



## CHAPTER 11

# Working with Cluster Administration

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This chapter describes how to use the Cluster Administration feature in Cisco Data Center Network Manager (DCNM).

This chapter includes the following sections:

- [Information About Cluster Administration, page 11-1](#)
- [Licensing Requirements for Cluster Administration, page 11-4](#)
- [Prerequisites for Cluster Administration, page 11-4](#)
- [Guidelines and Limitations for Cluster Administration, page 11-4](#)
- [Viewing Server Information, page 11-4](#)
- [Field Descriptions for Cluster Administration, page 11-5](#)
- [Additional References, page 11-6](#)
- [Feature History for Cluster Administration, page 11-6](#)

## Information About Cluster Administration

This section includes the following topics:

- [Cluster Administration, page 11-1](#)
- [Clustered-Server Environment, page 11-2](#)
- [Master Server Role, page 11-2](#)
- [Distributed Server Tasks, page 11-2](#)
- [Effect of Cluster Changes on Server Task Distribution, page 11-3](#)

## Cluster Administration

Cluster Administration allows you to view information about the Cisco DCNM servers configured to operate in a server cluster. If the Cisco DCNM server is not configured to operate in a cluster, the Cluster Administration feature allows you to view information about the single server.

For each server that appears in the Cluster Administration summary pane, you can view information such as the Cisco DCNM release number, Java version, operating system, system threads, memory utilization, IP address, and disk drive usage.

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## Clustered-Server Environment

You can deploy Cisco DCNM in a server cluster, with up to five Cisco DCNM servers in a cluster. Cisco DCNM servers in a cluster communicate using multicast IP messages. The primary benefit of a clustered-server deployment is enhanced capacity for the device-management tasks that Cisco DCNM performs. A clustered-server deployment also helps to ensure availability of the Cisco DCNM server. Cisco DCNM distributes tasks among all servers in the cluster. Servers in the cluster are always active and never in a stand-by mode.

For information about the server-system and network requirements for a clustered-server deployment, and for the detailed steps for installing a server cluster, see the *Cisco DCNM Installation and Licensing Guide, Release 5.x*.

## Master Server Role

One server in a Cisco DCNM server cluster is the master server. The master server is responsible for assigning tasks to all of the servers in the server cluster, including to itself. Tasks are stored in the Cisco DCNM database. If the master server fails, the server that assumes the master server role can access the tasks in the database.

When users log into the Cisco DCNM client, they should specify the IP address or DNS name of the master server. When users submit requests to the master server, the master server distributes the tasks as needed.

Cisco DCNM determines which server is the master server by the oldest server start time. The Cisco DCNM server that started first is always the master server in a server cluster. If the master server fails, the Cisco DCNM server with the next oldest start time assumes the role of the master server. You can control which server is the master server by controlling the order in which you start the servers in a cluster.

## Distributed Server Tasks

The master server distributes tasks by assigning managed devices to servers in the server cluster. For example, in a cluster of four servers, if Cisco DCNM is managing 20 devices, the master server assigns five managed devices to each server, including itself.

After the master server assigns a device to a server, that server performs the following tasks for that device:

- Auto-synchronization with devices—The server regularly retrieves the system message log file from the device. For more information about auto-synchronization, see [Chapter 12, “Administering Auto-Synchronization with Devices.”](#)
- Statistical data collection—The server runs any statistical data collectors for the device, with the exception of Virtual Port Channel (vPC) statistics. The master server always runs statistical data collectors for vPC statistics. For more information about statistical data collection, see [Chapter 14, “Administering Statistical Data Collection.”](#)
- Device discovery—The server performs device configuration discovery for the device; however, the remainder of the device discovery phases are performed by the master server. For more information about the phases of device discovery, see the [“Discovery Process” section on page 5-3](#).

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For example, if a user initiates device discovery for a switch named DC-NEXUS-7010-3, the master server completes the initial phases of device discovery. It then assigns the device configuration discovery phase for DC-NEXUS-7010-3 to one of the servers in the cluster, ensuring that discovery tasks are evenly distributed. After discovery completes, the master server assigns DC-NEXUS-7010-3 to the server that is managing the least number of devices. The master server instructs the assigned server to perform auto-synchronization for DC-NEXUS-7010-3. Whenever a Cisco DCNM client user starts a statistical chart for any managed feature on DC-NEXUS-7010-3, the master server instructs the assigned server to run the statistical data collector for the chart.

## Effect of Cluster Changes on Server Task Distribution

When servers join or leave the cluster, the master server always ensures that the assignment of managed devices to servers is redistributed evenly among the servers in the cluster. [Table 11-1](#) describes the behavior of a Cisco DCNM server cluster for more specific events.

**Table 11-1** Cluster Change Events and Behavior

Cluster Change Event	Cluster Behavior
Master server stops or fails	The server with the oldest start time becomes the master server and redistributes the assignment of managed devices evenly among the servers remaining in the cluster. Because the cluster size decreased, the number of devices assigned to each server increases.
Server stops or fails	The master server redistributes the assignment of managed devices evenly among the servers remaining in the cluster. Because the cluster size decreased, the number of devices assigned to each server increases.
Server fails while performing a user-initiated device-configuration deployment	<p>If the user-initiated device-configuration deployment did not complete before the member server failed, the deployment fails and the server task to deploy the device configuration is lost.</p> <p>To recover from the loss of the deployment, the user must repeat the configuration steps and deploy the configuration again. In some cases, the failure may result in the device becoming unmanaged, and the user must rediscover the device before repeating the configuration steps.</p> <p>The master server redistributes the assignment of managed devices evenly among the servers remaining in the cluster. Because the cluster size decreased, the number of devices assigned to each server increases.</p>
Server starts	The master server redistributes the assignment of managed devices evenly among the servers remaining in the cluster. Because the cluster size increased, the number of devices assigned to each server decreases.

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## Licensing Requirements for Cluster Administration

The following table shows the licensing requirements for this feature:

Product	License Requirement
Cisco DCNM	Cluster Administration requires no license. Any feature not included in a license package is bundled with the Cisco DCNM and is provided at no charge to you. For information about obtaining and installing a Cisco DCNM LAN Enterprise license, see the <i>Cisco DCNM Installation and Licensing Guide, Release 5.x</i> .

## Prerequisites for Cluster Administration

The Cluster Administration feature has the following prerequisite:

- Servers in a cluster must meet the clustered-server requirements. For more information, see the *Cisco DCNM Installation and Licensing Guide, Release 5.x*.

## Guidelines and Limitations for Cluster Administration

The Cluster Administration feature has the following limitation:

- The Cluster Administration feature shows information about running servers only. When a server in a cluster stops or fails, it appears to have left the cluster, and its information is not shown by the Cluster Administration feature.

## Viewing Server Information

You can view information about the Cisco DCNM servers that are configured to operate as a server cluster. If you have a single server, which is not configured to operate as a member of a server cluster, you can use the Cluster Administration feature to view information about it.

### DETAILED STEPS

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**Step 1** From the Feature Selector pane, choose **DCNM Server Administration > Cluster Administration**.  
The Summary pane displays the cluster by the partition name assigned to the cluster during installation. A single server environment still has a partition name assigned to it during installation.

**Step 2** Expand the cluster.  
The Summary pane lists each Cisco DCNM server in the cluster with information about the server.




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**Tip** To update the server information, from the toolbar, choose **View > Refresh**.

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**Step 3** (Optional) If you want to view disk usage information, on the Details tab, expand the **Logical Disk(s)** section.

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## Field Descriptions for Cluster Administration

This section includes the following field descriptions for the Cluster Administration feature:

- [Summary Pane](#), page 11-5
- [Server: Details Tab](#), page 11-5

### Summary Pane

**Table 11-2** Cluster Administration Summary Pane

Field	Description
[Cluster partition name]	<i>Display only.</i> Name assigned to the Cisco DCNM server partition during installation of the server software.  <b>Note</b> The remaining fields on the summary pane pertain to specific servers in a cluster.
IP Address	<i>Display only.</i> IPv4 address of the Cisco DCNM server. If the server is currently the master server in the server cluster, the IP Address field also indicates that the server is the master server.
DCNM Version	<i>Display only.</i> Cisco DCNM release number that the server is running.
Java Version	<i>Display only.</i> Java version that the Cisco DCNM server is using.
Total Threads	<i>Display only.</i> Number of processing threads used by the Cisco DCNM software on the server system.
Memory Utilization (Percentage)	<i>Display only.</i> Percentage of system memory used by the Cisco DCNM software on the server system.
Last Local Refresh Time	<i>Display only.</i> Local date and time on the Cisco DCNM server when the client last received updated information.

### Server: Details Tab

**Table 11-3** Server: Details Tab

Field	Description
<b>General</b>	
The fields in this section show the same information as the fields of the same name on the Summary pane.	
<b>Logical Disk(s)</b>	
Name	<i>Display only.</i> Name of the drive.
Size (MB)	<i>Display only.</i> Total capacity of the drive, in megabytes.
Free Space (MB)	<i>Display only.</i> Number of megabytes available for use on the drive.

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## Additional References

For additional information related to administering Cluster Administration, see the following sections:

- [Related Documents, page 11-6](#)
- [Standards, page 11-6](#)

## Related Documents

Related Topic	Document Title
Events	<i>Cisco DCNM System Management Configuration Guide, Release 5.x</i>
Device discovery	<i>Chapter 5, “Administering Device Discovery”</i>
Auto-synchronization with devices	<i>Chapter 12, “Administering Auto-Synchronization with Devices”</i>
Statistical data collection	<i>Chapter 14, “Administering Statistical Data Collection”</i>
Stopping servers	<i>Chapter 16, “Starting and Stopping Cisco DCNM Servers”</i>

## Standards

Standards	Title
No new or modified standards are supported by this feature, and support for existing standards has not been modified by this feature.	—

## Feature History for Cluster Administration

[Table 11-4](#) lists the release history for this feature.

**Table 11-4** Feature History for Cluster Administration

Feature Name	Releases	Feature Information
Cluster Administration	5.0(2)	Support was added.