



## CHAPTER 20

# Working with Cluster Administration

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

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## Information About Cluster Administration

This section includes the following topics:

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- [Clustered-Server Environment, page 20-2](#)
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## Cluster Administration

Cluster Administration allows you to view information about the DCNM-LAN servers configured to operate in a server cluster. If the DCNM-LAN 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 DCNM-LAN 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 DCNM-LAN in a server cluster, with up to five DCNM-LAN servers in a cluster. DCNM-LAN 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 DCNM-LAN performs. A clustered-server deployment also helps to ensure availability of the DCNM-LAN server. DCNM-LAN 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 DCNM-LAN 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 DCNM-LAN 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 DCNM-LAN 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.

DCNM-LAN determines which server is the master server by the oldest server start time. The DCNM-LAN server that started first is always the master server in a server cluster. If the master server fails, the DCNM-LAN 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 DCNM-LAN 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 21, “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 23, “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 15-3](#).

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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 DCNM-LAN 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 20-1](#) describes the behavior of a DCNM-LAN server cluster for more specific events.

**Table 20-1**      **Cluster Change Events and Behavior**

<b>Cluster Change Event</b>	<b>Cluster Behavior</b>
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
DCNM-LAN	Cluster Administration requires no license. Any feature not included in a license package is bundled with the DCNM-LAN 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 DCNM-LAN 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 DCNM-LAN server in the cluster with information about the server.
-  **Tip** To update the server information, from the toolbar, choose **View > Refresh**.
- 
- 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 20-5
- [Server: Details Tab](#), page 20-5

### Summary Pane

**Table 20-2** Cluster Administration Summary Pane

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

### Server: Details Tab

**Table 20-3** 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 20-6](#)
- [Standards, page 20-6](#)

## Related Documents

Related Topic	Document Title
Events	<i>System Management Configuration Guide, Cisco DCNM for LAN, Release 5.x</i>
Device discovery	<a href="#">Chapter 15, “Administering Device Discovery”</a>
Auto-synchronization with devices	<a href="#">Chapter 21, “Administering Auto-Synchronization with Devices”</a>
Statistical data collection	<a href="#">Chapter 23, “Administering Statistical Data Collection”</a>
Stopping servers	<a href="#">Chapter 26, “Starting and Stopping Cisco DCNM-LAN Servers”</a>

## 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 20-4](#) lists the release history for this feature.

**Table 20-4 Feature History for Cluster Administration**

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