



Understanding Distributed Call Processing

Cisco CallManager (release 3.0 and later) provides the capability for distributed call processing. With this feature, you can distribute the call processing load of your system across multiple Cisco CallManagers in a cluster.

Use the following procedure to configure a distributed call processing system:

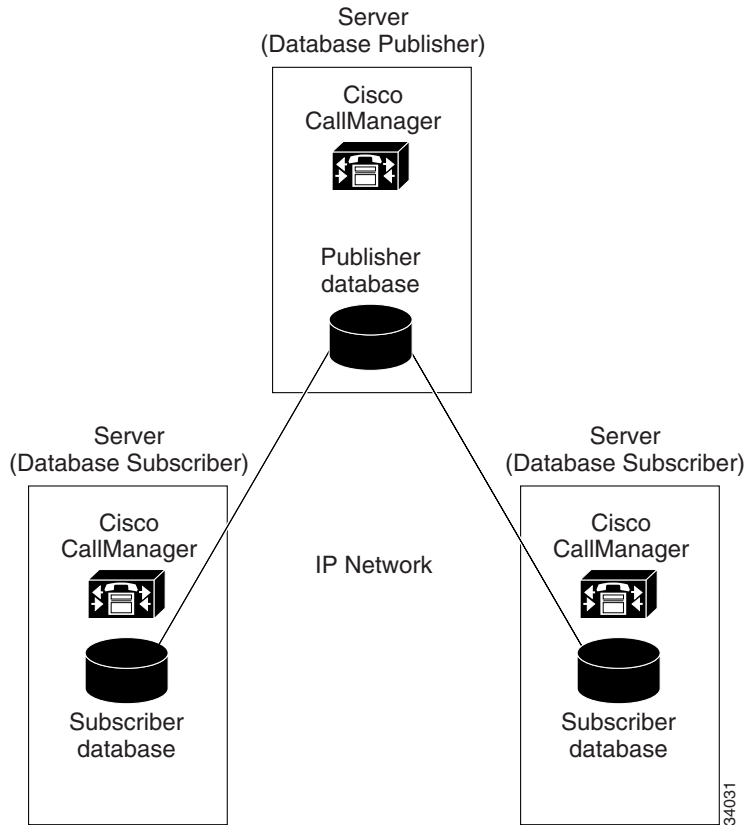
- Configuring a Distributed System, page 2-3

Clusters

A cluster is a set of Cisco CallManagers that share the same database.

When you install the Cisco CallManager software on a server, you specify which servers and which Cisco CallManagers belong to the same cluster. You also specify which server is the publisher database for the cluster. The other servers in the cluster are all subscribers to the publisher database, but they also maintain their own backup copies of the publisher database. Figure 2-1 illustrates a simple cluster containing three Cisco CallManagers.

During normal operation, all of the Cisco CallManagers in the cluster read data from and write data to the publisher database. Periodically, the backup copies of the database are updated automatically from the publisher. If the publisher database becomes unavailable for any reason (for example, if the network connection is broken), the various Cisco CallManagers in the cluster can continue to operate from their local backup copies of the database. When the publisher database is restored, normal operation resumes.

Figure 2-1 Example of a Cluster with Three Cisco CallManagers

Configuring a Distributed System

After installing the Cisco CallManagers that form a cluster, you must configure the publisher database to allow these Cisco CallManagers to work as a distributed system. This section describes some general steps and guidelines for configuring a distributed call processing system.

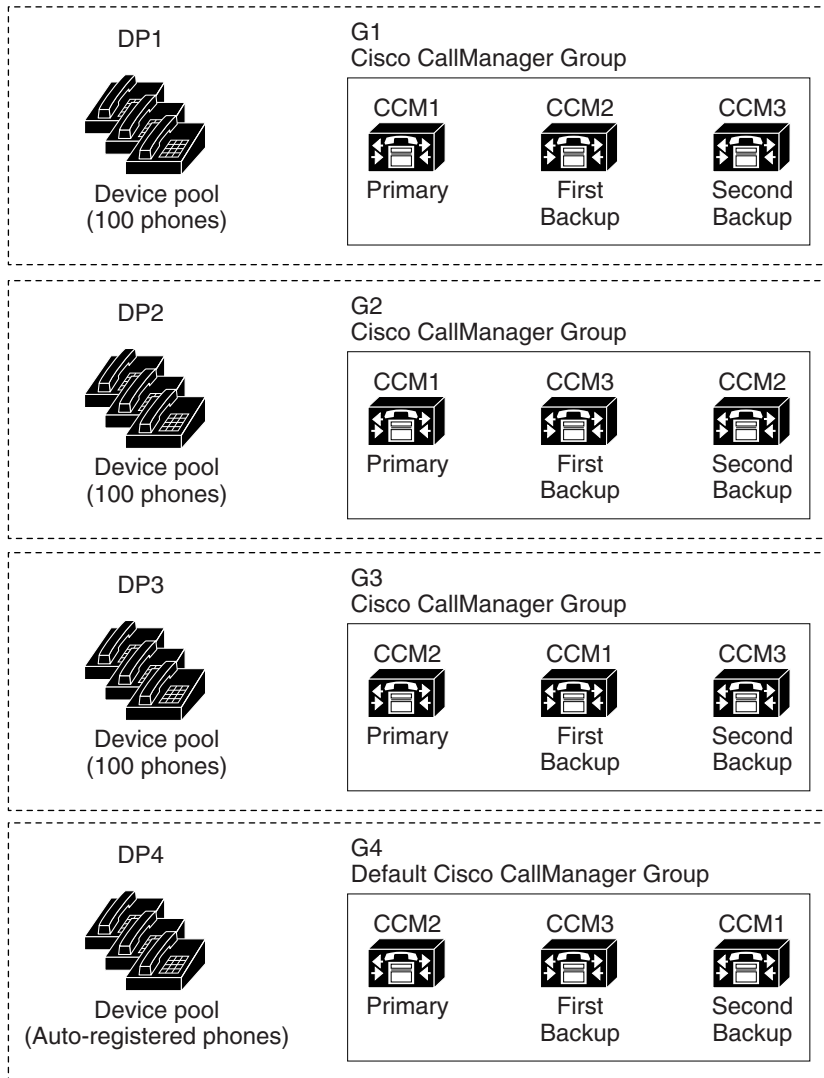
In general, you create a distributed system by distributing the devices (such as phones and gateways) among the various Cisco CallManagers in a cluster. To distribute the devices, you configure Cisco CallManager groups and device pools, and then assign the devices to the device pools in a way that achieves the type of distribution you want. Cisco CallManager groups and device pools are logical groupings that may or may not relate to the physical locations of the Cisco CallManagers and devices on your network.

You can use Cisco CallManager groups to establish redundancy (backup call processors) for the primary Cisco CallManager in the group. A Cisco CallManager group is an ordered list of up to three Cisco CallManager servers. During normal operation, all device pools and devices that use a particular Cisco CallManager group are controlled by the first (primary) Cisco CallManager in the group. If the primary Cisco CallManager in a group fails, control of the device pools and devices registered with the primary Cisco CallManager transfers to the next Cisco CallManager in the group list.

For example, assume a simplified system consisting of three Cisco CallManagers in a cluster, with 300 existing Cisco IP Phones and provisions to auto-register new phones as they are added later. Figure 2-2 shows one possible way to configure the Cisco CallManager groups and device pools to distribute the call processing load for this system.

- Four Cisco CallManager groups are configured. Cisco CallManager group G1 is assigned to device pool DP1, group G2 is assigned to device pool DP2, group G3 is assigned to device pool DP3, and group G4 is assigned to device pool DP4. Group G4 is configured as the default group for devices that auto-register.
- CCM1 serves as the primary Cisco CallManager for the devices in DP1 and DP2, first backup for DP3, and second backup for the devices in DP4.
- CCM2 serves as the primary Cisco CallManager for the devices in DP3 and DP4, first backup for DP1, and second backup for the devices in DP4.
- CCM3 is the first backup Cisco CallManager for the devices in DP2 and DP3, and second backup for the devices in DP1 and DP4.

Figure 2-2 Example of Cisco CallManager Groups and Device Pools



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The following procedure describes general steps for configuring Cisco CallManager groups and device pools. The example shown in Figure 2-2 focuses on the Cisco IP Phones, but similar steps apply to other devices such as gateways.

Before You Begin

Install the Cisco Media Convergence Servers and Cisco CallManager software to form a cluster of Cisco CallManagers. For details, refer to the installation instructions that shipped with your Cisco CallManager.

The example cluster in Figure 2-2 consists of Cisco CallManagers CCM1, CCM2, and CCM3.

Procedure

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- Step 1** In Cisco CallManager Administration, select **System > Cisco CallManager**, select a Cisco CallManager server, and enable its auto-registration option. This will allow new phones to auto-register with that Cisco CallManager as they are added to the system. In the example shown in Figure 2-2, auto-registration is enabled on CCM2.
- a. Enter the starting and ending directory numbers for the new phones that auto-register with the selected Cisco CallManager.
 - b. If desired, enter the partition name and external phone number mask for the phones that auto-register.
 - c. Uncheck the “Auto-registration Disabled on this Cisco CallManager” option. This enables auto-registration for the selected Cisco CallManager.



Caution

Auto-registration is disabled by default. Enabling auto-registration carries a security risk in that “rogue” phones can automatically register to the Cisco CallManager. Restrict your use of auto-registration to brief periods when bulk phone adds are required.

- d. Click **Update** to save the changes.

For details, see the “Updating a Cisco CallManager” section on page 12-5 and the “Understanding Auto-Registration” section on page 4-1.

Step 2 In Cisco CallManager Administration, select **System > Cisco CallManager Group** to configure groups.

- A Cisco CallManager group is a prioritized list of up to three Cisco CallManagers.
- A Cisco CallManager group named Default is configured automatically when you install the Cisco CallManager software. This is the default group for devices that auto-register with Cisco CallManager. However, you can update this group to assign a particular Cisco CallManager to it, or you can select a different group as the default group for auto-registration.
- There can be only one default Cisco CallManager group for auto-registration for the entire cluster.

In the example shown in Figure 2-2, four groups—G1, G2, G3, and G4—are configured, and G4 is the default Cisco CallManager auto-registration group.

For details, see the “Configuring Cisco CallManager Groups” section on page 13-1.

Step 3 In Cisco CallManager Administration, select **System > Device Pool** to configure the device pools for the system.

- a. A device pool named Default is configured automatically when you install Cisco CallManager, and the Default Cisco CallManager group is assigned to it. This is the default device pool for devices that auto-register with Cisco CallManager. However, you can update this device pool to change its settings, or you can select a different device pool as the default for auto-registered devices.
- b. Configure the other device pools and assign the Cisco CallManager groups to the appropriate device pools to achieve the desired load balancing and redundancy.

In the example shown in Figure 2-2, device pool DP4 is configured as the default device pool for auto-registered devices, Cisco CallManager group G1 is assigned to DP1, G2 is assigned to DP2, G3 is assigned to DP3, and G4 is assigned to DP4.

For details, refer to the “Configuring Device Pools” section on page 17-1 and the “Understanding Redundancy” section on page 3-1.

Step 4 In Cisco CallManager Administration, select **System > Device Defaults** to select the default device load, device pool, and template for each type of device. When a device auto-registers with a particular Cisco CallManager, it acquires the device defaults that apply to its device type on that Cisco CallManager.

Refer to the “Setting Device Defaults” section on page 15-1 for more information.

Step 5 In Cisco CallManager Administration, select **Device > Phone** to configure the Cisco IP Phones and assign them to the appropriate device pools. As new phones are connected to the system, they auto-register with the default device pool until all the auto-registration directory numbers are consumed (see Step 1).



Note After a phone auto-registers with a particular Cisco CallManager, you can update its configuration and assign it to a different device pool (and a different Cisco CallManager group). Similarly, you can reconfigure any device and assign it to a different device pool to achieve better load balancing for your system.

Step 6 After making your configuration changes and saving them in the database, restart all devices affected by those changes.

Related Topics

- Understanding Redundancy, page 3-1
- Configuring Cisco CallManager Groups, page 13-1
- Configuring Device Pools, page 17-1
- Setting Device Defaults, page 15-1

