>
<th>Enter a name for the conference template, for example Lecture.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conference type</td>
<td>Select Lecture.</td>
</tr>
<tr>
<td>Number of hosts to reserve</td>
<td>Enter '2' in this example.</td>
</tr>
<tr>
<td>Call Policy mode</td>
<td>We recommend that you do not use this feature to define which participants can create a conference and that you use the field Allow conference to be created on the Conference aliases page instead. If you still want to use the feature, select On and see Appendix 4: Call policy mode [p.81] for more information.</td>
</tr>
<tr>
<td>Service Preference</td>
<td>Select Prefer HD with SD fallback.</td>
</tr>
<tr>
<td>Maximum number of cascades</td>
<td>To enable cascading enter '1' or, if you want to cascade to more than one conference bridge, a higher number. To disable cascading, enter '0'.</td>
</tr>
<tr>
<td>Limit number of participants</td>
<td>Specify a limited number of participants, if required. The number includes any auto-dialed participants and any reserved hosts. Note: No preference is given to participants who have organized a conference. If the maximum number of participants is reached before the participant who organized the conference has dialed in, this participant is rejected.</td>
</tr>
</tbody>
</table>
4. Click **Create conference template**.
5. Click **View/Edit** for the Lecture template.
6. Click **Edit** under the **Advanced parameters** section.
7. Enter the following in the relevant fields, leave other fields as their default values:

<table>
<thead>
<tr>
<th>Field</th>
<th>Input</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIN</td>
<td>Check the on box next to the field in the primary column then enter a PIN for the host to use when entering the conference. Note: For TelePresence MCU software versions lower than 4.3 a guest PIN must be specified if a host PIN is specified.</td>
</tr>
</tbody>
</table>

8. Click **Save** to exit the advance parameters.

9. Click **Save** on the **Conference template** page.

**Creating a conference template for a Lecture-type conference hosted on HD TelePresence Servers**

1. Go to **Conference configuration > Conference templates**.
2. Click **New**.
3. Enter the following in the relevant fields, leave other fields as their default values:

<table>
<thead>
<tr>
<th><strong>Name</strong></th>
<th>Enter a name for the conference template, for example <em>Lecture - TS</em>.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Conference type</strong></td>
<td>Select <em>Lecture</em>.</td>
</tr>
<tr>
<td><strong>Number of hosts to reserve</strong></td>
<td>Enter ‘2’ in this example.</td>
</tr>
<tr>
<td><strong>Call Policy mode</strong></td>
<td>We recommend that you do not use this feature to define which participants can create a conference and that you use the field <em>Allow conference to be created</em> on the <em>Conference aliases</em> page instead. If you still want to use the feature, select <em>On</em> and see Appendix 4: Call policy mode [p.81] for more information.</td>
</tr>
<tr>
<td><strong>Service Preference</strong></td>
<td>Select <em>Prefer HD TS</em>.</td>
</tr>
<tr>
<td><strong>Maximum number of cascades</strong></td>
<td>To enable cascading enter ‘1’ or, if you want to cascade to more than one conference bridge, a higher number. To disable cascading, enter ‘0’. TelePresence Server version 4.0(1.57) or later is required for cascading to work.</td>
</tr>
<tr>
<td><strong>Limit number of participants</strong></td>
<td>Specify a limited number of participants, if required. The number includes any auto-dialed participants and any reserved hosts.</td>
</tr>
<tr>
<td><strong>Note</strong>: No preference is given to participants who have organized a conference. If the maximum number of participants is reached before the participant who organized the conference has dialed in, this participant is rejected.</td>
<td></td>
</tr>
<tr>
<td><strong>Host quality</strong></td>
<td>Enter the maximum quality setting to apply to hosts using this conference template. When using a CTS3000 or TX9000 you must select <em>Full HD (1080p 30fps / 720p 60fps video, multi-channel audio)</em> or a custom quality setting that has an audio quality level of multi-channel, otherwise insufficient resources will be allocated to display multiple screens.</td>
</tr>
<tr>
<td><strong>Guest quality</strong></td>
<td>Enter the maximum quality setting to apply to guests using this conference template. When using a CTS3000 or TX9000 you must select <em>Full HD (1080p 30fps / 720p 60fps video, multi-channel audio)</em> or a custom quality setting that has an audio quality level of multi-channel, otherwise insufficient resources will be allocated to display multiple screens.</td>
</tr>
<tr>
<td><strong>Allow multiscreen</strong></td>
<td>Decide whether this conference will support multiscreen systems, or whether it will only display single screen systems and the center camera of a multiscreen system. The default is <em>No</em>. If <em>Yes</em> is selected, the endpoint does not support TIP (Telepresence Interoperability Protocol) and the expectation is for multiscreen systems to have all three screens active, then create a pre-configured endpoint to match each multiscreen system in the call. (To do this go to Conference configuration &gt; Pre-configured endpoints). For more information on pre-configuring endpoints see Cisco TelePresence Conductor Administrator Guide.</td>
</tr>
<tr>
<td><strong>Content quality</strong></td>
<td>Select the maximum quality allowed for this conference.</td>
</tr>
</tbody>
</table>
4. Click **Create conference template**.
5. Click **View/Edit** for the Lecture - TS template.
6. Click **Edit** under the **Advanced parameters** section.
7. Enter the following in the relevant field, leave other fields as their default values:

**PIN**  
Check the on box next to the **Pin** field and then enter a PIN for the host to use when entering the conference.

---

**Cisco TelePresence Conductor with Cisco VCS (Policy Service) Deployment Guide (XC3.0)**  
Page 47 of 89
8. Click **Save** to exit the advance parameters.

   ![Advanced parameters](image)

9. Click **Save** on the **Conference template** page.

### Task 24: Creating the auto-dialed participants

An auto-dialed participant is a participant that is automatically dialed from the conferencing resource at the start of the conference. The auto-dialed participant is associated with templates and is commonly used for dialing an endpoint, an external audio bridge, or a recording device.

Although the TelePresence Conductor and its conference bridges use SIP to call auto-dialed participants, H.323 endpoints can be called into a conference through the Cisco VCS’s inter-working feature.

The following examples show how to create an auto-dialed participant for:

- an endpoint to join the 'HD Meeting'
- a recording device to join the 'Lecture' hosted on TelePresence MCUs
- a recording device to join the 'Lecture - TS' hosted on TelePresence Servers

**Note:** Auto-dialed participants that are multiscreen endpoints are not supported. For multiscreen auto-dialed participants only the center screen is displayed in the conference.

#### Creating an auto-dialed participant for an endpoint

1. Go to **Conference configuration > Auto-dialed participants**.
2. Click **New**.
3. Enter the following in the relevant fields, leave other fields as their default values:

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Name</strong></td>
<td>Enter a name for the auto-dialed participant, for example <em>Invite boss to meeting</em>.</td>
</tr>
<tr>
<td><strong>Conference template</strong></td>
<td>Select <em>HD Meeting</em>.</td>
</tr>
<tr>
<td><strong>Conference name match</strong></td>
<td>Enter *meet\boss.(HD</td>
</tr>
<tr>
<td><strong>Address</strong></td>
<td>Enter <em>boss@sip domain</em>.*</td>
</tr>
</tbody>
</table>
Protocol | Select a protocol supported by the video network (SIP is recommended).
---|---
Role type | Select Participant.
Keep conference alive | Select Yes.

### Auto-dialed participants

- **Name**:
- **Description**: Invite boss to meeting
- **Conference template**: Lecture
- **Conference name match (must use regex)**: \.*
- **Participant address**: TCSrecording@<SIP domain>
- **Protocol**: SIP
- **Role type**: Participant
- **DTMF sequence**:
- **Keep conference alive**: Yes
- **Enabled**:

4. Click **Create participant**.
5. Click **View/Edit** for the 'Invite boss to meeting' auto-dialed participant.
6. At the bottom of the page, there is a chart with the templates that are associated with this auto-dialed participant. Verify this association is correct.

<table>
<thead>
<tr>
<th>template associated with this auto-dialed participant</th>
<th>Description</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCS lecture</td>
<td>Meeting</td>
<td></td>
</tr>
</tbody>
</table>

7. Click **Save**.

**Creating an auto-dialed participant for a recording device joining a TelePresence MCU hosted conference**

1. Go to **Conference configuration > Auto-dialed participants**.
2. Click **New**.
3. Enter the following in the relevant fields, leave other fields as their default values:

<table>
<thead>
<tr>
<th>Name</th>
<th>Enter a name for the auto-dialed participant, for example TCS – Recording device.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conference template</td>
<td>Select Lecture to use with the 'Lecture' meeting on TelePresence MCUs.</td>
</tr>
<tr>
<td>Conference name match</td>
<td>Enter .* This will match on all conference names.</td>
</tr>
<tr>
<td>Address</td>
<td>Enter TCSrecording@&lt;SIP domain&gt;.</td>
</tr>
<tr>
<td>Protocol</td>
<td>Select a protocol supported by the video network (SIP is recommended).</td>
</tr>
<tr>
<td>Role type</td>
<td>Select Guest.</td>
</tr>
<tr>
<td>Keep conference alive</td>
<td>Select No.</td>
</tr>
</tbody>
</table>
4. Click **Create participant**.
5. Click **View/Edit** for the ‘TCS - Recording device’ auto-dialed participant.
6. Click **Edit** under the **Advanced parameters** section.
7. Enter the following in the relevant fields, leave other fields as their default values:

<table>
<thead>
<tr>
<th><strong>Appear as a recording device</strong></th>
<th>Check the on box next to the field and then change the value to True from the drop-down list.</th>
</tr>
</thead>
</table>

8. Click **Save** to exit the advance parameters.

9. At the bottom of the page, there is a chart with the templates that are associated with this auto-dialed participant. Verify this association is correct.

<table>
<thead>
<tr>
<th><strong>Template associated with this auto-dialed participant</strong></th>
<th><strong>Description</strong></th>
<th><strong>Type</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture</td>
<td></td>
<td>Lecture</td>
</tr>
</tbody>
</table>

10. Click **Save** on the **Auto-dialed participants** page.

**Creating an auto-dialed participant for a recording device joining a TelePresence Server hosted conference**

1. Go to **Conference configuration > Auto-dialed participants**.
2. Click **New**.
3. Enter the following in the relevant fields, leave other fields as their default values:

<table>
<thead>
<tr>
<th>Name</th>
<th>Enter a name for the auto-dialed participant, for example TCS – Recording device for TS.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conference template</td>
<td>Select Lecture to use with the Lecture meeting on the TelePresence Server</td>
</tr>
<tr>
<td>Conference name match</td>
<td>Enter (.* ) This will match on all conference names.</td>
</tr>
<tr>
<td>Address</td>
<td>Enter TCSrecording@&lt;SIP domain&gt;</td>
</tr>
<tr>
<td>Protocol</td>
<td>Select a protocol supported by the video network (SIP is recommended).</td>
</tr>
<tr>
<td>Role type</td>
<td>Select Guest.</td>
</tr>
<tr>
<td>Keep conference alive</td>
<td>Select No.</td>
</tr>
<tr>
<td>Maximum quality</td>
<td>Enter the maximum quality setting to apply to this auto-dialed participant.</td>
</tr>
</tbody>
</table>

4. Click Create participant.

5. At the bottom of the page, there is a chart with the templates that are associated with this auto-dialed participant. Verify this association is correct.

6. Click Save on the Auto-dialed participants page.
Task 25: Creating conference aliases for the Meeting-type conferences

Meeting-type conferences require one or more conference aliases for the role-type of 'Participant'. The following examples show how to create a conference alias for:

- TelePresence MCU hosted 'HD Meeting' conference template
- TelePresence MCU hosted 'SD Meeting' conference template
- TelePresence Server hosted 'HD Meeting' conference template
- TelePresence Server hosted 'SD Meeting' conference template

Creating a conference alias for the TelePresence MCU hosted 'HD Meeting' template

1. Go to Conference configuration > Conference aliases.
2. Click New.
3. Enter the following in the relevant fields, leave other fields as their default values:

<table>
<thead>
<tr>
<th>Name</th>
<th>Enter a name for the alias, for example HD Meeting.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incoming alias</td>
<td>Enter (meet.*\HD)@vcs.domain for example</td>
</tr>
<tr>
<td>Conference name</td>
<td>Enter \1</td>
</tr>
<tr>
<td>Priority</td>
<td>Enter '25' for example.</td>
</tr>
<tr>
<td>Conference template</td>
<td>Select HD Meeting.</td>
</tr>
<tr>
<td>Role type</td>
<td>Select Participant.</td>
</tr>
<tr>
<td>Allow conference to be created</td>
<td>Select Yes if participants dialing this alias should be able to create the conference. If you select No, you need to define another alias resulting in the same conference with Allow conference to be created set to Yes or the conference must be created via the TelePresence Conductor's API.</td>
</tr>
</tbody>
</table>

See Appendix 5: Allow conference to be created [p.87] for more information.
4. Click **Create conference alias**.

**Creating a conference alias for the TelePresence MCU hosted ‘SD Meeting’ template**

Repeat the steps under *Creating a conference alias for the TelePresence MCU hosted ‘HD Meeting’ template* [p.52] to create a conference alias for the ‘SD Meeting’ hosted on TelePresence MCUs. Enter the following in the relevant fields, leave other fields as their default values:

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Enter a name for the alias, for example SD Meeting.</td>
</tr>
<tr>
<td><strong>Incoming alias</strong></td>
<td>Enter (meet..*..SD)@vcs.domain for example. This pattern will match meet.&lt;any_characters&gt;<a href="mailto:.SD@vcs.domain">.SD@vcs.domain</a></td>
</tr>
<tr>
<td>Conference name</td>
<td>Enter \1</td>
</tr>
<tr>
<td>Priority</td>
<td>Enter ‘40’ for example.</td>
</tr>
<tr>
<td><strong>Conference template</strong></td>
<td>Select SD Meeting.</td>
</tr>
<tr>
<td><strong>Role type</strong></td>
<td>Select Participant.</td>
</tr>
<tr>
<td>Allow conference to be created</td>
<td>Select Yes if participants dialing this alias should be able to create the conference. If you select No, you need to define another alias resulting in the same conference with Allow conference to be created set to Yes or the conference must be created via the TelePresence Conductor's API. See Appendix 5: Allow conference to be created [p.87] for more information.</td>
</tr>
</tbody>
</table>

**Creating a conference alias for the TelePresence Server hosted ‘HD TS Meeting’ template**

The following steps create a conference alias that uses the ‘HD TS Meeting’ template and hosts the conference on a TelePresence Server:

1. Go to **Conference configuration > Conference aliases**.
2. Click **New**.
3. Enter the following in the relevant fields, leave other fields as their default values:

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Name</strong></td>
<td>Enter a name for the alias, for example <strong>HD TS Meeting</strong>.</td>
</tr>
<tr>
<td><strong>Incoming alias</strong></td>
<td>Enter <code>(meetts\.*\HD)@vcs.domain</code> for example.</td>
</tr>
<tr>
<td><strong>Conference name</strong></td>
<td>Enter <code>\1</code></td>
</tr>
<tr>
<td><strong>Priority</strong></td>
<td>Enter '30' for example.</td>
</tr>
<tr>
<td><strong>Conference template</strong></td>
<td>Select <strong>HD TS Meeting</strong>.</td>
</tr>
<tr>
<td><strong>Role type</strong></td>
<td>Select <strong>Participant</strong>.</td>
</tr>
<tr>
<td><strong>Allow conference to be created</strong></td>
<td>Select <strong>Yes</strong> if participants dialing this alias should be able to create the conference. If you select <strong>No</strong>, you need to define another alias resulting in the same conference with <strong>Allow conference to be created</strong> set to <strong>Yes</strong> or the conference must be created via the TelePresence Conductor's API. See [Appendix 5: Allow conference to be created][p.87] for more information.</td>
</tr>
</tbody>
</table>

- **Conference aliases**
  - Name: **HD TS Meeting**
  - Description: 
  - Incoming alias (must use regex): `(meetts\.*\HD)@vcs.domain`
  - Conference name: `\1`
  - Priority: `30`
  - Conference template: **HD TS Meeting**
  - Role type: **Participant**
  - Allow conference to be created: **Yes**

4. Click **Create conference alias**.

**Creating a conference alias for the TelePresence Server hosted ‘SD TS Meeting’ template**

Repeat the steps under [Creating a conference alias for the TelePresence Server hosted ‘HD TS Meeting’ template][p.53] to create a conference alias for the 'SD Meeting' hosted on TelePresence Servers. Enter the following in the relevant fields, leave other fields as their default values:

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Name</strong></td>
<td>Enter a name for the alias, for example <strong>SD TS Meeting</strong>.</td>
</tr>
<tr>
<td><strong>Incoming alias</strong></td>
<td>Enter <code>(meetts\.*\SD)@vcs.domain</code> for example.</td>
</tr>
</tbody>
</table>

[Cisco TelePresence Conductor with Cisco VCS (Policy Service) Deployment Guide (XC3.0)](Page 54 of 89)
Conference name | Enter \1
--- | ---
Priority | Enter '45' for example.
Conference template | Select SD TS Meeting.
Role type | Select Participant.
Allow conference to be created | Select Yes if participants dialing this alias should be able to create the conference. If you select No, you need to define another alias resulting in the same conference with Allow conference to be created set to Yes or the conference must be created via the TelePresence Conductor's API. See Appendix 5: Allow conference to be created [p.87] for more information.

**Task 26: Creating conference aliases for the Lecture-type templates**

Lecture-type conferences require one or more conference aliases per role-type. The role types are 'Host' and 'Guest'. The following examples show how to create a conference alias for:

- TelePresence MCU hosted 'Lecture' template with a role of 'Host'
- TelePresence MCU hosted 'Lecture' template with a role of 'Guest'
- TelePresence Server hosted 'Lecture-TS' template with a role of 'Host'
- TelePresence Server hosted 'Lecture - TS' template with a role of 'Guest'

**Note:** When configuring conference aliases for 'Lecture'-type conferences, you must ensure that the Conference name for the 'Host' alias and the 'Guest' alias resolve to the same string. If you do not, they will end up in separate conferences.

**Creating a conference alias for the TelePresence MCU hosted ‘Lecture’ template with a role of ‘Host’**

1. Go to Conference configuration > Conference aliases.
2. Click New.
3. Enter the following in the relevant fields, leave other fields as their default values:

<table>
<thead>
<tr>
<th>Name</th>
<th>Enter a name for the alias, for example Training - Teacher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incoming alias</td>
<td>Enter (teach..*)@vcs.domain for example.</td>
</tr>
<tr>
<td></td>
<td>This pattern will match teach.&lt;any_characters&gt;@vcs.domain</td>
</tr>
<tr>
<td>Conference name</td>
<td>Enter Training</td>
</tr>
</tbody>
</table>
Priority Enter ‘10’ for example.
Conference template Select Lecture.
Role type Select Host.
Allow conference to be created Select Yes if participants dialing this alias should be able to create the conference. If you select No, you need to define another alias resulting in the same conference with Allow conference to be created set to Yes or the conference must be created via the TelePresence Conductor’s API.
See Appendix 5: Allow conference to be created [p.87] for more information.

4. Click Create conference alias.

Creating a conference alias for the TelePresence MCU hosted ‘Lecture’ template with a role of ‘Guest’

1. Go to Conference configuration > Conference aliases.
2. Click New.
3. Enter the following in the relevant fields, leave other fields as their default values:

<table>
<thead>
<tr>
<th>Name</th>
<th>Enter a name for the alias, for example Training - Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incoming alias</td>
<td>Enter (learn..*)@vcs.domain for example. This pattern will match learn.&lt;any_characters&gt;@vcs.domain</td>
</tr>
<tr>
<td>Conference name</td>
<td>Enter Training</td>
</tr>
<tr>
<td>Priority</td>
<td>Enter ‘20’ for example.</td>
</tr>
</tbody>
</table>

You are here: Conference configuration > Conference aliases > New
4. Click **Create conference alias**.

**Creating a conference alias for the TelePresence Server hosted ‘Lecture - TS’ template with a role of ‘Host’**

1. Go to **Conference configuration > Conference aliases**.
2. Click **New**.
3. Enter the following in the relevant fields, leave other fields as their default values:

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Name</strong></td>
<td>Enter a name for the alias, for example <strong>Training - Teacher - TS</strong></td>
</tr>
<tr>
<td><strong>Incoming alias</strong></td>
<td>Enter <code>(teachts\.*@vcs.domian)</code> for example. This pattern will match teachts.&lt;any_characters&gt;@vcs.domain</td>
</tr>
<tr>
<td><strong>Conference name</strong></td>
<td>Enter <strong>TrainingTS</strong> for example.</td>
</tr>
<tr>
<td><strong>Priority</strong></td>
<td>Enter ‘15’ for example.</td>
</tr>
<tr>
<td><strong>Conference template</strong></td>
<td>Select <strong>Lecture - TS</strong>.</td>
</tr>
</tbody>
</table>
### Role type
Select Host.

### Allow conference to be created
Select Yes if participants dialing this alias should be able to create the conference. If you select No, you need to define another alias resulting in the same conference with Allow conference to be created set to Yes or the conference must be created via the TelePresence Conductor's API.

See Appendix 5: Allow conference to be created [p.87] for more information.

### Conference aliases

<table>
<thead>
<tr>
<th>Modify conference alias</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
</tr>
<tr>
<td>Description</td>
</tr>
<tr>
<td>Incoming alias (must use regex)</td>
</tr>
<tr>
<td>Conference name</td>
</tr>
<tr>
<td>Priority</td>
</tr>
<tr>
<td>Conference template</td>
</tr>
<tr>
<td>Role type</td>
</tr>
<tr>
<td>Allow conference to be created</td>
</tr>
</tbody>
</table>

4. Click **Create conference alias**.

**Creating a conference alias for the TelePresence Server hosted ‘Lecture - TS’ template with a role of ‘Guest’**

1. Go to **Conference configuration > Conference aliases**.
2. Click **New**.
3. Enter the following in the relevant fields, leave other fields as their default values:

<table>
<thead>
<tr>
<th>Name</th>
<th>Enter a name for the alias, for example Training - Students - TS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incoming alias</td>
<td>Enter (learnts..*)@vcs.domain for example.</td>
</tr>
<tr>
<td></td>
<td>This pattern will match learnts.&lt;any_characters&gt;@vcs.domain</td>
</tr>
<tr>
<td>Conference name</td>
<td>Enter TrainingTS for example.</td>
</tr>
<tr>
<td>Priority</td>
<td>Enter '23' for example.</td>
</tr>
<tr>
<td>Conference template</td>
<td>Select Lecture - TS.</td>
</tr>
<tr>
<td>Role type</td>
<td>Select Guest.</td>
</tr>
</tbody>
</table>
Allow conference to be created: Select Yes if participants dialing this alias should be able to create the conference. If you select No, you need to define another alias resulting in the same conference with Allow conference to be created set to Yes or the conference must be created via the TelePresence Conductor's API.

See Appendix 5: Allow conference to be created [p.87] for more information.

4. Click Create conference alias.
Testing system configuration

When the configuration described in the previous sections is complete, you should test that the system is working correctly.

Creating a Meeting-type conference

To test that two or more endpoints can join an HD TelePresence MCU conference based on a template with a type of Meeting, dial meet.test.HD@<SIP domain> from each endpoint. Both endpoints should be taken to the same conference.

To test that two or more endpoints can join an HD TelePresence Server conference based on a template with a type of Meeting, dial meetts.test.HD@<SIP domain> from each endpoint. Both endpoints should be taken to the same conference.

Adding an auto-dialed participant

To test that auto-dialed participants are called when an HD Meeting TelePresence MCU conference is created, dial meet.boss.HD@<SIP domain> from an endpoint. The auto-dialed participants boss@<SIP domain> and TCSrecording@<SIP domain> should receive a call from the TelePresence MCU conference bridge.

To test that auto-dialed participants are called when an HD Meeting TelePresence Server conference is created, dial meetts.boss.HD@<SIP domain> from an endpoint. The auto-dialed participants boss@<SIP domain> and TCSrecording@<SIP domain> should receive a call from the TelePresence Server conference bridge.

Creating a Lecture-type conference

To test that two or more endpoints can use different aliases to join the same TelePresence MCU conference based on a template with a type of Lecture, have one endpoint dial teach.test@<SIP domain> to represent the teacher and have the other endpoint dial learn.test@<SIP domain>. All endpoints should be taken to the same conference. The endpoints that dialed learn.test@<SIP domain> will see a blank screen until the endpoint that dialed teach.test@<SIP domain> enters the conference.

To test that two or more endpoints can use different aliases to join the same TelePresence Server conference based on a template with a type of Lecture, have one endpoint dial teachts.test@<SIP domain> to represent the teacher and have the other endpoint dial leartnts.test@<SIP domain>. All endpoints should be taken to the same conference. The endpoints that dialed leartnts.test@<SIP domain> will see a blank screen until the endpoint that dialed teachts.test@<SIP domain> enters the conference.

Testing cascading

To check that cascading is working properly it is necessary to occupy all the ports on the first conference bridge so that the TelePresence Conductor cascades the conference to the second conference bridge. If there are enough endpoints registered to the Cisco VCS you can test this by adding callers to the conference until it is cascaded. Alternatively, you can increase the number of host resources to be reserved by a Lecture-type template to a level that fills the primary conference bridge. This will cause the conference to be cascaded when guests dial in to a conference that is based on that template.
Creating a system backup

To create a backup of TelePresence Conductor system data:

1. Go to Maintenance > Backup and restore.
2. Optionally, enter an Encryption password with which to encrypt the backup file. If a password is specified, the same password will be required to restore the file.
3. Click Create system backup file.
4. After the backup file has been prepared, a pop-up window appears and prompts you to save the file (the exact wording depends on your browser). The default name is in the format: <software version>_<hardware serial number>_<date>_<time>_backup.tar.gz. (The file extension is normally .tar.gz.enc if an encryption password is specified. However, if you use Internet Explorer to create an encrypted backup file, the filename extension will be .tar.gz.gz by default. These different filename extensions have no operational impact; you can create and restore encrypted backup files using any supported browser.) The preparation of the system backup file may take several minutes. Do not navigate away from this page while the file is being prepared.
5. Save the file to a designated location.

Log files are not included in the system backup file.

For more information see Cisco TelePresence Conductor Administrator Guide or the TelePresence Conductor's online help.
Troubleshooting

Tracking a call from Cisco VCS to TelePresence Conductor

Event log
To see the events associated with a particular call on both Cisco VCS and TelePresence Conductor look at the search history on the Cisco VCS (Status > Search history, then click View for a particular call). Searching for the tag associated with that call in the event log on the TelePresence Conductor yields the events associated with that call:

- For calls which create conferences this tag is then associated with all future events associated with this conference (for example, conference destruction and auto-dialed participant requests to the conference bridge).
- For calls which are joining existing conferences, the tag is associated with their conference join request.

A full explanation of all the terms in the event log can be found in Cisco TelePresence Conductor Administrator Guide.

The call tag is specific to a call across multiple Cisco VCSs.

Diagnostic log
Use diagnostic logging (Maintenance > Diagnostics > Diagnostic logging) to see the call signaling in the Cisco VCS.

Tracking a conference on the TelePresence Conductor

Event log
To see all events associated with a particular conference alias (i.e. across multiple individual conferences) filter by Conference_alias_UUID in the event log either by copying it to the filter box from the event log or by clicking on the hyperlink.

Diagnostic log
Use diagnostic logging (Maintenance > Diagnostics > Diagnostic logging) to see the call signaling in the TelePresence Conductor.

Specific issues

Unable to enable more than one conference bridge
If only a single conference bridge can be enabled, the reason could be that there is no valid release key installed on the TelePresence Conductor.

Contact your Cisco account representative to obtain release key and option keys.

TelePresence Conductor does not communicate with any conference bridges
If the TelePresence Conductor is running without a release key, only a single un-clustered conference bridge is supported.
If the only conference bridge that is enabled on the TelePresence Conductor is clustered, the conference bridge shows as Unusable on the Conference bridge status page (Status > Conference bridges) and the TelePresence Conductor is unable to communicate with any conference bridges.

Contact your Cisco account representative to obtain release key and option keys.

## Call does not connect

If a call fails to connect:

1. On the Cisco VCS, look at the Search details for the call (go to Status > Search history and click View on the relevant call).
   - Check that the TelePresence Conductor search rule is being applied, under Search details the name of the search rule pointing at TelePresence Conductor should look like this:
     ```
     SearchRule (1)
     Name: To Conference Policy Service
     ```
   - If the search rule is not used, go to Configuration > Dial plan > Search rules and look under State and check the pattern is active. Open a separate tab at Maintenance > Tools > Check pattern. This tool checks pattern matches. Under Pattern type select regex and copy the relevant Pattern string and Replace string from the Search rules page as well as the destination alias from the Search history page.

2. On the Cisco VCS look under Status > Search history to see if the ARQ message under Status lists as TelePresence Conductor policy service unavailable. This is the default reply provided by the Cisco VCS, and indicates that the TelePresence Conductor was unavailable.
   - On the Cisco VCS, check the connectivity with the TelePresence Conductor by going to Configuration > Dial plan > Policy services and click View/Edit for the TelePresence Conductor policy service. In the Status section at the bottom of the page, it should show the State as Active. If it shows Inactive, further details are shown in the top section next to the Server 1 address field.
   - On the TelePresence Conductor, check the connectivity with the conference bridges by going to Conference configuration > Conference bridges > Conference bridge pool. If the Status column shows any of the conference bridges as Unusable then check the connectivity to the conference bridges and the authentication used.

3. If the SETUP message has status of Forbidden, check that:
   - The conference bridge pool has sufficient ports free to connect the call with the number of ports requested by the template.
   - The number of ports reserved for cascading is sufficient.
   - The number of ports reserved for chairpersons is not too high.

## Conference does not get created

If a conference does not get created, check the list of alarms on the TelePresence Conductor.

If the alarm "Invalid JSON found" has been raised on the TelePresence Conductor and any JSON strings entered into the Custom parameter field on the Advanced template parameters or Advanced auto-dialed participant parameters pages contain double quotes, see Alarm "Invalid JSON found" raised for valid JSON string [p.66].
Auto-dialed participant not dialed

If the auto-dialed participant does not get called:

1. Make sure that you have the following settings on the Cisco VCS neighbor zone for all TelePresence Servers:
   - **Zone profile** set to Custom
   - **Monitor peer status** set to No

   If you do not have the Cisco VCS neighbor zone configured as above, auto-dialed participants are not dialed if they are hosted on a cascade TelePresence Server.

2. Go to **Status > Search history** on the Cisco VCS and see which alias the conference bridge called. If no alias was called go to 2. If the alias is incorrect, rectify the **Address** field on TelePresence Conductor for the auto-dialed participant under **Conference configuration > Auto-dialed participants** on the TelePresence Conductor.

3. If no call is made check the **Conference name match** field for the auto-dialed participant under **Conference configuration > Auto-dialed participants** on the TelePresence Conductor. Additionally check that all conference bridges, which you expect to be registered to the Cisco VCS, are actually registered, and that they are registering the expected aliases (on the Cisco VCS, go to **Status > Registrations > By alias**). This is essential if outbound calls from the conference bridge to auto-dialed participants are to be routed correctly.

Guests are disconnected when hosts remain on the cascade MCU only

Guest participants are disconnected from the primary conference bridge even though there are host participants still present on a cascade conference bridge for the same conference. This occurs when:

- The conference bridge type is TelePresence MCU
- The conference template advanced parameter **Disconnect when last host leaves** is set to **true**
- All hosts that were dialed into the primary TelePresence MCU have disconnected
- There are still one or more hosts remaining on a cascade TelePresence MCU
- There are still one or more guests remaining on the primary TelePresence MCU

This issue does not occur on TelePresence Servers, even if the equivalent API parameter **disconnectOnChairExit** has been set to **true** via the custom advanced template parameters.

Conference bridges not registering with Cisco VCS

If the conference bridges are not registering with the Cisco VCS using either H.323 or SIP:

1. Check whether there are any registration restriction policies in place on the Cisco VCS (go to **Configuration > Registration > Configuration**). If there are:
   - Either ensure that the policies are set up in such a way to allow the conference bridges to register,
   - Or change the URIs registered by the conference bridges to a format that is compatible with the registration restriction policy.

2. Ensure that the conference bridge is configured exactly as described in the section **Configuring the TelePresence MCUs** [p.13].

If the conference bridges are not registering using SIP:

1. Review the SIP domain configuration on the Cisco VCS (**Configuration > Protocols > SIP > Domains**). Ensure the SIP domain of the conference bridge(s) that are trying to register is present. If not,
either:
- Change the SIP domain of the conference bridge(s) to be compatible.
- Create a new SIP domain on the Cisco VCS.

2. Ensure that the conference bridge is configured exactly as described in the section Configuring the TelePresence MCUs [p.13].

If the conference bridges are not registering using H.323:

Ensure that the conference bridge is configured exactly as described in the section Configuring the TelePresence MCUs [p.13].

**Pre-configured endpoint cannot join conference**

When you pre-configure single-screen and multiscreen endpoints on the TelePresence Conductor, you specify the address of each codec used by the endpoint.

In certain scenarios the address of the endpoint may change depending on where it registers to (for example if the domain portion of the URI is the IP address of the peer the endpoint is registering to). If not all addresses that the endpoint can be known as are listed in the pre-configured endpoints configuration in TelePresence Conductor, the TelePresence Conductor may not recognize its address and the endpoint will use the template default settings rather than the known endpoint settings.

To resolve this, you must ensure that all possible addresses that could be used by the codec are listed.

To do this:

1. On the TelePresence Conductor, go to Conference configuration > Pre-configured endpoints.
2. From the list of pre-configured endpoints select the endpoint in question.
3. In the **Codecs** section at the bottom of the page, click on the first codec.
4. In the **Optional address** fields, ensure that all possible addresses from which calls for this codec could be received are listed.
5. Click **Save**.
6. Repeat steps 3-5 for each codec configured for that endpoint.

**Only one screen of a multiscreen endpoint is used**

**Insufficient configuration**

By default, templates on the TelePresence Conductor are configured to provision single-screen systems or the primary screen of multiscreen systems only. If you have a multiscreen endpoint but only the screen related to the main codec is being used in a conference, then ensure that the template being used is set to allow multiscreen systems, as follows:

2. Click on the template that is being used for the relevant conference.
3. From the **Allow multiscreen** drop-down menu, select Yes.
4. Click **Save**.

If using a Cisco TelePresence System (CTS) endpoint, you must also configure the conference template to use multi-channel audio. If not, insufficient resources will be allocated to the endpoint resulting in only one of the three screens being used.
To provision an endpoint to use multi-channel audio:

2. Ensure that there is at least one quality setting with the following configuration:
   - 720p 30fps multi-channel audio, or
   - 720p 60fps multi-channel audio, or
   - 1080p 30fps multi-channel audio.
   If not, create a new quality setting by clicking New.
3. Go to Conference configuration > Conference templates.
4. Click on the template that is being used for the relevant conference.
5. From the Participant quality drop-down menu (for Meetings), or either the Host quality or Guest quality drop-down menu (for Lectures), select the appropriate multi-channel audio quality setting.
6. Click Save.

Cascaded conferences

Only single screen endpoints are supported on cascade links connecting TelePresence Servers. Therefore, if a multiscreen endpoint joins a conference on a cascade conference bridge, participants on the same cascade bridge will see all screens, whereas participants on the primary bridge and on other cascade bridges will only see one screen (the screen showing the loudest speaker).

Conference name displayed on conference bridge is different from conference name that was configured

TelePresence MCUs support conference names of up to 31 characters and TelePresence Servers support conference names of up to 80 characters. If the TelePresence Conductor has a conference name that is longer than the maximum number of supported characters it will hash the name and pass the hash value to the conference bridge for it to use as the conference name. The TelePresence Conductor will continue to use the original name itself.

If a conference name is longer than 31 (for TelePresence MCU) or 80 (for TelePresence Server) characters, you can view the hashed value on the Conferences status page (Status > Conferences):

- **Name**: shows the conference name used by the TelePresence Conductor
- **Conference name**: shows the hashed value, i.e. the conference name used by the conference bridge.

Alarm "Invalid JSON found" raised for valid JSON string

It may be possible for the alarm "Invalid JSON found" to be raised even though the JSON string that was entered into the Custom parameter field on the Advanced template parameters or Advanced auto-dialed participant parameters pages appears to have been entered correctly. The alarm is raised if the JSON string contains double quotes (") with the Unicode value of 147 instead of the Unicode value 34. The Unicode value 147 is used in some external editors from which you may have copied the JSON string.

Sending the JSON string with the unsupported double quotes to the conference bridge will prevent the conference from being created.

To work around this issue, re-type the double quotes contained in the JSON string within the user interface field.
Error messages

Error communicating with mcu error="Method not supported" – this may be because a physical TelePresence Server has been added as a TelePresence MCU bridge or the slave conference bridge of a cluster has been configured.

Unsupported conference bridge software version - this may be because a physical TelePresence MCU has been added as a TelePresence Server bridge.

Regular expression match and replace

A regular expression replace of \12\2 will replace with 12th bracket match and follow it with the 2nd bracket match.

If a match of the 1st bracket match, followed by the insertion of the literal digit 2 followed by the 2nd bracket match is required, then named matches need to be used. These work as follows:

\(?P<id>123\)456\(789\) will store

123 as \1
789 as \2

123 as named replace: \(<id>\) (the name used inside the "<" and ">" is user selectable)

to replace, use:

\g<id>

so to replace the 1st bracket match, followed by the insertion of the literal digit 2 followed by the 2nd bracket match use:

\g<id>2\2
Appendix 1: Configuring TelePresence Conductor and Cisco VCS to support numeric dial strings

To support numeric dial strings perform the tasks outlined in the body of this deployment guide, add the transform detailed below and substitute the remaining tasks for adding search rules and conference aliases:

On the Cisco VCS:
- Adding a transform to add a domain when none exists [p.68]
- Adding a search rule for numeric dial strings [p.69]

On the TelePresence Conductor:
- Adding numeric conference aliases for Meeting-type conferences [p.70]
- Adding numeric conference aliases for Lecture-type conferences [p.74]

Adding a transform to add a domain when none exists

For consistency with both SIP and H.323 dialing, this deployment scenario always uses the URI form for routing calls (that is, dialed_digits@domain). When the Cisco VCS receives a call request, the dialed number:
- will contain the 4 digit extension number that identifies the specific endpoint to route to
- may or may not include a domain (only included when a SIP endpoint is making the call)

Thus, a transform is needed to ensure that the dialed number is transformed into a consistent form, in this case to add the domain (vcs.domain) if required. To achieve this, a regex is used: \(^[@]*\) transforms to \(\backslash 1@vcs\).domain (any dialed information which does not contain a domain – does not contain an ‘@’ – has the ‘@vcs.domain’ added.)

See Regular expression reference in the Reference section of Cisco TelePresence Conductor Administrator Guide or Online Help for further details.

To create the transform:
1. Log on to the Cisco VCS as a user with administrator privileges.
2. Go to Configuration > Dial plan > Transforms.
3. Click New.
4. Configure the fields as follows:

<table>
<thead>
<tr>
<th>Priority</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>“Add domain where none exists” for example</td>
</tr>
<tr>
<td>Pattern type</td>
<td>Regex</td>
</tr>
<tr>
<td>Pattern string</td>
<td>([^@]*)</td>
</tr>
<tr>
<td>Pattern behavior</td>
<td>Replace</td>
</tr>
</tbody>
</table>
5. Click **Create transform**.

### Create transform

- **Priority**: 2
- **Description**: Add domain where none exist
- **Pattern type**: Regex
- **Pattern string**: `(3\d{3})@vcs.domain(\.*SKIP)`
- **Replace string**: @vcs.domain
- **State**: Enabled

**Create transform**  **Cancel**

---

### Adding a search rule for numeric dial strings

Substitute the following steps for **Task 15: Configuring a search rule with the TelePresence Conductor policy service as the target** [p. 28] if you would like to use numeric dial strings in your deployment.

To configure the search rule:

1. Go to **Configuration > Dial plan > Search rules**.
2. Click **New**.
3. Enter the following in the relevant fields, leave other fields as their default values:

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rule name</strong></td>
<td>Enter 'To Conductor Policy Service' for example.</td>
</tr>
<tr>
<td><strong>Priority</strong></td>
<td>Enter '10' for example. The priority for this search rule must be higher (have a lower priority number) than the priority for the local zone.</td>
</tr>
<tr>
<td><strong>Mode</strong></td>
<td>Select <em>Alias pattern match</em></td>
</tr>
<tr>
<td><strong>Pattern type</strong></td>
<td>Select <em>Regex</em></td>
</tr>
<tr>
<td><strong>Pattern string</strong></td>
<td>Enter <code>(3\d{3})@vcs.domain(\.*SKIP)</code> for example. This matches <a href="mailto:3XXX@vcs.domain">3XXX@vcs.domain</a> with X representing a single digit. Because of the transform you added earlier, dial strings without a domain are also matched.</td>
</tr>
<tr>
<td><strong>Pattern behavior</strong></td>
<td>Select <em>Leave</em></td>
</tr>
</tbody>
</table>
On successful match, Select Stop.

Target Select Conductor Policy Service.

### Create search rule

<table>
<thead>
<tr>
<th>Configuration</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rule name</strong></td>
<td>To Conductor Policy Service</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Priority</strong></td>
<td>10</td>
</tr>
<tr>
<td><strong>Protocol</strong></td>
<td>Any</td>
</tr>
<tr>
<td><strong>Source</strong></td>
<td>Any</td>
</tr>
<tr>
<td><strong>Request must be authenticated</strong></td>
<td>No</td>
</tr>
<tr>
<td><strong>Mode</strong></td>
<td>Also pattern match</td>
</tr>
<tr>
<td><strong>Pattern type</strong></td>
<td>Regex</td>
</tr>
<tr>
<td><strong>Pattern string</strong></td>
<td>Patterns to be matched</td>
</tr>
<tr>
<td><strong>Pattern behavior</strong></td>
<td>Leave</td>
</tr>
<tr>
<td><strong>On successful match</strong></td>
<td>Stop</td>
</tr>
<tr>
<td><strong>Target</strong></td>
<td>Conductor Policy Service</td>
</tr>
<tr>
<td><strong>State</strong></td>
<td>Enabled</td>
</tr>
</tbody>
</table>

4. Click **Create search rule**.

### Adding numeric conference aliases for Meeting-type conferences

Substitute the following steps for Task 25: Creating conference aliases for the Meeting-type conferences [p.52] if you would like to use numeric dial strings in your deployment.

**Creating a conference alias for the TelePresence MCU hosted ‘HD Meeting’ template**

1. Go to **Conference configuration > Conference aliases**.
2. Click **New**.
3. Enter the following in the relevant fields, leave other fields as their default values:

<table>
<thead>
<tr>
<th>Name</th>
<th>Enter a name for the alias, for example <strong>HD Meeting</strong>.</th>
</tr>
</thead>
</table>
| Incoming alias | Enter `(30\d(2)) @.*`  
This pattern will match a numerical alias of 30XX (X being single digits), with any domain. |
| Conference name | Enter \1 |
| Priority | Enter '25' for example. |
| Conference template | Select **HD Meeting**. |
| Role type | Select **Participant**. |
| Allow conference to be created | Select Yes if participants dialing this alias should be able to create the conference. If you select **No**, you need to define another alias resulting in the same conference with **Allow conference to be created** set to Yes or the conference must be created via the TelePresence Conductor's API.  
See [Appendix 5: Allow conference to be created][p.87] for more information. |

4. Click **Create conference alias**.

**Creating a conference alias for the TelePresence MCU hosted ‘SD Meeting’ template**

Repeat the steps under [Creating a conference alias for the TelePresence MCU hosted ‘HD Meeting’ template][p.70] to create a conference alias for the ‘SD Meeting’ hosted on TelePresence MCUs. Enter the following in the relevant fields, leave other fields as their default values:

| Name | Enter a name for the alias, for example **SD Meeting**. |

---

[p.87]: Appendix 5: Allow conference to be created
[p.70]: Creating a conference alias for the TelePresence MCU hosted ‘HD Meeting’ template
Creating a conference alias for the TelePresence Server hosted ‘HD TS Meeting’ template

The following steps create a conference alias that uses the ‘HD TS Meeting’ template and hosts the conference on a TelePresence Server:

1. Go to Conference configuration > Conference aliases.
2. Click New.
3. Enter the following in the relevant fields, leave other fields as their default values:

<table>
<thead>
<tr>
<th>Name</th>
<th>Enter a name for the alias, for example HD TS Meeting.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incoming alias</td>
<td>Enter (31\d(2)) \s.* This pattern will match a numerical alias of 31XX (X being single digits), with any domain.</td>
</tr>
<tr>
<td>Conference name</td>
<td>Enter \1</td>
</tr>
<tr>
<td>Priority</td>
<td>Enter '30' for example.</td>
</tr>
<tr>
<td>Conference template</td>
<td>Select HD TS Meeting.</td>
</tr>
<tr>
<td>Role type</td>
<td>Select Participant.</td>
</tr>
<tr>
<td>Allow conference to be created</td>
<td>Select Yes if participants dialing this alias should be able to create the conference. If you select No, you need to define another alias resulting in the same conference with Allow conference to be created set to Yes or the conference must be created via the TelePresence Conductor's API. See Appendix 5: Allow conference to be created [p.87] for more information.</td>
</tr>
</tbody>
</table>
4. Click **Create conference alias**.

**Creating a conference alias for the TelePresence Server hosted ‘SD TS Meeting’ template**

Repeat the steps under [Creating a conference alias for the TelePresence Server hosted ‘HD TS Meeting’ template](#) to create a conference alias for the ‘SD Meeting’ hosted on TelePresence Servers. Enter the following in the relevant fields, leave other fields as their default values:

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Name</strong></td>
<td>Enter a name for the alias, for example <strong>SD TS Meeting</strong>.</td>
</tr>
<tr>
<td><strong>Incoming alias</strong></td>
<td>Enter <em>(33\d(2))@.</em>* This pattern will match a numerical alias of 33XX (X being single digits), with any domain.</td>
</tr>
<tr>
<td><strong>Conference name</strong></td>
<td>Enter \1</td>
</tr>
<tr>
<td><strong>Priority</strong></td>
<td>Enter ‘45’ for example.</td>
</tr>
<tr>
<td><strong>Conference template</strong></td>
<td>Select <strong>SD TS Meeting</strong>.</td>
</tr>
<tr>
<td><strong>Role type</strong></td>
<td>Select <strong>Participant</strong>.</td>
</tr>
<tr>
<td><strong>Allow conference to be created</strong></td>
<td>Select Yes if participants dialing this alias should be able to create the conference. If you select No, you need to define another alias resulting in the same conference with <strong>Allow conference to be created</strong> set to Yes or the conference must be created via the TelePresence Conductor's API. See <a href="#">Appendix 5: Allow conference to be created</a> for more information.</td>
</tr>
</tbody>
</table>
Adding numeric conference aliases for Lecture-type conferences

Creating a conference alias for the TelePresence MCU hosted ‘Lecture’ template with a role of ‘Host’

1. Go to Conference configuration > Conference aliases.
2. Click New.
3. Enter the following in the relevant fields, leave other fields as their default values:

<table>
<thead>
<tr>
<th>Name</th>
<th>Enter a name for the alias, for example Training - Teacher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incoming alias</td>
<td>Enter ((34\d(2))@.*) This pattern will match a numerical alias of 34XX (X being single digits), with any domain.</td>
</tr>
<tr>
<td>Conference name</td>
<td>Enter Training</td>
</tr>
<tr>
<td>Priority</td>
<td>Enter ‘10’ for example.</td>
</tr>
<tr>
<td>Conference template</td>
<td>Select Lecture.</td>
</tr>
<tr>
<td>Role type</td>
<td>Select Host.</td>
</tr>
<tr>
<td>Allow conference to be created</td>
<td>Select Yes if participants dialing this alias should be able to create the conference. If you select No, you need to define another alias resulting in the same conference with Allow conference to be created set to Yes or the conference must be created via the TelePresence Conductor’s API. See Appendix 5: Allow conference to be created [p.87] for more information.</td>
</tr>
</tbody>
</table>

4. Click Create conference alias.
Creating a conference alias for the TelePresence MCU hosted ‘Lecture’ template with a role of ‘Guest’

1. Go to Conference configuration > Conference aliases.
2. Click New.
3. Enter the following in the relevant fields, leave other fields as their default values:

<table>
<thead>
<tr>
<th>Name</th>
<th>Enter a name for the alias, for example Training - Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incoming alias</td>
<td>Enter ((35\d(2))@.*)</td>
</tr>
<tr>
<td>Conference name</td>
<td>Enter Training</td>
</tr>
<tr>
<td>Priority</td>
<td>Enter '20' for example.</td>
</tr>
<tr>
<td>Conference template</td>
<td>Select Lecture</td>
</tr>
<tr>
<td>Role type</td>
<td>Select Guest</td>
</tr>
<tr>
<td>Allow conference to be created</td>
<td>Select Yes if participants dialing this alias should be able to create the conference. If you select No, you need to define another alias resulting in the same conference with Allow conference to be created set to Yes or the conference must be created via the TelePresence Conductor’s API. See Appendix 5: Allow conference to be created [p.87] for more information.</td>
</tr>
</tbody>
</table>

4. Click Create conference alias.
Creating a conference alias for the TelePresence Server hosted ‘Lecture - TS’ template with a role of ‘Host’

1. Go to Conference configuration > Conference aliases.
2. Click New.
3. Enter the following in the relevant fields, leave other fields as their default values:

<table>
<thead>
<tr>
<th><strong>Name</strong></th>
<th>Enter a name for the alias, for example Training - Teacher - TS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Incoming alias</strong></td>
<td>Enter (36{d(2)}0.*)</td>
</tr>
<tr>
<td></td>
<td>This pattern will match a numerical alias of 36XX (X being single digits), with any domain.</td>
</tr>
<tr>
<td><strong>Conference name</strong></td>
<td>Enter TrainingTS for example.</td>
</tr>
<tr>
<td><strong>Priority</strong></td>
<td>Enter ‘15’ for example.</td>
</tr>
<tr>
<td><strong>Conference template</strong></td>
<td>Select Lecture - TS.</td>
</tr>
<tr>
<td><strong>Role type</strong></td>
<td>Select Host.</td>
</tr>
<tr>
<td><strong>Allow conference to be created</strong></td>
<td>Select Yes if participants dialing this alias should be able to create the conference. If you select No, you need to define another alias resulting in the same conference with Allow conference to be created set to Yes or the conference must be created via the TelePresence Conductor's API. See Appendix 5: Allow conference to be created [p.87] for more information.</td>
</tr>
</tbody>
</table>

4. Click Create conference alias.
Creating a conference alias for the TelePresence Server hosted ‘Lecture - TS’ template with a role of ‘Guest’

1. Go to Conference configuration > Conference aliases.
2. Click New.
3. Enter the following in the relevant fields, leave other fields as their default values:

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Enter a name for the alias, for example Training – Students – TS</td>
</tr>
<tr>
<td>Incoming alias</td>
<td>Enter (37\d(2) @.*</td>
</tr>
<tr>
<td>Conference name</td>
<td>Enter TrainingTS for example.</td>
</tr>
<tr>
<td>Priority</td>
<td>Enter '23' for example.</td>
</tr>
<tr>
<td>Conference template</td>
<td>Select Lecture - TS.</td>
</tr>
<tr>
<td>Role type</td>
<td>Select Guest.</td>
</tr>
</tbody>
</table>

Allow conference to be created: Select Yes if participants dialing this alias should be able to create the conference. If you select No, you need to define another alias resulting in the same conference with Allow conference to be created set to Yes or the conference must be created via the TelePresence Conductor's API.

See Appendix 5: Allow conference to be created [p.87] for more information.

4. Click Create conference alias.
Appendix 2: Identifying dedicated content ports on a Cisco TelePresence MCU

This information is available on the spec sheet for the TelePresence MCU, but it is also available through the web interface, the steps below describe how to locate and use this information.

1. Go to the TelePresence MCU in a browser.
2. Log in as administrator.
3. Go to Status > Conferences and look at the line marked Streaming and content ports in use 0 (0)/##, where ## is the number of dedicated content ports of this TelePresence MCU.
Appendix 3: Example call flows

H.323 call flow

The following diagram shows a breakdown of the H.323 call flow:

![H.323 call flow diagram]

Figure 1: H.323 call flow

**Phase 1**

The endpoint sends an ARQ to the Cisco VCS, which matches the search rule for the TelePresence Conductor policy service. The Cisco VCS sends an HTTP request to the TelePresence Conductor. The HTTP response from the TelePresence Conductor contains CPL, which tells the Cisco VCS to act as though the endpoint has been located and to proceed with call setup with the endpoint by sending an ACF to it.

**Phase 2**

The Cisco VCS receives the SETUP message from the endpoint, which again matches the TelePresence Conductor policy service search rule. It sends a second HTTP request to the TelePresence Conductor. If the conference is new, the TelePresence Conductor sets up a fresh conference on the conference bridge. TelePresence Conductor sends another piece of CPL to the Cisco VCS telling it to forward the call to MCU14321.

**Phase 3**

The Cisco VCS matches the alias MCU14321 to its search rule To MCU 1. The prefix MCU1 is stripped and the message is sent to the conference bridge neighbor zone. MCU1 picks up the call and normal H.323 call setup now proceeds.
**Note:** Phase 2 and 3 occur in the same way when a SIP INVITE is received by TelePresence Conductor rather than a H.323 SETUP. Phase 1 is H.323 specific.

## Cascade creation call flow

The following diagram shows a breakdown of the call flow when a cascade is created. This diagram excludes the ARQ request/response shown in the previous diagram ([Figure 1: H.323 call flow](p.79)) and proceeds from the point where the endpoint sends the SETUP message:

![Cascade creation call flow diagram](image)

**Phase 1**

The Cisco VCS receives the SETUP message from the endpoint, which matches the TelePresence Conductor policy service search rule. It sends an HTTP request to the TelePresence Conductor. The TelePresence Conductor knows that there are not enough available ports on MCU 1 and that a cascade should be created. The Cisco VCS receives another piece of CPL from the TelePresence Conductor telling it to forward the call to MCU24321 (the primary conference on MCU 1). The TelePresence Conductor contacts the conference bridges and instructs them to set up the cascade.

**Phase 2**

Under instructions from the TelePresence Conductor, MCU 2 sets up an H.323 call to the alias MCU14321. The call setup travels through the Cisco VCS to MCU 1. Concurrently the SETUP message from the endpoint is connected to MCU 2 and normal H.323 call setup between the two then takes place.
Appendix 4: Call policy mode

Call policy mode is activated on a per-template basis on the TelePresence Conductor when active. It allows the Cisco VCS to make call policy decisions about which participants are allowed to create a conference.

To make decisions on which participants are allowed to create a conference we recommend that you use the Allow conference to be created field on the TelePresence Conductor’s conference alias instead of the Call Policy mode. For more information see Appendix 5: Allow conference to be created [p. 87].

When a call policy mode enabled TelePresence Conductor receives a call that will generate a new conference, TelePresence Conductor returns the call policy that attaches the call policy prefix to the dialed alias. This allows the policy on the Cisco VCS to act on calls with the call policy prefix. By allowing or denying these calls to be routed back to the TelePresence Conductor the Cisco VCS can control which users are allowed to create conferences.

The TelePresence Conductor’s behavior with call policy enabled on one or more templates is detailed below:
Appendix 4: Call policy mode

The VCS makes a policy request to the Conductor.

Is the incoming alias prefixed with the call policy prefix?

Yes

Does the incoming alias map to a template with call policy enabled?

No

Generate a conference on the appropriate conference bridge, if it has not already been created.

No

If fulfilled, would the conference request require generating a new conference?

Yes

Return CPL to route the call to the appropriate conference bridge.

No

Return CPL, with the call policy prefix added to the alias that the Conductor received.
There are three main ways a Cisco VCS can filter these calls. The first two, search rules and call policy rules, are detailed below.

The third method is by writing an external policy server. For help in doing so, see *External Policy on Cisco VCS Deployment Guide*. External policy servers used in conjunction with the Cisco VCS offer powerful and fine-grained methods for controlling call routing.

### Configuring call policy on the TelePresence Conductor

#### Configuring call policy for an existing template

In all cases it is first necessary to (on the TelePresence Conductor):

1. Go to Conference configuration > Conference templates.
2. Click on the conference templates for which you want to enable Call Policy mode.
3. On the drop down menu for Call Policy mode select On.
4. Click Save.

#### Configuring the call policy prefix

The call policy prefix is configurable under Conference configuration > Call Policy. The default is “create.”, which is what is used in the examples that follow. To change the call policy prefix:

1. Go to Conference configuration > Call Policy.
2. In the Call Policy prefix field enter the desired Call Policy prefix.
3. Click Save.

#### Using search rules to limit the ability to create conferences to authenticated users

Limiting the ability to create conferences to authenticated users requires two search rules on the Cisco VCS pointing at the TelePresence Conductor policy service. The first has already been created in Task 13: Adding the TelePresence Conductor as a policy service [p.24]. The second matches requests with the Call Policy prefix attached. To configure this (on the Cisco VCS):

1. Go to Configuration > Dial plan > Search rules.
2. Click Create new search rule.
3. Add (create\.?) to the start of the Pattern string. (The question mark and parentheses make the create\. part of the match optional.)
4. Go to Configuration > Dial plan > Search rules.
5. Click New.
6. Enter the following in the relevant fields, leave other fields as their default values:

<table>
<thead>
<tr>
<th>Rule name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enter Authenticated users to Conductor Policy Service for example.</td>
<td>Enter This search rule only matches authenticated users for example.</td>
</tr>
</tbody>
</table>
7. Click Create search rule.

Using call policy rules on the Cisco VCS to limit the ability to create conferences to a range of aliases

When using a call policy mode the Cisco VCS needs to send both the first request for a conference to the TelePresence Conductor and also the second request with the call policy prefix attached. The call policy prefix in use is the 'create.' call policy prefix. To achieve this:

- Enter '120' for example.
- Select Any.
- Select Yes.
- Select Alias pattern match.
- Select Regex.
- Enter `create\.(meet|teach|learn)\..*@<SIP domain>`.
- Select Leave.
- Select Stop.
- Select Conductor Policy Service.
- Select Enabled.

Click Create search rule.
1. Go to **Configuration > Dial plan > Search rules** and select the search rule created in Task 15: Configuring a search rule with the TelePresence Conductor policy service as the target [p.28].

2. Add `(create\.)?` to the start of the **Pattern string**. (The question mark and parentheses make the `create\.` part of the match optional).

3. Click **Save**.

**Note:** It is not possible to use Call Policy rules in conjunction with local CPL. Call Policy rules are a way of generating local CPL without having to write scripts. If using an uploaded local CPL script is imperative but source alias call filtering is necessary then either extend the existing CPL script or consider using an external policy server.

The following set of instructions will guide you through the configuration necessary to allow only users registered with the domain `vcs.domain` to create conferences:

1. Log into the Cisco VCS.
2. Go to **Configuration > Call Policy > Configuration**.
3. If it is not already selected, select `Local CPL` for **Call Policy mode**.
4. Click **Save**.
5. If the button is present, click **Delete uploaded file**.
6. Go to **Configuration > Call Policy > Rules**.
7. Click **New**.
8. Enter the following in the relevant fields, leave other fields as their default values:
<table>
<thead>
<tr>
<th>Source pattern</th>
<th>Enter .*@&lt;SIP domain&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Destination pattern</td>
<td>Enter create.(meet</td>
</tr>
<tr>
<td>Action</td>
<td>Select Allow</td>
</tr>
</tbody>
</table>

9. Click **Add**.

10. **Note**: Call policy rules implicitly allow calls. The next steps are necessary to create rule to deny calls which do not match the .*@<SIP domain> pattern.

   Click **New**.

11. Enter the following in the relevant fields, leave other fields as their default values:

<table>
<thead>
<tr>
<th>Source pattern</th>
<th>Enter .@.*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Destination pattern</td>
<td>Enter create.(meet</td>
</tr>
<tr>
<td>Action</td>
<td>Select <strong>Reject</strong></td>
</tr>
</tbody>
</table>

12. Click **Add**.
Appendix 5: Allow conference to be created

Similar to the Call Policy mode, which is only applicable to deployments using the Cisco VCS’s external policy service interface, the field Allow conference to be created on the Conference aliases page, allows call control to define whether participants can create a conference or just join the conference after it has been created. We recommend that you use the Allow conference to be created field instead of the Call Policy feature.

For each alias associated with a conference template, define whether the participants dialing the alias are allowed to create the conference or not.

To define an alias for participants who are allowed to create a conference:

2. Fill in all required fields with the relevant values according to Task 25: Creating conference aliases for the Meeting-type conferences [p.52] or Task 26: Creating conference aliases for the Lecture-type templates [p.55].
3. For the field Allow conference to be created select Yes.

To define an alias for participants who are not allowed to create a conference and can only join the conference after it has been created:

2. Fill in all required fields with the relevant values according to Task 25: Creating conference aliases for the Meeting-type conferences [p.52] or Task 26: Creating conference aliases for the Lecture-type templates [p.55]
3. For the field Allow conference to be created select No.

Where a conference alias has been set up with Allow conference to be created set to No, a conference can be started using either one of the following methods:

- by making a call to a second conference alias that matches to the same conference and has Allow conference to be created set to Yes.
  The two conference aliases must either have the same Conference name defined or a regex replace string (in the Conference name field) that results in the same conference name for both conference aliases.
- by creating the conference via the TelePresence Conductor’s API, for example using Cisco TMS.

Note: Participants dialing the conference alias that has Allow conference to be created set to No before the conference is created on the TelePresence Conductor will be rejected.
# Document revision history

The following table summarizes the changes that have been applied to this document:

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 2015</td>
<td>Modified configuration of VCS neighbor zones for TelePresence Servers and added a troubleshooting item for auto-dialed participants not being dialed.</td>
</tr>
<tr>
<td>January 2015</td>
<td>Updated for XC3.0</td>
</tr>
<tr>
<td>October 2014</td>
<td>Edited the task to add a second search rule for each TelePresence Server, which is only required when running XC2.4, not XC2.4.1 or later.</td>
</tr>
<tr>
<td>September 2014</td>
<td>Updated for XC2.4</td>
</tr>
<tr>
<td>April 2014</td>
<td>Updated for XC2.3</td>
</tr>
<tr>
<td>August 2013</td>
<td>Updated for XC2.2 and renamed to Cisco TelePresence Conductor with Cisco VCS (Policy Service) Deployment Guide.</td>
</tr>
<tr>
<td>May 2013</td>
<td>Updated for XC2.1</td>
</tr>
<tr>
<td>December 2012</td>
<td>Updated for XC2.0 and renamed as <em>Cisco TelePresence Conductor with Cisco TelePresence Video Communication Server (VCS) Deployment Guide</em>. Information regarding deployments with Cisco Unified Call Manager is now in <em>Cisco TelePresence Conductor with Cisco Unified Communications Manager Deployment Guide</em> (D14998).</td>
</tr>
<tr>
<td>May 2012</td>
<td>Updated for XC1.2.</td>
</tr>
<tr>
<td>May 2012</td>
<td>Initial release.</td>
</tr>
</tbody>
</table>
THE SPECIFICATIONS AND INFORMATION REGARDING THE PRODUCTS IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL STATEMENTS, INFORMATION, AND RECOMMENDATIONS IN THIS MANUAL ARE BELIEVED TO BE ACCURATE BUT ARE PRESENTED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. USERS MUST TAKE FULL RESPONSIBILITY FOR THEIR APPLICATION OF ANY PRODUCTS.

THE SOFTWARE LICENSE AND LIMITED WARRANTY FOR THE ACCOMPANYING PRODUCT ARE SET FORTH IN THE INFORMATION PACKET THAT SHIPPED WITH THE PRODUCT AND ARE INCORPORATED HEREIN BY THIS REFERENCE. IF YOU ARE UNABLE TO LOCATE THE SOFTWARE LICENSE OR LIMITED WARRANTY, CONTACT YOUR CISCO REPRESENTATIVE FOR A COPY.

The Cisco implementation of TCP header compression is an adaptation of a program developed by the University of California, Berkeley (UCB) as part of UCB’s public domain version of the UNIX operating system. All rights reserved. Copyright © 1981, Regents of the University of California.

NOTWITHSTANDING ANY OTHER WARRANTY HEREIN, ALL DOCUMENT FILES AND SOFTWARE OF THESE SUPPLIERS ARE PROVIDED "AS IS" WITH ALL FAULTS. CISCO AND THE ABOVE-NAMED SUPPLIERS DISCLAIM ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, THOSE OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OR ARISING FROM A COURSE OF DEALING, USAGE, OR TRADE PRACTICE.

IN NO EVENT SHALL CISCO OR ITS SUPPLIERS BE LIABLE FOR ANY INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR LOSS OR DAMAGE TO DATA ARISING OUT OF THE USE OR INABILITY TO USE THIS MANUAL, EVEN IF CISCO OR ITS SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Cisco and the Cisco Logo are trademarks of Cisco Systems, Inc. and/or its affiliates in the U.S. and other countries. A listing of Cisco’s trademarks can be found at www.cisco.com/go/trademarks. Third party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1005R)

Any Internet Protocol (IP) addresses and phone numbers used in this document are not intended to be actual addresses and phone numbers. Any examples, command display output, network topology diagrams, and other figures included in the document are shown for illustrative purposes only. Any use of actual IP addresses or phone numbers in illustrative content is unintentional and coincidental.

© 2015 Cisco Systems, Inc. All rights reserved.