# Cisco TelePresence Conductor Geographic Cascading

## Deployment Guide

XC1.2

D14966

May 2012

# Contents

**Introduction ..... 3**

About Geographic Cascading ..... 3
The user experience in cascaded conferences ..... 3
In what situations should Geographic Cascading be used? ..... 3
About this document ..... 3
Prerequisites ..... 4

**Configuration ..... 5**

Configuring TelePresence Conductor on the VCS(s) ..... 5
Step 1: Adding the TelePresence Conductor as a policy service ..... 5
Step 2: Configuring a search rule with the TelePresence Conductor policy service as the target ..... 6

**Configuring the conference bridge pools on TelePresence Conductor and VCS ..... 9**

Setting up regional conference bridge pools ..... 9
Adding a new conference bridge to TelePresence Conductor and the VCS ..... 10
Step 1: Adding a conference bridge to an existing pool in TelePresence Conductor ..... 10
Step 2: Adding the conference bridge as a neighbor zone ..... 11
Step 3: Adding a search rule pointing to the conference bridge's neighbor zone ..... 14
Step 4: Conference bridge specific configuration ..... 15

**Configuring the master conference on TelePresence Conductor ..... 16**

Step 1: Configuring a regional service preference ..... 16
Step 2: Configuring a master conference template ..... 16
Step 3: Configuring a chairperson conference alias for the master conference ..... 18
Step 4: Configuring a guest conference alias for the master conference ..... 19

**Configuring slave conferences on TelePresence Conductor ..... 21**

Step 1: Configuring a regional Service Preference ..... 21
Step 2: Configuring a slave conference template ..... 21
Step 3: Configuring a conference alias for the slave conference ..... 22
Step 4: Configuring a cascade link for the slave conference ..... 23

**Testing system configuration ..... 25**

Step 1: Dial endpoints into the master conference ..... 25
Step 2: Dial endpoints into slave conferences ..... 25

**Appendix 1: Intelligent search rules for routing endpoints to regional conferences ..... 26**

**Legal notices ..... 27**

Intellectual property rights ..... 27
Copyright notice ..... 27

# Introduction

## About Geographic Cascading

Geographic Cascading is a way of reducing WAN bandwidth by using the Conductor to generate cascade links between conference bridges in different regions. The intent is that users join conferences in their home region. This limits the use of WAN bandwidth between regions because there is only one video stream going between the different regions.

Geographic Cascading involves choosing one region to host the “master” conference, which is the conference that all other “slave” conferences generate cascade links into. The participants in the master and slave conferences have different conference experiences.

Geographic Cascading involves many elements of the video network operating in tight coordination. It requires a strong knowledge of the technologies involved and considerable amount of forward planning. As a result if you are intending to implement forms of geographic cascade not outlined in this document it is highly recommended that you enlist the help of the Cisco Advanced Services team to aid in planning and execution of the necessary configuration.

## The user experience in cascaded conferences

The video stream sent from the slave conference bridge to the master conference bridge is the active speaker on the slave conference. This allows the active speaker on a slave conference bridge to be seen in the master conference in the same way in which other participants would be.

The video stream from the cascade master contains whatever conference layout is used on the master conference bridge. If no layout is specified on the master conference bridge then it defaults to a full-screen view of the active speaker. The video stream from the master conference bridge is shown full-screen to all participants on the slave conference. This can result in an active speaker on the slave conference bridge seeing themselves.

## In what situations should Geographic Cascading be used?

The generation of cascade links involves the use of one additional port on the master and slave conference bridge respectively. This along with the participant layouts in cascaded conferences makes the use of geographic cascading unsuited to small conferences. It is recommended that Geographic Cascades are used for large conferences.

Geographic Cascading involves the designation of a certain conference as being the master conference. This is the conference which all other conferences dial into.

# About this document

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

- An endpoint user can call the alias **allhands-amer@<SIP domain>.** If this is the first person to call this alias, a new conference is created by TelePresence Conductor and the user is routed to it. The conference is created on a conference bridge in the AMER region.
- An endpoint user who is leading the meeting can dial **chair-allhands-amer@<SIP domain>**. If this is the first person to call this alias, a new conference is created by TelePresence Conductor and the user is routed to it. The conference is created on a conference bridge in the AMER region.

- An endpoint user can call the alias **allhands-<region>@<SIP domain>** If this is the first person to call this alias, a new conference is created by TelePresence Conductor and the user is routed to it. The conference is created preferentially on a conference bridge in the APAC region. When the conference is started a cascade link is generated between this slave conference and the master conference in AMER.

This document takes you through the steps required to configure the Cisco VCSs, TelePresence Conductor and conference bridges to perform the actions above. It also describes how to check that the system is working as expected.

Descriptions of system configuration parameters for the Cisco VCS, TelePresence Conductor and conference 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 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).

# Prerequisites

Before starting the system configuration, ensure you have access to:

- A Cisco VCS (or Cisco VCS cluster) running version X6 or later. This must already be configured to act as a H.323 gatekeeper and optionally as a SIP registrar and proxy. Ensure that the system has been tested by registering at least three endpoints to it and ensuring that they are all capable of calling each other. For more information, see the *VCS Administrator Guide* (D14049).
- A TelePresence Conductor unit that is powered on and accessible over the network. For assistance in reaching this stage please see *Cisco TelePresence Conductor Getting Started Guide* (D14829).
- The initial configuration of the TelePresence Conductor completed as per steps 1-3 of the TelePresence Conductor Deployment Guide (XC1.2).
- Two or more conference bridges that are powered on and accessible over the network. These conference bridges should be located in different regions. Basic configuration for the conference bridge should be completed as described in the relevant *Getting Started Guide*. Cisco MCU software must be version 4.2 or later. The following Cisco MCUs are supported by TelePresence Conductor:
  - 4200 Series
  - 4500 Series
  - 5300 series
  - 8420 Media Blade
  - 8510 Media2 Blade

  **Note:** this guide assumes the conference bridges are connected to the network on port A.

- A web browser with access to the web interfaces of the Cisco VCS, TelePresence Conductor and conference bridges that are being configured.

# Configuration

## Configuring TelePresence Conductor on the VCS(s)

For all the VCSs in the network that will contact the TelePresence Conductor directly it is recommended to complete the steps below.

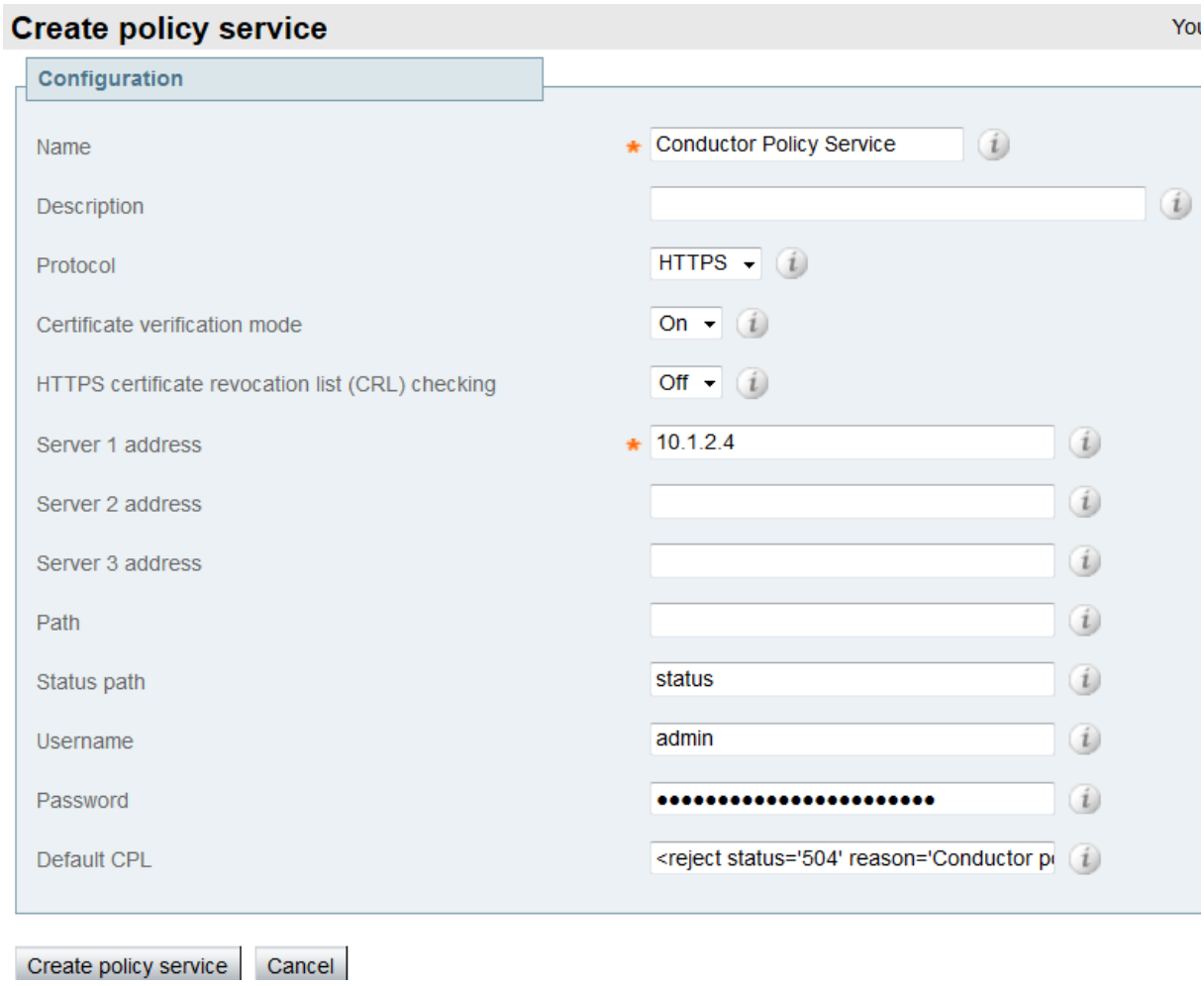
A policy service is in essence a location to which HTTP or HTTPS requests containing various details about a call can be sent. CPL (Call Policy Language) is returned by the call policy service and governs what should be done with that call. The TelePresence Conductor's policy service either rejects calls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

### Step 1: Adding the TelePresence Conductor as a policy service

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

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

| | |
|---|---|
| Name | Enter 'Conductor Policy Service' |
| Protocol | Select *HTTPS* |
| Certificate Verification Mode | 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 TelePresence Conductor through the web UI at **Maintenance > Security certificates> Server Certificate**<br><br>Note: Setting HTTPS certificate verification mode makes HTTPS communication highly insecure and is not recommended for production systems. |
| HTTPS certificate revocation list CRL checking | Select *Off* |
| Server 1 address | Enter the TelePresence Conductor's IP address |
| Path | Enter **`api/conference_controller/conference/conference_factory.cpl`**<br><br>Note: If you are using a printed copy of this document to copy and paste the above into the field go to the TelePresence Conductor online help and navigate to: **Before you start > Configuring a VCS for use with the TelePresence Conductor** |
| Username | Enter the username of the TelePresence Conductor administration user. This appears on the TelePresence Conductor's **Administrator accounts** page (**Users > Administrator accounts**) |
| Password | Enter the password of the TelePresence Conductor administration user |
| Default CPL | Enter **`<reject status='504' reason='Conductor policy service unavailable'/>`** |




1. Click **Create policy service**.

**Note:** Until the VCS updates its TelePresence Conductor status, the status of the TelePresence Conductor policy service under VCS configuration > Dial plan > Policy services will list as active. Once the VCS queries the TelePresence Conductor for its status this will change to inactive. This is expected behavior. **The TelePresence Conductor policy service will only list itself as active when the following criteria are met:**

1. The TelePresence Conductor has its root and admin passwords changed from their default values. This is a security feature.
2. 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.

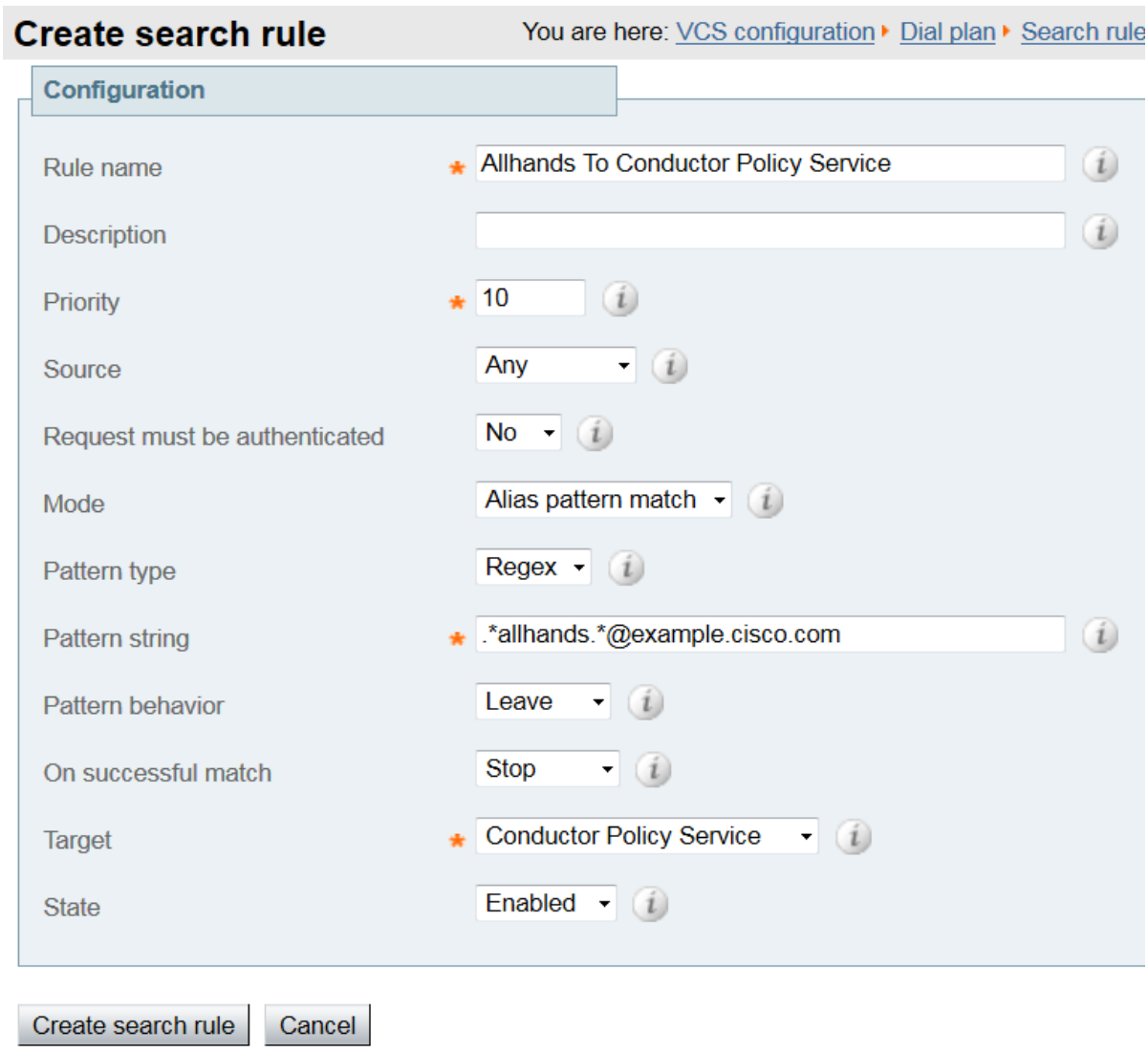
## Step 2: Configuring a search rule with the TelePresence Conductor policy service as the target

Search rules define where the VCS routes each call. 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 the **Search rules** page (**VCS configuration > Dial plans > Search rules**).
2. Click **New**.
3. Input the following into the relevant fields, leaving other fields as their default values:

| | |
|---|---|
| Rule Name | Enter 'Allhands To Conductor Policy Service' for example |
| Priority | Enter '10' for example |
| Source | Select *Any* |
| Request must be authenticated | Select *No* |
| Mode | Select *Alias pattern match* |
| Pattern type | Select *Regex* |
| Pattern string | Enter .*allhands.*@**<SIP domain>**<br><br>Note: Replace <SIP domain> with the appropriate sip domain for your network. |
| Pattern Behavior | Select *Leave* |
| On Successful Match | Select *Stop* |
| Target | Select *Conductor Policy Service* |
| State | Select *Enabled* |



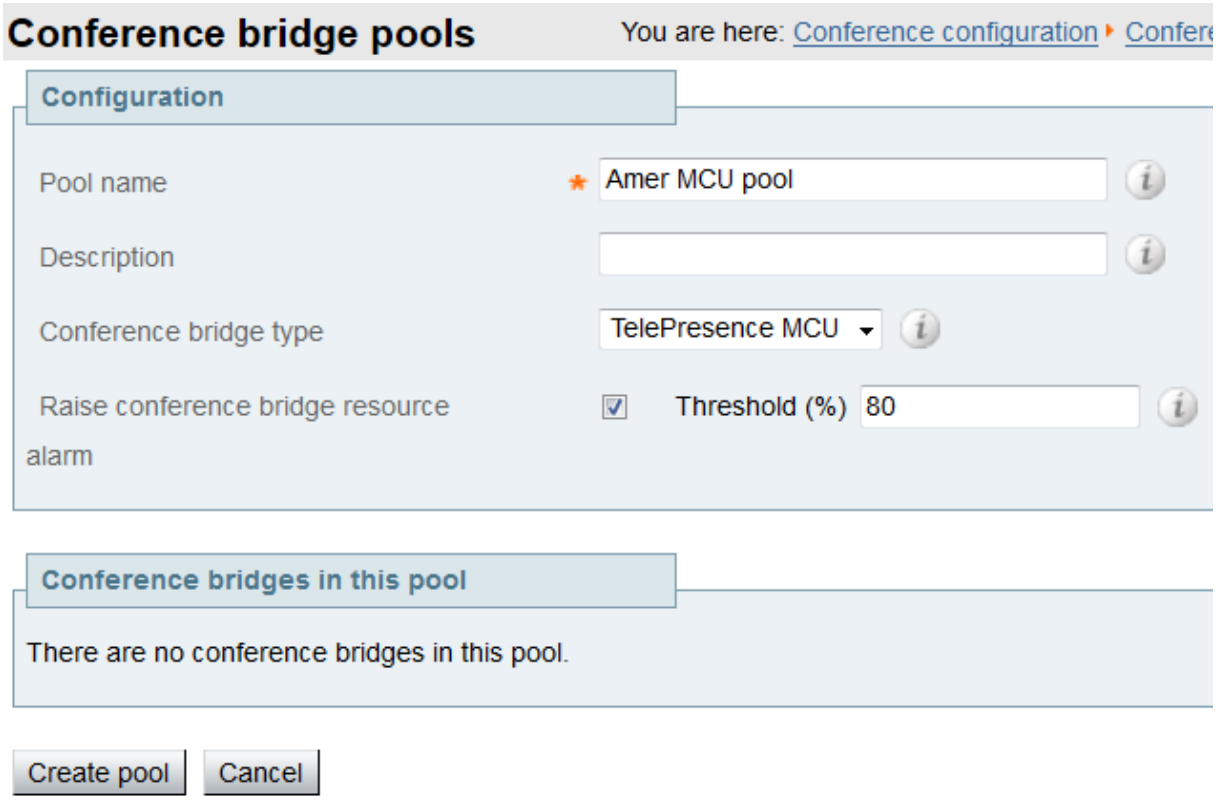
4. Click **Create search rule**.

# Configuring the conference bridge pools on TelePresence Conductor and VCS

## Setting up regional conference bridge pools

For each regional conference bridge pool you want to configure follow the steps below.

1. Log into the TelePresence Conductor as a user with administrator rights.
2. Go to the **Conference bridge pools** page (**Conference Configuration > Conference bridges > Conference bridge pools**).
3. Click **New**.
4. In the **Pool name** field enter the regions name for example “AMER mcu pool”




5. Click **Create pool**
6. For each conference bridge you want to add to the pool follow the instructions in **Adding a new conference bridge to TelePresence Conductor and the VCS** to add a conference bridge to TelePresence Conductor and the VCS.

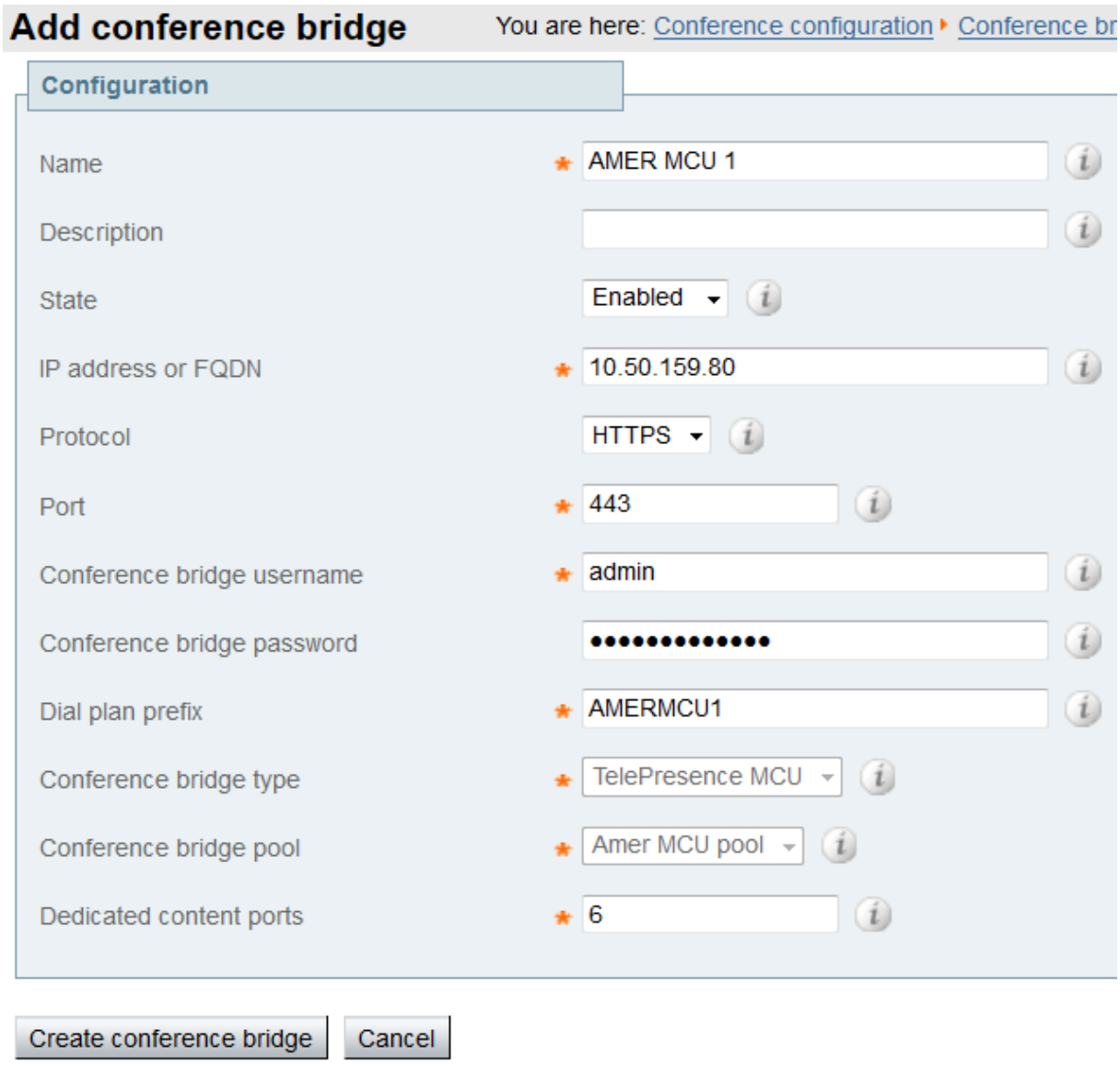
# Adding a new conference bridge to TelePresence Conductor and the VCS

## Step 1: Adding a conference bridge to an existing pool in TelePresence Conductor

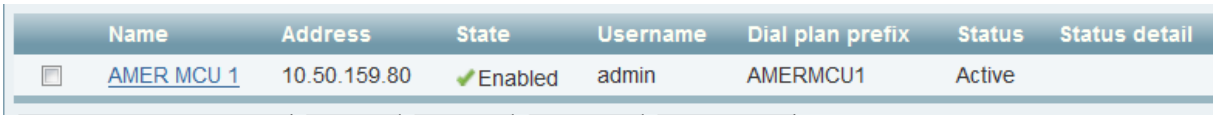
This section assumes you are adding a conference bridge to an existing pool Select a pool to add a conference to from the **Conference bridge pools** page (**Conference Configuration > Conference bridges > Conference bridge pools**).

1. Click **Add conference bridge**.
2. Input the following values into the relevant fields:

| | |
|---|---|
| Name | Enter an appropriate name for the conference bridge 'AMER MCU 1' for example |
| IP address or FQDN | Enter the conference bridge's IP address |
| Port | Enter '80' if using HTTP or '443' if using HTTPS to communicate with the conference bridge. |
| Protocol | Select *HTTP* or *HTTPS* for secure communication.<br><br>Note: HTTP mode is highly insecure and is not recommended for production systems. |
| Conference bridge username | Enter the username of a user with admin rights |
| Conference bridge Password | Enter the conference password of the above user |
| Dial plan prefix | Enter a prefix appropriate to your dial plan. For example AMERMCU1<br><br>**Note: Remember this prefix you will need it when configuring the conference bridge search rule on the VCS.** |
| Dedicated Content Ports | Enter the appropriate value for your conference bridge. To discover if a conference bridge has any dedicated content ports follow the steps given in Appendix 5: Identifying Dedicated Content Ports on an MCU |




3. Click **Create conference bridge**.
4. Ensure that under the **Status** header under conference bridges in this pool the conference bridge is listed as *Active*. (You may need to refresh the page to update the value listed here.)



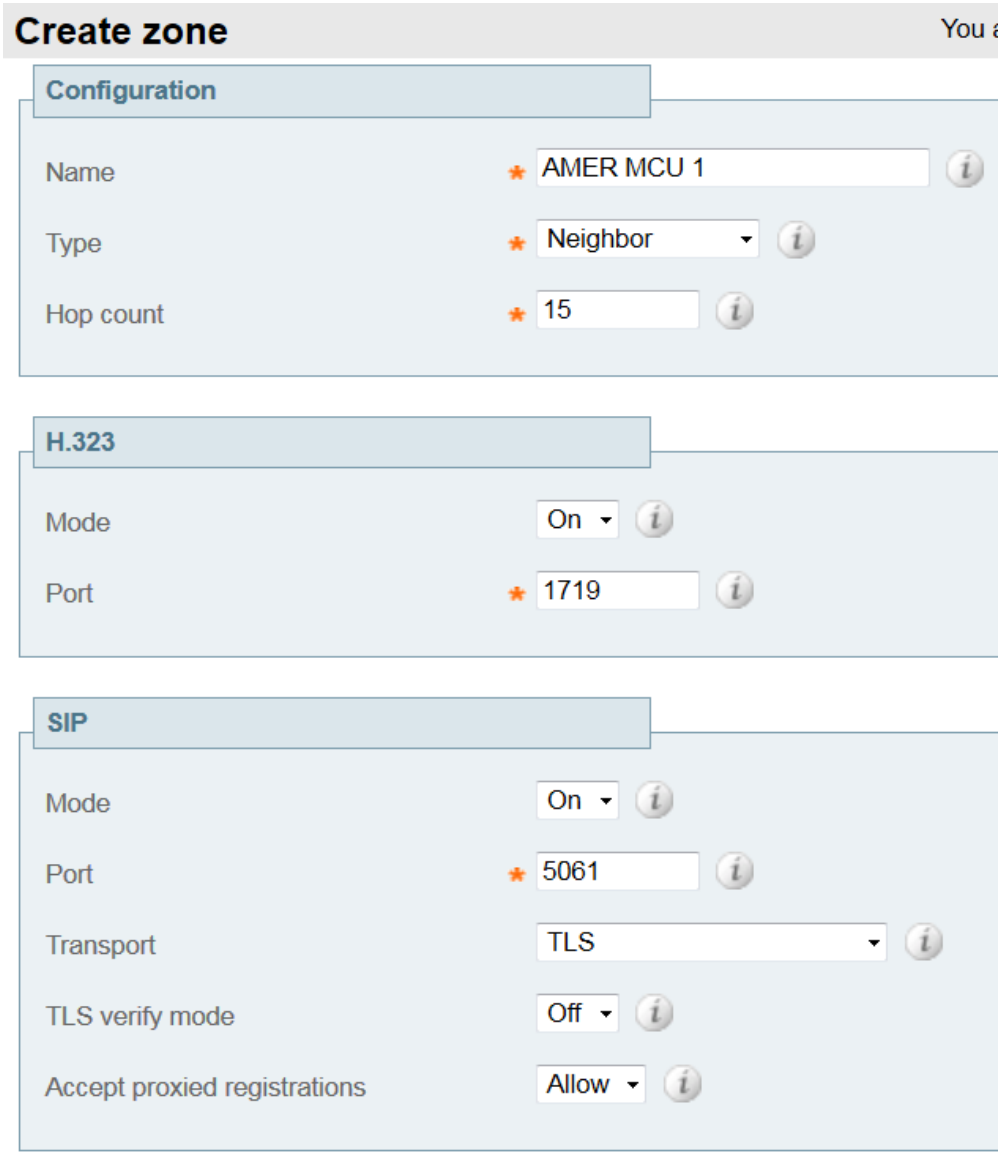

Otherwise check the settings configured for this MCU as well as network connectivity using the **Maintenance > Tools > Network Utilities > Ping**

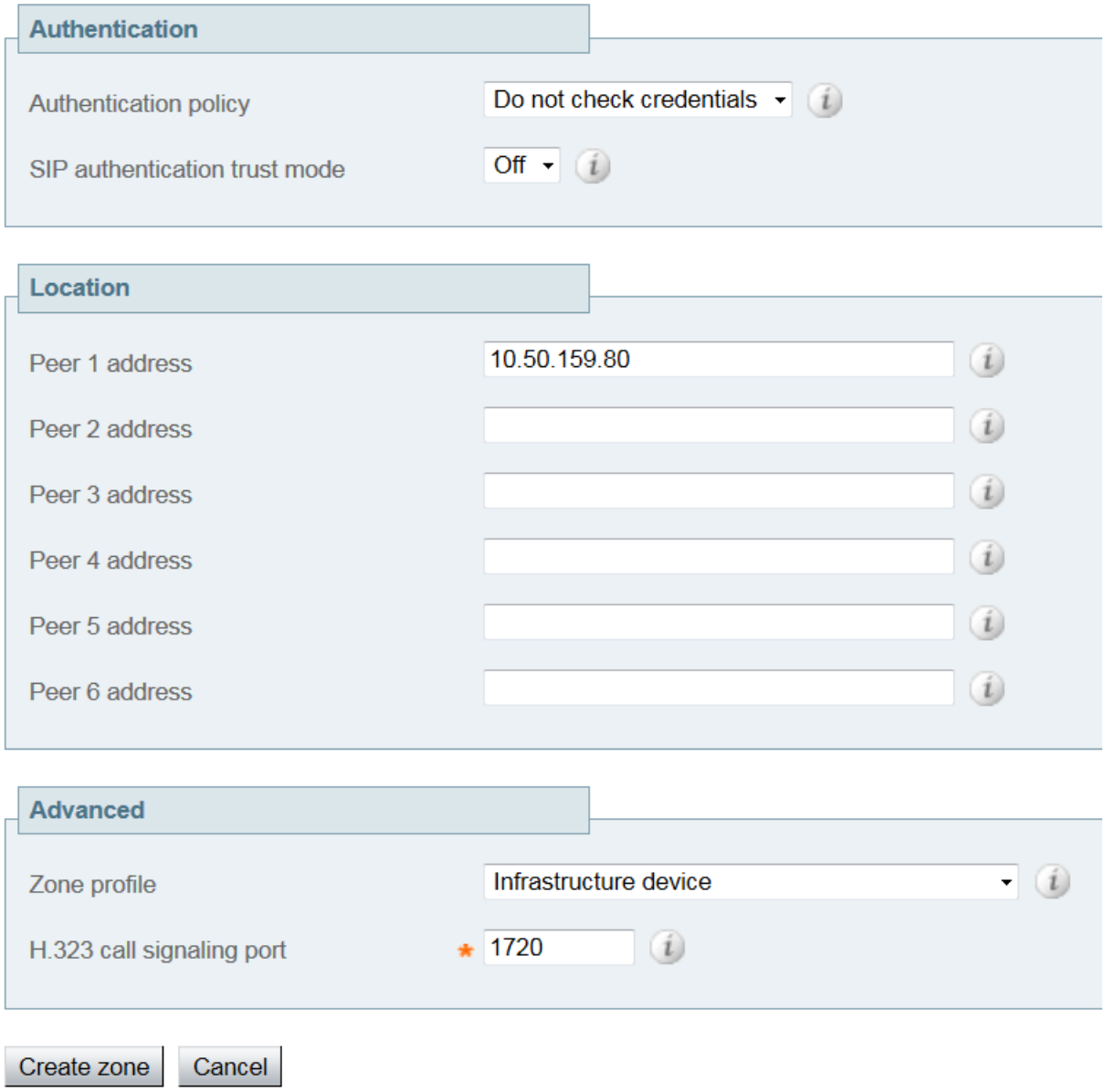
## Step 2: Adding the conference bridge as a neighbor zone

To configure the VCS with **Neighbor zones** for your conference bridges:

1. Log in to the VCS as a user with admin rights.
2. Go to the **Zones** page (**VCS configuration > Zones**).
3. Click **Create new zone.**
4. Input the following into the relevant fields, leave other fields as their default values:

| | |
|---|---|
| Name | Enter 'AMER MCU 1' for example<br><br>**Note: Remember this name you will need it when configuring the conference bridge search rule on the VCS.** |
| Type | Select *Neighbor* |
| Sip Transport | Select *TLS* if your conference bridge has the encryption option key<br>Select *TCP* otherwise.<br><br>Note: ensure that the SIP transport protocol matches the protocol selected for SIP registration on the conference bridge.<br><br>Note: Changing the transport method from TLS from TCP or vice versa *does not* change the port from 5061 to 5060. This must be done manually. |
| Peer 1 address | Enter the conference bridge's IP address |
| Zone Profile | If the VCS is running 7.0.x or later select *Infrastructure Device*<br>If the VCS is running 6.x select *Non-registering Device*<br><br>Note: These Zone profiles perform no aliveness checking. As a result an 'Active' status given by this zone cannot be relied upon to indicate VCS to conference bridge communication is possible. |


Create zone
You a
Configuration
Name
AMER MCU 1
Type
Neighbor
Hop count
15
H.323
Mode
On
Port
1719
SIP
Mode
On
Port
5061
Transport
TLS
TLS verify mode
Off
Accept proxied registrations
Allow




5. Click **Create zone**.

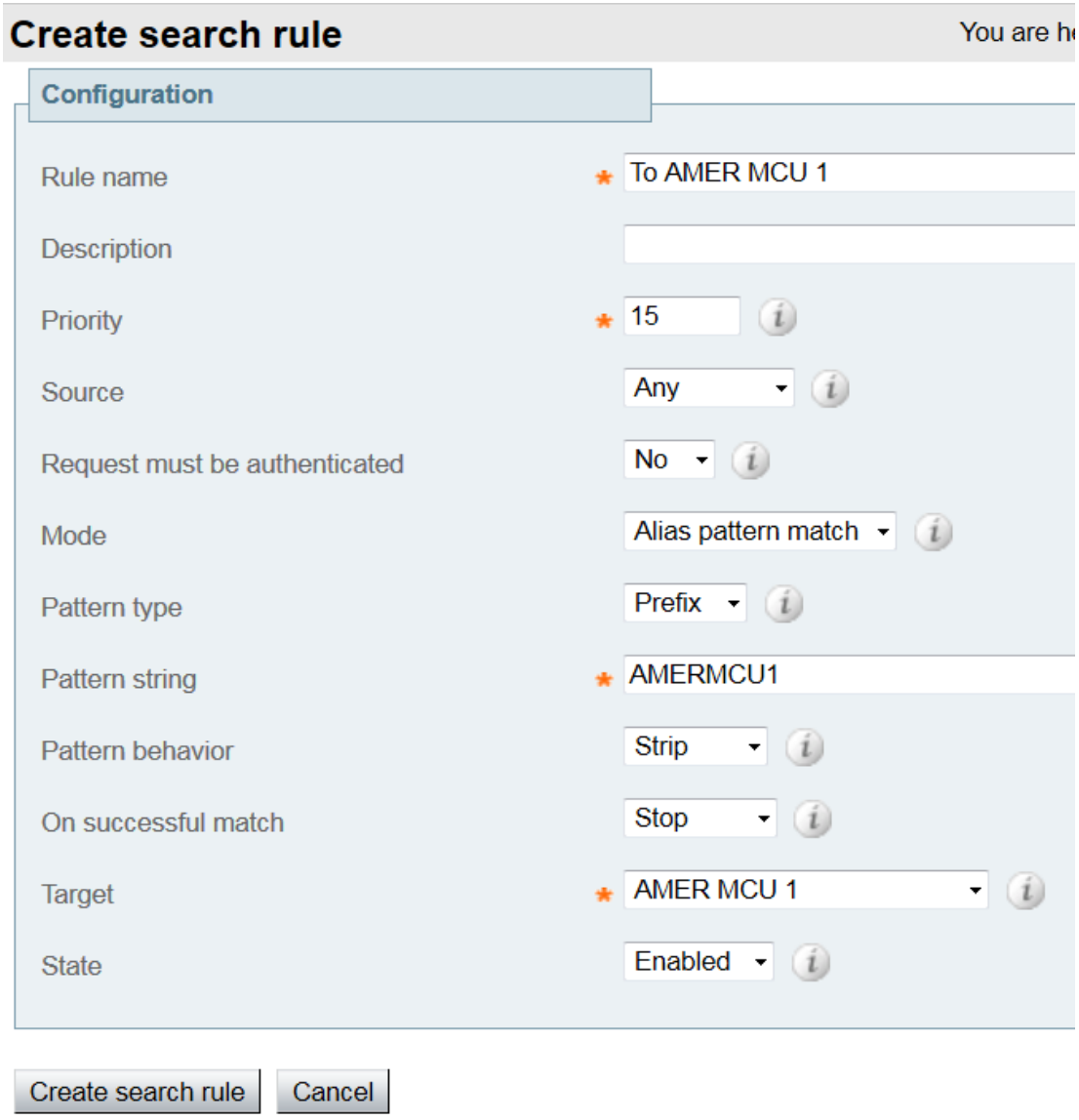
## Step 3: Adding a search rule pointing to the conference bridge's neighbor zone

To configure the Search rule:

1. Go to the **Search rules** page (**VCS configuration > Dial plans > Search rules**).
2. Click **New**.
3. Input the following into the relevant fields, leave other fields as their default values:

| | |
|---|---|
| Rule Name | Enter a suitable name 'To AMER MCU 1' for example |
| Priority | Enter '15' for example |
| Mode | Select *Alias Pattern Match* |
| Pattern Type | Select *Prefix* |

| | |
|---|---|
| Pattern String | Enter the Dial plan prefix configured in **Step 1** |
| Pattern Behavior | Select *Strip* |
| On successful match | Select *Stop* |
| Target | Select the neighbor zone configured in **Step 2** |




4. Click **Create search rule**.

## Step 4: Conference bridge specific configuration

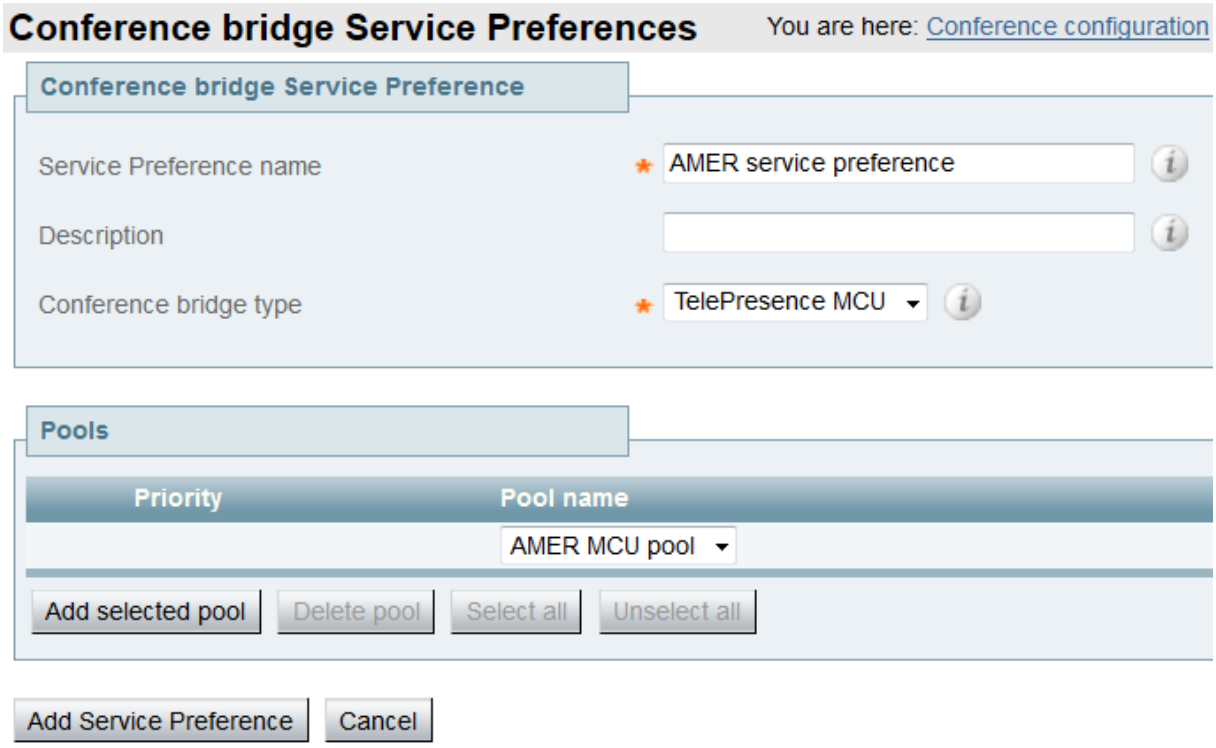
Configure the conference bridge as per the **Configuring the conference bridges** section of the Cisco TelePresence Conductor Deployment Guide.

# Configuring the master conference on TelePresence Conductor

Each geographic conference has a pre-defined master conference. This is the conference that all the slave conferences dial into. The master and slave conferences have different configurations.

## Step 1: Configuring a regional service preference

1. Login to the TelePresence Conductor as a user with administrative rights.
2. Go to **Conference configuration > Conference bridges > Conference bridge Service Preferences**
3. Click **New**
4. In the **Service Preference name** field enter an appropriate name for this regional service preference for example “AMER service preference”.
5. In the **Pools** section of the page under **Pool name** select an appropriate conference bridge pool for this region, for example “AMER MCU Pool”

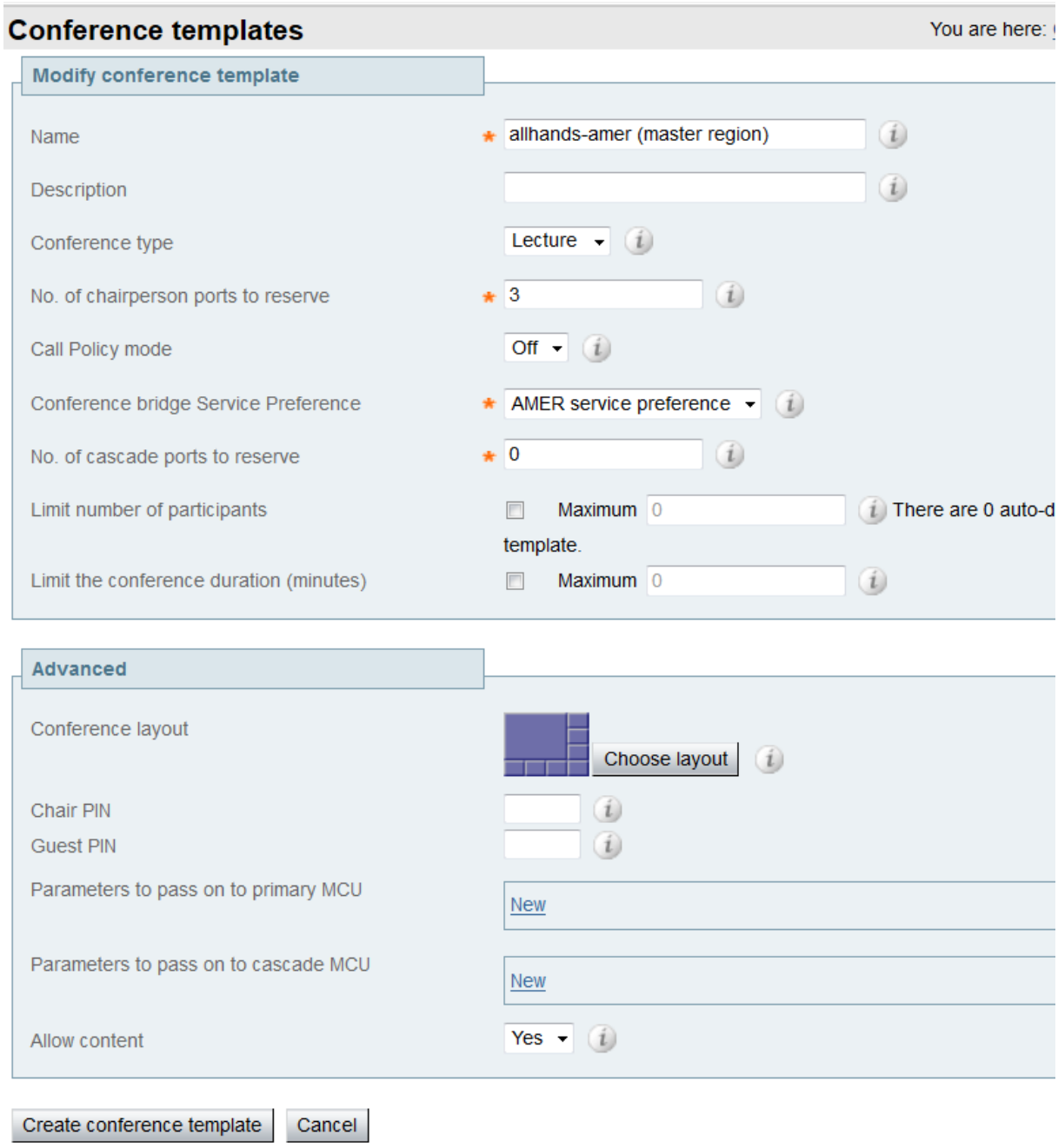



6. Click **Add selected pool**
7. Repeat steps 5-6 for any additional conference bridge pools in this region.

## Step 2: Configuring a master conference template

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

| | |
|---|---|
| Name | Enter a name appropriate for this region, for example “allhands-amer (master region)” |
| Conference type | Select *Lecture* |
| No. of chairperson ports to reserve | Enter a value appropriate to your geographic conference.<br><br>To guarantee the geographic cascade will work it is necessary to reserve a number of chairperson ports equal to or greater than the total number of slave conferences plus the total number of endpoints that are expected to join on the master conference as chairpeople. At least one person must join the master conference as a chairperson to prompt the MCU into sending video. |
| Conference bridge Service Preference | Select the service preference configured in **Step 1** |
| No. of cascade ports to reserve | Enter '0' |
| Conference layout | Select a preferred default layout. |



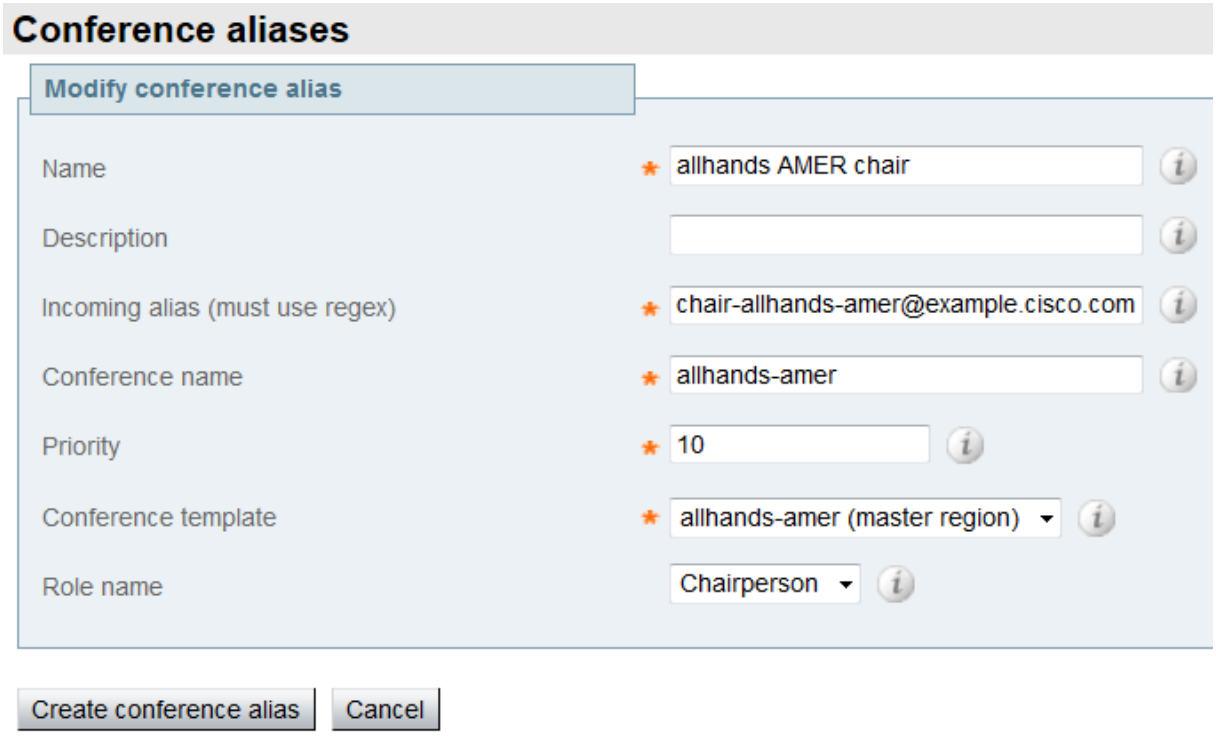

4. Click **Create conference template**

## Step 3: Configuring a chairperson conference alias for the master conference

This is the conference alias the chairs and the slave conference bridges should dial to join the conference. At least one endpoint must join the conference as a chair to trigger the conference bridges to send video.

1. Go to the **Conference aliases** page (**Conference configuration > Conference aliases**).
2. Click **New**.
3. Input the following into the relevant fields, leave other fields as their default values:

| | |
|---|---|
| Name | Enter an appropriate name for the region of the master conference for example “allhands AMER chair” |
| Incoming alias | Enter an appropriate regex for the region the master conference is being hosted in for example “chair-allhands-amer@**< SIP domain>”** |
| Conference name | Enter an appropriate name for the region the master conference is being hosted in for example “allhands-amer” |
| Priority | Enter '20' |
| Conference template | Select the template configured in **Step 2** |
| Role Name | Select *Chairperson* |




4. Click **Create conference alias**

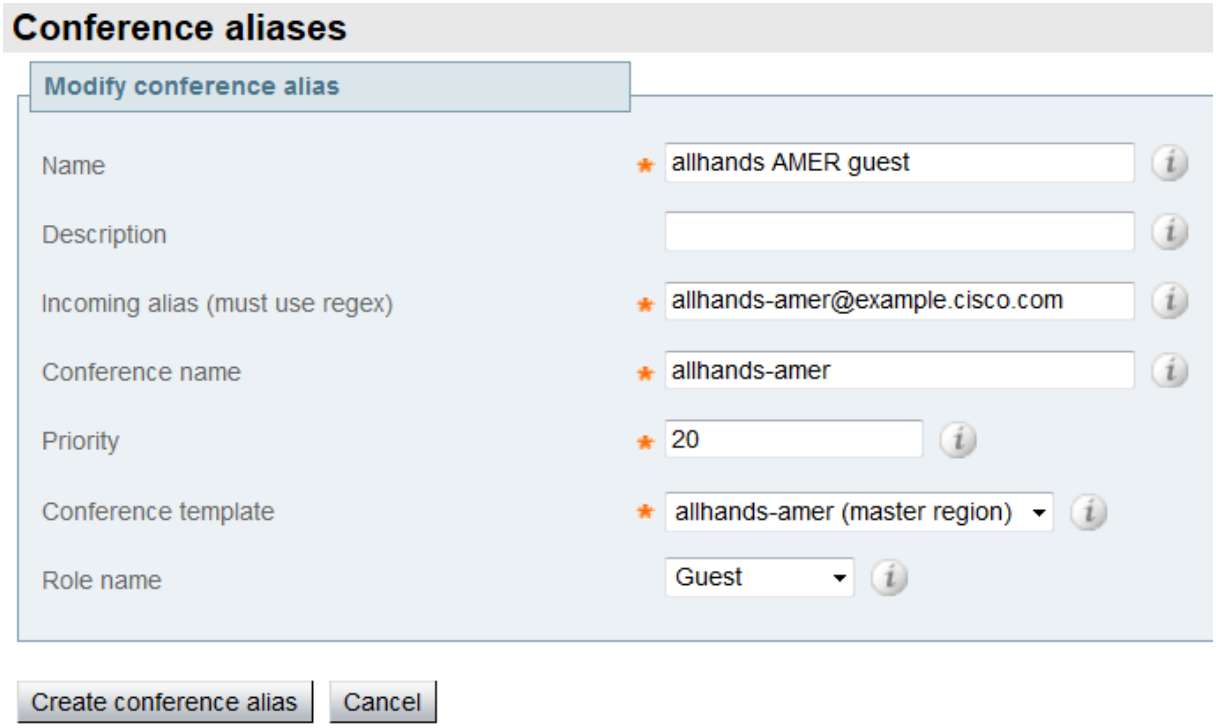
## Step 4: Configuring a guest conference alias for the master conference

This is the conference alias most users in the master conference region should call to reach the conference.

1. Go to the **Conference aliases** page (**Conference configuration > Conference aliases**).
2. Click **New**.
3. Input the following into the relevant fields, leaving other fields as their default values:

| | |
|---|---|
| Name | Enter an appropriate name for the region of the master conference, for example “allhands AMER guest” |
| Incoming alias | Enter an appropriate regex for the region the master conference is being hosted in, for example “allhands-amer@**< SIP domain>”** |
| Conference name | Enter an appropriate name for the region the master conference is |

| | |
|---|---|
| | being hosted in, for example "allhands-amer"<br><br>This must be the same as the name entered in **Step 3** |
| Priority | Enter '20' |
| Conference template | Select the template configured in **Step 2** |
| Role Name | Select *Guest* |



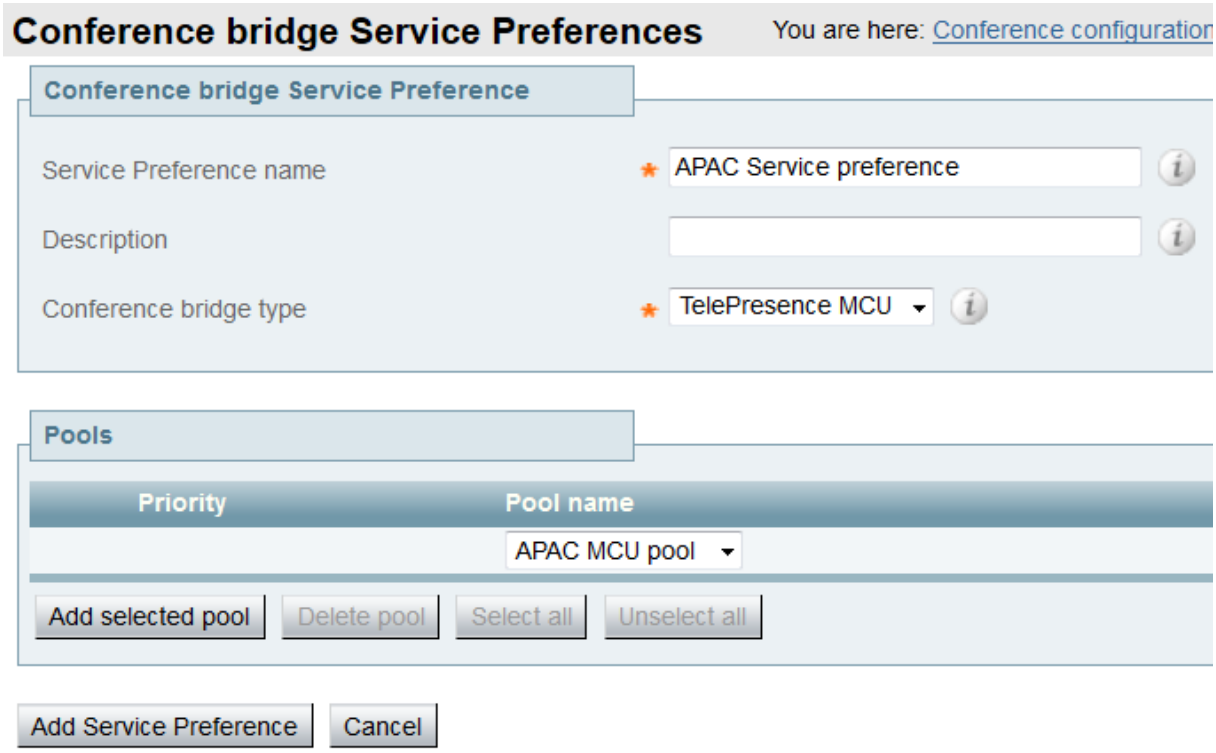

4. Click **Create conference alias**

# Configuring slave conferences on TelePresence Conductor

Slave conferences dial into the master conference on TelePresence Conductor. For each slave conference it is necessary to complete the steps below.

## Step 1: Configuring a regional Service Preference

1. Log into the TelePresence Conductor as a user with administrative rights.
2. Go to **Conference configuration > Conference bridges > Conference bridge Service Preferences**
3. Click **New**
4. In the **Service Preference name** field enter an appropriate name for this regional service preference for example “APAC service preference”.
5. In the **Pools** section of the page under **Pool name** select the appropriate conference bridge pool for this region, for example “APAC MCU Pool”



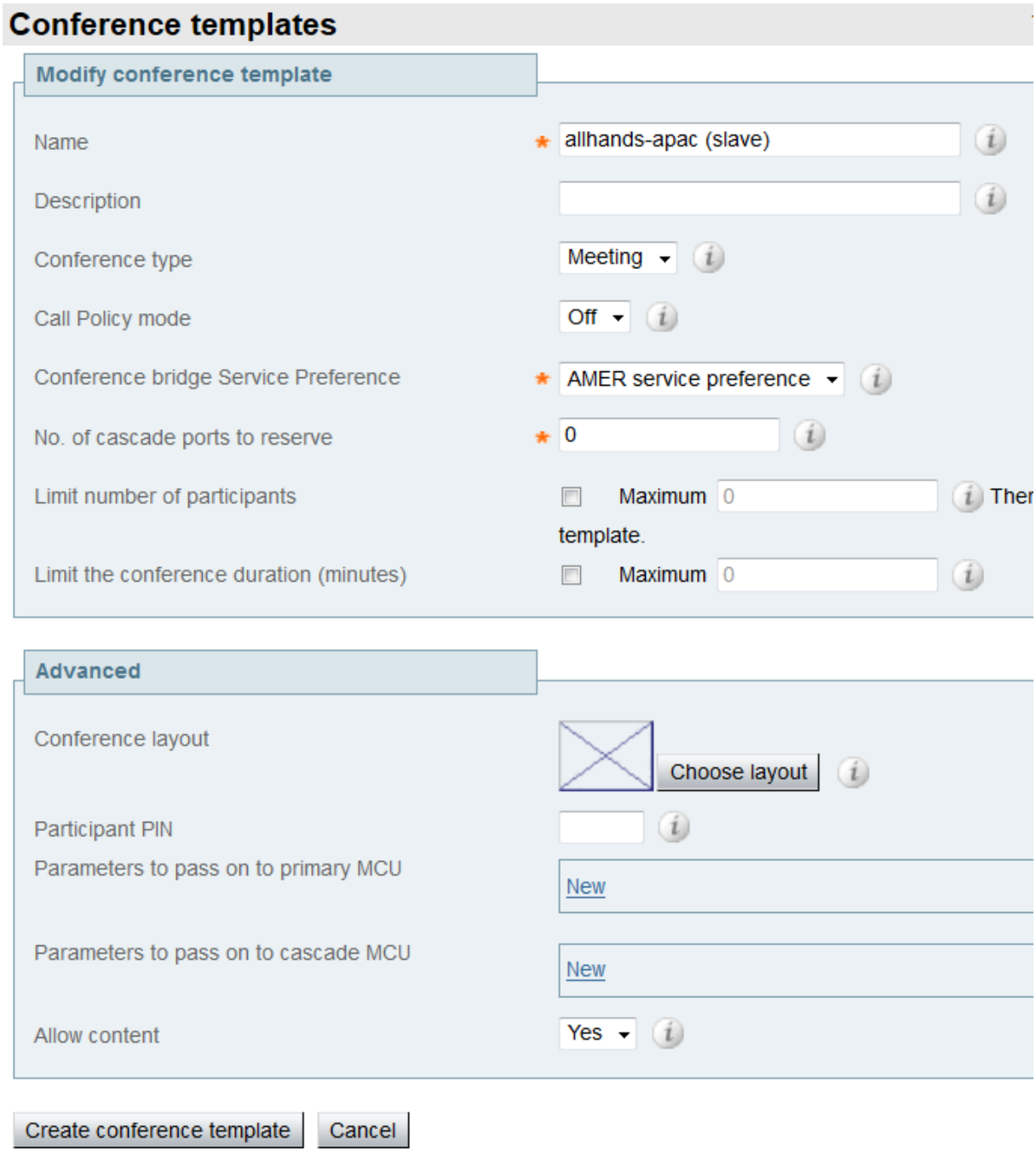

6. Click **Add selected pool**
7. Repeat steps 5-6 for any additional conference bridge pools in this region.

## Step 2: Configuring a slave conference template

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

| | |
|---|---|
| Name | Enter a name appropriate for this region for example “allhands-apac (slave) |

| | |
|---|---|
| Conference type | Select *Meeting* |
| Conference bridge Service Preference | Select the Service Preference configured in **Step 1** |
| No. of cascade ports to reserve | Enter '0' |



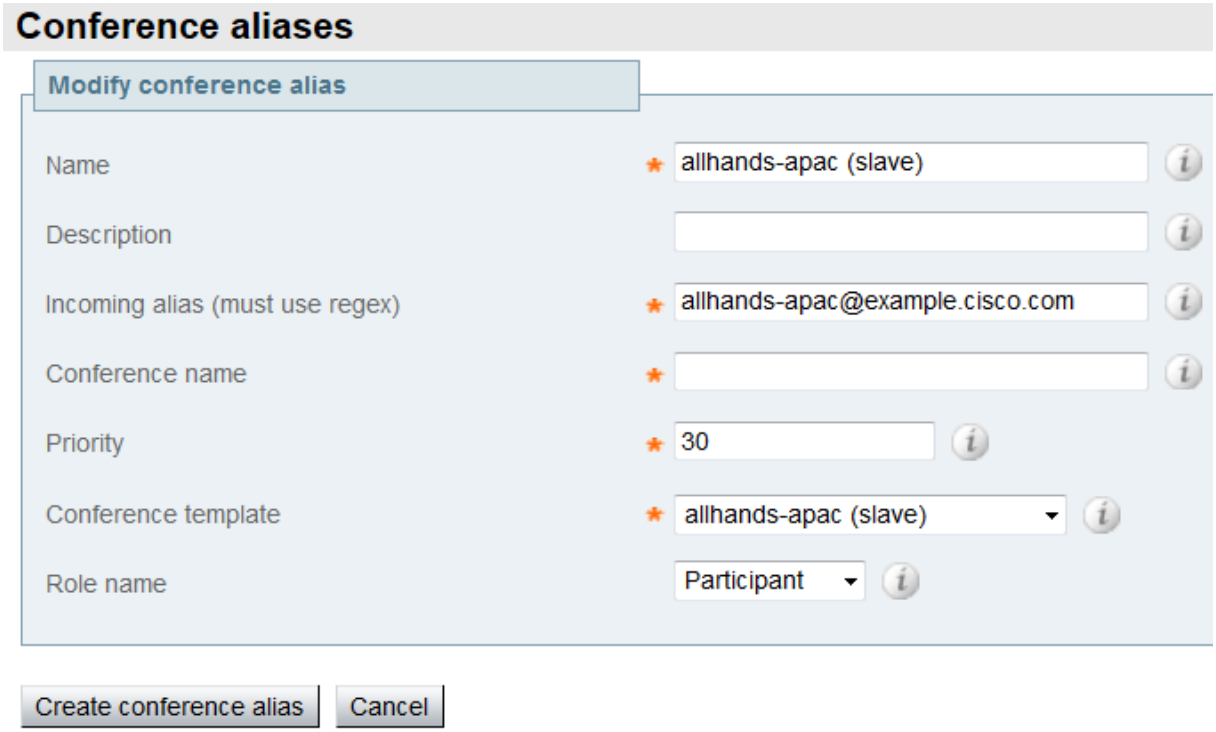

4. Click **Create conference template**

## Step 3: Configuring a conference alias for the slave conference

1. Go to the **Conference aliases** page (**Conference configuration > Conference aliases**).
2. Click **New**.

3. Input the following into the relevant fields, leave other fields as their default values:

| | |
|---|---|
| Name | Enter an appropriate name for the region of the slave conference for example “allhands APAC” |
| Incoming alias | Enter an appropriate regex for the region the slave conference is being hosted in i.e. allhands-apac@**< SIP domain>** |
| Conference name | Enter an appropriate name for the region the slave conference is being hosted for example “allhands-apac” |
| Priority | Enter '10' |
| Conference template | Select the template configured in **Step 2** |
| Role Name | Select *Participant* |




4. Click **Create conference alias**

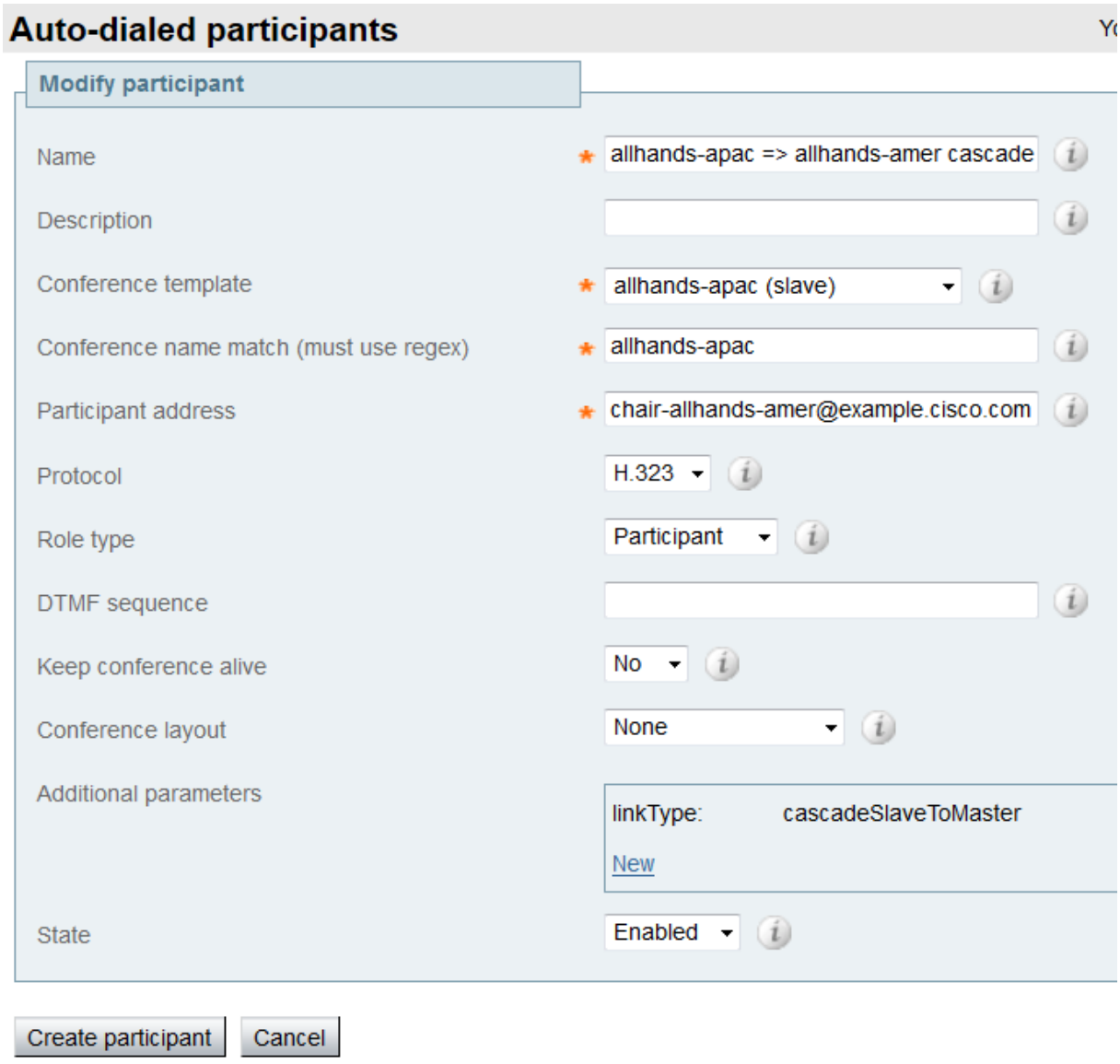
## Step 4: Configuring a cascade link for the slave conference

1. Go to the **Autodialed participants** page (**Conference configuration > Autodialed participants**).
2. Select **New**
3. Input the following into the relevant fields, leave other fields as their default values:

| | |
|---|---|
| Name | Enter an appropriate name for the cascade link for example “allhands-apac => allhands-amer cascade link” |
| Conference template | Select the conference template configured in **Step 2** |
| Conference name | Enter the conference name configured in **Step 3** |
| Participant address | Enter the chairperson address for the primary conference configured in **Step 3: Configuring a conference alias for the Master conference** |

| | |
|---|---|
| Protocol | Select *H.323* |
| Keep conference alive | Select *No* |
| Role type | Select *Participant*<br><br>*Note that this is the role of the participant from the perspective of the slave MCU* |

4. Under “Advanced parameters” click **New**
5. Select *linkType* and click **Add**
6. On the popup window select **add anyway**
7. Click **Edit**
8. Select *cascadeSlaveToMaster*
9. Click **Ok**




10. Click **Create participant**

# Testing system configuration

Once you have completed the configuration described in the previous sections, you should test that the system is working correctly as follows.

## Step 1: Dial endpoints into the master conference

To test that endpoints can join the master conference dial endpoints into the guest alias and the chair alias you have configured on TelePresence Conductor for the master conference. These endpoints should experience a normal conferencing experience.

## Step 2: Dial endpoints into slave conferences

To test that endpoints can join the slave conference and the cascade link is generated correctly by the conference bridge, dial the alias for the slave conference as defined  on TelePresence Conductor.

All endpoints on the slave conference(s) should see the same conference layout. This conference layout should show the active participants from each of the slave conferences (assuming the layout has enough “windows” for all the video streams).

# Appendix 1: Intelligent search rules for routing endpoints to regional conferences

The method outlined in the above document for directing endpoints to TelePresence Conductor using search rules has its benefits and disadvantages. Chief amongst the disadvantages is it requires each of the users to know which region they are in and the corresponding conference alias they should dial.

This can be prevented in the situation where each region has its own associated VCS, by using the search rule pointed at TelePresence Conductor append a region specific suffix to a call to the geographic conference.

For example if the different conference aliases follow the pattern allhands-<region>@<SIP domain> the following search rule could be used in each region:

| | |
|---|---|
| Rule Name | Enter 'Allhands To Conductor Policy Service' for example |
| Priority | Enter '5' for example |
| Source | Select *Any* |
| Request must be authenticated | Select *No* |
| Mode | Select *Alias pattern match* |
| Pattern type | Select *Regex* |
| Pattern string | Enter allhands@**<SIP domain>**<br><br>Note: Replace <SIP domain> with the appropriate sip domain for your network. |
| Pattern Behavior | Select *replace* |
| Replace match | Enter the alias that matches the conference alias for this region on the TelePresence Conductor, for example “allhands-amer@<SIP domain>” |
| On Successful Match | Select *Stop* |
| Target | Select *Conductor Policy Service* |
| State | Select *Enabled* |

The drawback of this approach is that there may be good reasons for certain users being on the master conference even if it is not in their region. Users on the master conference retain control over the viewtype they use, amongst other things.

It is therefore a good idea to implement the above search rule in addition, but at a higher priority to the search rule described in the section **Configuring TelePresence Conductor on the VCS(**s).

There are other methods of routing users to the correct conferences such as CPL or external policy servers, to implement either it is recommended you read the appropriate documentation.

# Legal notices

## Intellectual property rights

This Administrator Guide and the product to which it relates contain information that is proprietary to TANDBERG and its licensors. Information regarding the product is found below in the Copyright notice and Patent information sections.

TANDBERG® is a registered trademark belonging to Tandberg ASA. Other trademarks used in this document are the property of their respective holders. This Guide may be reproduced in its entirety, including all copyright and intellectual property notices, in limited quantities in connection with the use of this product. Except for the limited exception set forth in the previous sentence, no part of this Guide may be reproduced, stored in a retrieval system, or transmitted, in any form, or by any means, electronically, mechanically, by photocopying, or otherwise, without the prior written permission of TANDBERG.



## Copyright notice

The product that is covered by this Deployment Guide is protected under copyright, patent, and other intellectual property rights of various jurisdictions.



TANDBERG is now part of Cisco. Tandberg Telecom UK Limited is a wholly owned subsidiary of Cisco Systems, Inc.

A list of the conditions of use can be found at:
http://www.cisco.com/en/US/docs/telepresence/infrastructure/conductor/license_info/Cisco_Conductor_EULA.pdf

This product includes copyrighted software licensed from others. A list of the licenses and notices for open source software used in this product can be found at:
http://www.cisco.com/en/US/products/ps11775/products_licensing_information_listing.html

This product includes software developed by Computing Services at Carnegie Mellon University (http://www.cmu.edu/computing/).

This product includes software developed by the University of California, Berkeley and its contributors.