Cisco TelePresence Conductor

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Cisco TelePresence Conductor

Although Cisco VCS can spread the load over multiple H.323 registered MCUs as described in this document, Cisco TelePresence Conductor now provides a better solution, providing finer control and more capabilities for placing and load balancing calls onto MCUs and TelePresence Servers.

Introduction

This deployment guide describes how multiple H.323 Cisco TelePresence MCUs should be integrated with Cisco TelePresence Video Communication Servers (Cisco VCSs) to provide MCU resilience.

This deployment scenario allows the Cisco VCS to control calls to a pool of MCUs that are configured to handle the same MCU service prefix (the dial prefix used to indicate that the call is a call to a conference). The Cisco VCS randomly chooses a different MCU for each new ad hoc conference; the Cisco VCS also ensures that any calls to the same ad hoc conference ID are always routed to the chosen MCU in the pool. This means that multiple MCUs are available to handle the MCU service prefix, thus providing greater capacity and resilience for ad hoc conferences than an individual MCU alone could provide.

This guide identifies the requirements and specifies the operation and necessary configuration for:

- connecting multiple H.323 MCUs to a single Cisco VCS
- connecting multiple H.323 MCUs to a cluster of Cisco VCS peers

Typically H.323 MCUs support three conference types: ad hoc conferences, permanent conferences and scheduled conferences, each described below.

Note that the increase in capacity and resilience in the examples described in this guide only applies to ad hoc conferences, not permanent or scheduled conferences.

Ad hoc conferences

Ad hoc conferences are where either:

- the conference initiator sets up a conference by making a call to a number which consists of the MCU's service prefix followed by extra digits to define the full conference ID
- the conference initiator sets up a conference by making a call to the MCU's auto-attendant and then by using DTMF enters the required conference ID

For ad hoc conferences:

- if service prefix is used the MCU permanently registers its MCU service prefix on the Cisco VCS
- if auto-attendant is enabled the MCU permanently registers its auto-attendant access number on the Cisco VCS
- when an ad hoc conference is initiated the MCU registers the full ad hoc conference ID on the Cisco VCS; it removes the registration when the conference ends

Permanent conferences

Permanent conferences (also known as personal conferences) are where full conference IDs are specified in the MCU, and the MCU permanently registers these IDs on the Cisco VCS.

Scheduled conferences

Scheduled conferences are where the full conference ID of a conference is registered on the Cisco VCS only for the scheduled duration of the conference. Conferences may be scheduled in the MCU itself, or via Cisco TelePresence Management Suite (Cisco TMS).
Connecting multiple MCUs to a single Cisco VCS

Requirements
When connecting multiple MCUs to a single Cisco VCS, it is important that:

- all connected MCUs are used to host conferences
- calls made by different people for the same conference ID must be directed to the same MCU
- if there is an imbalance of callers on one or more MCUs and it or they approach their capacity (reporting “out of resources”), new conferences should be created on a less busy MCU

Operation
Each MCU is configured to register the same conference service prefix(es) on the Cisco VCS. When a call for a conference arrives, the Cisco VCS will check to see whether that conference ID is already registered.

- If the conference ID is registered (i.e. the conference has already been initiated), the call will be routed to that MCU.
- If the conference ID is not registered by any of the MCUs, but the required conference service prefix is registered by one or more MCUs, then the Cisco VCS will check to see whether another call has been made for this conference ID recently\(^1\).
  - If there has been no other recent call to this conference ID (i.e. this is the first), the Cisco VCS will randomly choose one of the MCUs that has registered a matching service prefix and will use that MCU for this conference ID. The Cisco VCS will route the call to that MCU so that the conference may be set up.
  - If there has been a recent call to this conference ID, the Cisco VCS will route this call to the same MCU to which the other call to this conference ID was routed. (This handles the situation where one or more callers dial in at almost the same time as the initiator, and so require their call(s) to be routed to the correct MCU before the MCU has had time to register the new conference ID.)

\(^1\) recently = within 1 minute. 1 minute gives the MCU plenty of time to register the full conference ID of the ad hoc conference that it has been requested to create.
Note: If any MCU is nearly full of callers (or has reached the limit of the number of conferences it can handle) it reports “out of resources” to the Cisco VCS. The Cisco VCS will then adjust its randomization algorithm to omit the nearly full MCU(s). The “out of resource” report will not affect the routing of callers to existing conferences. In this way, callers to conferences that have already been set up will continue to be sent to the appropriate MCU so that they can be in the same conference as all others dialing that conference ID; new conferences will only be set up on MCUs that are not reporting “out of resources”.

For capacity and resilience, each MCU should register on Cisco VCS with a unique service prefix. For example MCU1 would use prefix 81, MCU2 would use prefix 82, MCU3 would use prefix 83, and so on. This is recommended for both clustered and non-clustered Cisco VCS deployments.

Configuration

1. Configure each MCU to register identical service prefix(es) to the Cisco VCS.
2. Configure each MCU to register with a Gatekeeper registration type =MCU (standard), configurable on the Settings > Gatekeeper page.

The Cisco VCS then handles all the conference call routing.

Note: The Gatekeeper registration type MUST NOT be Gateway because otherwise the Cisco VCS will distribute calls to a specific conference ID randomly across all MCUs that have registered a matching prefix. Only if Gatekeeper registration type is MCU will the Cisco VCS ensure that calls to the same conference ID get routed to the same MCU.
Connecting multiple MCUs to a cluster of Cisco VCS peers

Requirements

When connecting multiple MCUs to a cluster of Cisco VCS peers, it is important that:

- failure of any Cisco VCS will not stop new conferences being set up
- conference calls that are not on MCUs directly connected to a Cisco VCS that goes out of action should continue unimpeded²
- all MCUs connected to the cluster are used to host conferences
- calls made by different people for the same conference ID must be directed to the same MCU
- if there is an imbalance of callers on one or more MCUs and it or they approach their capacity (reporting “out of resources”), new conferences should be created on a less busy MCU

Operation

Each MCU is configured to register the same conference service prefix(es) onto the Cisco VCS to which it registers. When a call for a conference arrives at a Cisco VCS, that Cisco VCS will check to see whether that conference ID is already registered anywhere on the cluster of Cisco VCS peers to which it belongs.

- If the conference ID is registered (i.e. the conference has already been initiated), the call will be routed to the MCU that registered the conference ID.
- If the conference ID is not registered by any of the MCUs across the cluster, but the required conference service prefix is registered by one or more MCUs, then the Cisco VCS receiving the call will check to see whether another call has been made for this conference ID recently³.
  - If there has been no other recent call to this conference ID (i.e. this is the first), the Cisco VCS will randomly choose, from across the cluster, one of the MCUs that has registered a matching service prefix, and will use that MCU for this conference ID. The Cisco VCS will route the call to that MCU so that the conference may be set up.

² This is X4 functionality – prior to X4, calls may traverse up to 2 clustered VCS peers. If a call traverses 2 VCS peers, then failure of either peer will cause that call to drop.

³ Recent = within 1 minute. 1 minute gives the MCU plenty of time to register the full conference ID of the ad hoc conference that it has been requested to create.
• If there has been a recent call to this conference ID, the Cisco VCS will route this call to the
same MCU to which the other call to this conference ID was routed, regardless of whether
the MCU is registered to that particular Cisco VCS or another Cisco VCS in the cluster. (This
handles the situation where one or more callers dial in at almost the same time as the
initiator, and so require their call(s) to be routed to the correct MCU before the MCU has had
time to register the new conference ID.)

**Note:** If any MCU is nearly full of callers (or has reached the limit of the number of conferences it can
handle) it reports “out of resources” to the Cisco VCS to which it is registered. Any Cisco VCS peer
wanting to set up a new conference will take this into account and will adjust the randomization
algorithm to omit the nearly full MCU(s). The “out of resource” report will not affect the routing of
callers to existing conferences. In this way, callers to conferences that have already been set up will
continue to be sent to the appropriate MCU so that they can be in the same conference as all others
dialing that conference ID; new conferences will only be set up on MCUs that are not reporting “out of
resources”.

For capacity and resilience, register to Cisco VCS cluster peers as many MCUs with the same service
prefix(es) as are required. The MCU selection functionality works across a cluster of Cisco VCS peers
just as well as it does in a single Cisco VCS.

**Configuration**

1. MCUs should be configured such that approximately the same number of MCUs are registered to
each Cisco VCS peer.
2. Configure each MCU to register identical service prefix(es) to their Cisco VCS peer.
3. Configure each MCU to register with a Gatekeeper registration type =MCU (standard),
configurable on the **Settings > Gatekeeper** page.

The Cisco VCS cluster then handles all the conference call routing.

**Note:** The Gatekeeper registration type MUST NOT be Gateway because otherwise the Cisco
VCS will distribute calls to a specific conference ID randomly across all MCUs that have registered a
matching prefix. Only if Gatekeeper registration type is MCU will the Cisco VCS ensure that calls to
the same conference ID get routed to the same MCU.
Appendix 1 – Subset or Superset service prefixes

If an MCU tries to register a service prefix that is either:
- a subset or a superset of an existing service prefix registration on that Cisco VCS,
- or, if the Cisco VCS is a peer in a cluster of Cisco VCSs a subset or a superset of an existing
  service prefix registration on any other peer in the cluster

the Cisco VCS will reject that registration. Service prefixes from different MCUs can be identical, but if
not identical, they must not overlap.

For example, if an MCU service prefix registration for 91 exists on the Cisco VCS and a different MCU
tries to register a service prefix of 914, this latter registration request will be rejected.

Similarly, if an MCU service prefix registration for 914 exists on the Cisco VCS and a different MCU
tries to register a service prefix of 91, this latter registration request will be rejected.

Registering exactly the same prefix is allowed (and required), so, for example, if an MCU service
prefix registration for 91 exists on the Cisco VCS and a different MCU tries to register a service prefix
of 91, this registration will be allowed.

Similarly, if an MCU service prefix registration for 914 exists on the Cisco VCS and a different MCU
tries to register a service prefix of 914, this registration will be allowed.
Appendix 2 – Gatekeeper / Border Controller operation

TANDBERG Gatekeeper running software version N6.0 or later, and TANDBERG Border Controller running software version Q6.0 or later, both operate in the same manner as the Cisco VCS in terms of routing calls to MCUs.