



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:

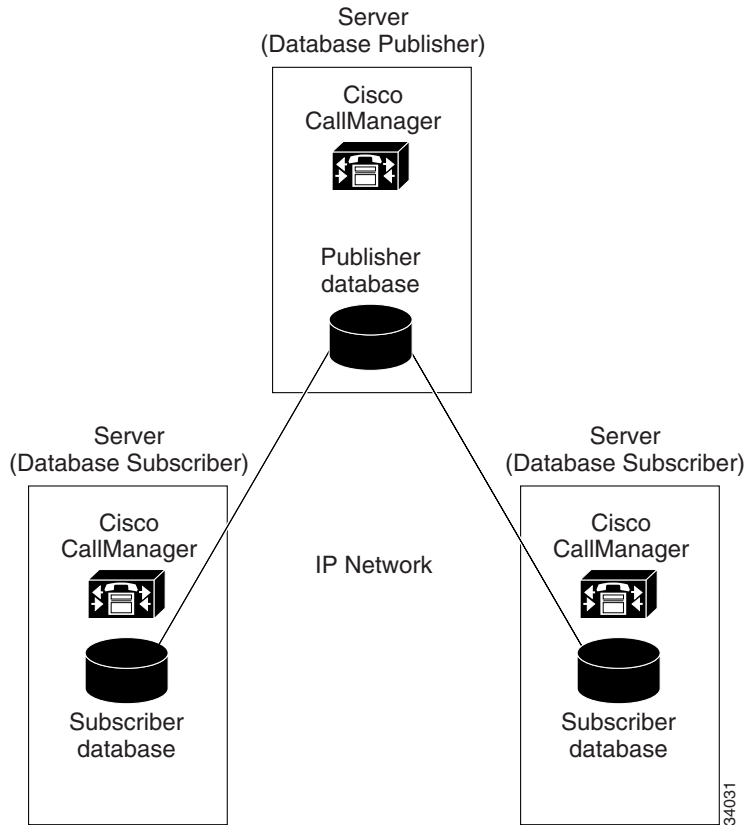
- Configuring a Distributed System, page 1-3

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 of the master database for the cluster. The other servers in the cluster are all subscribers to the master database, but they also maintain their own backup copies of the master database. Figure 1-1 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 master database. Periodically, the backup copies of the database are updated automatically from the master. If the master 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 master database is restored, normal operation resumes.

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

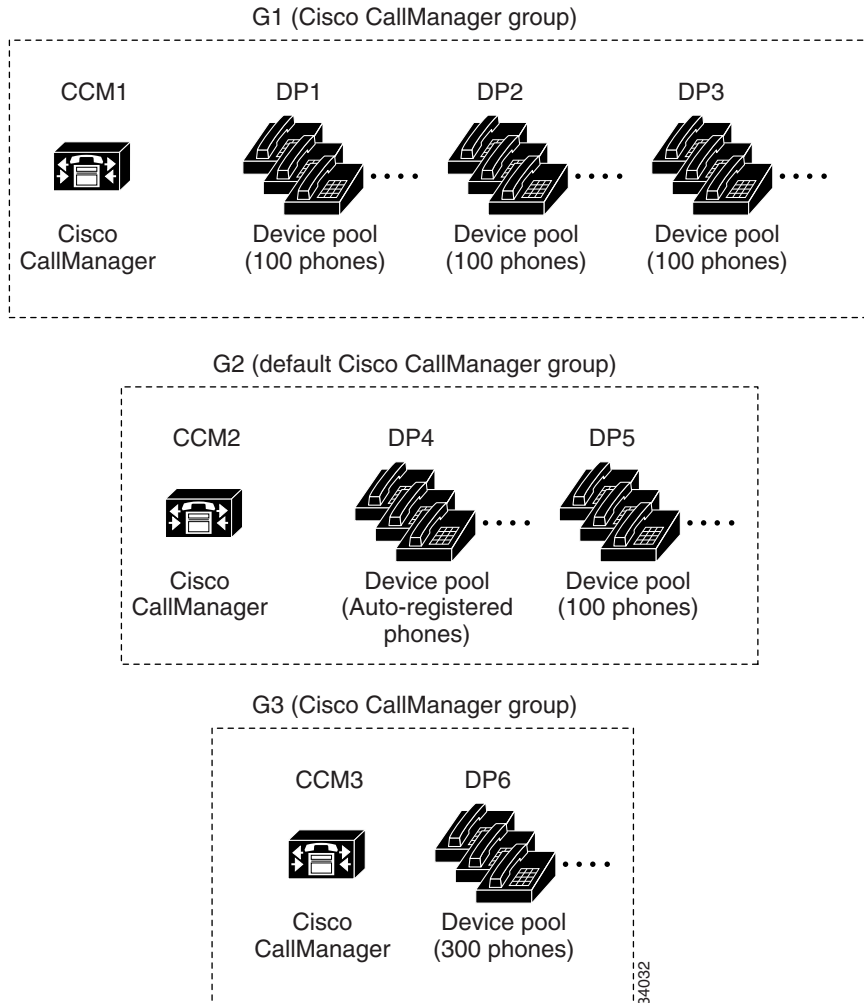
Configuring a Distributed System

After installing the Cisco CallManagers that form a cluster, you must configure the master database properly 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. The 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.

For example, assume a simplified system consisting of three Cisco CallManagers in a cluster, with 700 existing Cisco IP Phones and provisions to auto-register 200 new phones as they are added later. Figure 1-2 shows one possible way to configure the Cisco CallManager groups and device pools to distribute the call processing load for this system.

Figure 1-2 Example of Cisco CallManager Groups and Device Pools



The following procedure describes the general steps for configuring the Cisco CallManager groups and device pools shown in Figure 1-2. This example focuses on the Cisco IP Phones, but similar steps apply to other devices such as gateways.

Procedure

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- Step 1** Install the Cisco Media Convergence Servers and Cisco CallManager software to form a cluster of Cisco CallManagers. In Figure 1-2, the cluster consists of Cisco CallManagers CCM1, CCM2, and CCM3. For details, refer to the installation instructions for Cisco CallManager.
- Step 2** In Cisco CallManager Administration, select **System > Cisco CallManager** and select CCM2 to update the auto-registration information for Cisco CallManager CCM2. This will allow new phones to auto-register with CCM2 as they are added to the system.
- Enter the starting and ending directory numbers for the new phones that auto-register with CCM2.
 - If desired, enter the partition name and external phone number mask for the phones that auto-register.
 - Turn *off* the check mark labeled “Auto-registration Disabled on this Cisco CallManager.” Turning off the check mark enables auto-registration for Cisco CallManager CCM2.
 - Click **Update** to save the changes.

For details, see the “Updating a Cisco CallManager” section on page 9-5 and the “Auto-Registration” section on page 3-1.

- Step 3** In Cisco CallManager Administration, select **System > Cisco CallManager Group** to configure the three groups G1, G2, and G3.
- 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 TFTP group for purposes of auto-registration. There can be only one default Cisco CallManager group for the entire cluster. For this example, configure G2 as the default group.
 - Configure group G1 to contain Cisco CallManager CCM1, group G2 to contain CCM2, and group G3 to contain CCM3.

For details, see the “Cisco CallManager Group” section on page 10-1.

- Step 4** In Cisco CallManager Administration, select **System > Device Pool** to configure the six device pools for this system, DP1, DP2, DP3, DP4, DP5, and DP6.
- a. A device pool named Default is configured automatically when you install Cisco CallManager, and it is assigned to the Default Cisco CallManager group. 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. For this example, configure the default device pool DP4 and assign it to the default Cisco CallManager group G2.
 - b. Configure the other device pools and assign them to the appropriate Cisco CallManager groups. In this example, device pools DP1, DP2, and DP3 are assigned to group G1; device pools DP4 and DP5 are assigned to group G2; and device pool DP6 is assigned to group G3.

For details, see the “Device Pool” section on page 14-1.

- Step 5** In Cisco CallManager Administration, select **System > Device Defaults** to select the default 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. For this example, select Cisco CallManager CCM2 and set the default device pool to DP4 for every type of device.

- Step 6** In Cisco CallManager Administration, select **Device > Phone** to configure the Cisco IP Phones and assign them to the appropriate device pools. In this example, 300 phones are assigned to device pool DP6 and 100 phones are assigned to each of device pools DP1, DP2, DP3, and DP5. As new phones are connected to the system, they auto-register with the default device pool DP4 until all the auto-registration directory numbers are consumed (see Step 2).



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 7** After making your configuration changes and saving them in the database, restart all Cisco CallManagers affected by those changes. See the “Starting and Stopping Cisco CallManager” section on page 17-1.
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Additional Information

In addition to implementing distributed call processing, 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 Cisco CallManager servers. During normal operation, all device pools and devices in a particular Cisco CallManager group are controlled by the first (primary) Cisco CallManager in their group. If the primary Cisco CallManager in a group fails, control of the device pools and devices in that group transfers to the next Cisco CallManager in the group list. For details, see:

- Redundancy, page 2-1

