



## Overview

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This chapter contains the following sections:

- [About the Optimized Multi-Node Setup, on page 1](#)
- [Minimum System Requirements for Optimized Multi-Node Setup, on page 2](#)
- [Guidelines and Limitations for Optimized Multi-Node Setup, on page 4](#)
- [Best Practices for an Optimized Multi-Node Setup, on page 4](#)

## About the Optimized Multi-Node Setup

In Cisco UCS Director versions prior to Release 6.7.4.x, the multi-node setup included the following nodes:

- One primary node
- One or more service nodes
- One monitoring database
- One inventory database

Similar to 6.7.4.x release, 6.9.0.0 also support same capabilities and scale with the following nodes:

- One database node
- One primary node



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**Note** After upgrading to release 6.7.4.x, since the multi-node configuration requires only 2 VMs, you can claim the freed up VMs.

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# Minimum System Requirements for Optimized Multi-Node Setup

## System Requirements for the Primary Node

Number of VMs	vCPU Allocation	Memory Allocation (GB)	Memory Reservation (GB)	Disk Size (GB)	Inframgr Memory Allocation (GB)
1 - 5000	4	16	16	100	8
5001 - 10000	4	22	22	100	12
10001 - 15000	4	28	28	100	12
15001 - 20000	4	34	34	100	16
20001 - 25000	8	40	40	100	16
25001 - 30000	8	46	46	100	24
30001 - 35000	8	52	52	100	24
35001 - 40000	8	58	58	100	28
40001 - 45000	8	64	64	100	28
45001 - 50000	8	64	64	100	32

You can configure the Inframgr memory allocation in the `/opt/infra/bin/inframgr.env` file.

## System Requirements for the Database Node

Number of VMs	vCPU Allocation	Memory Allocation (GB)	Memory Reservation (GB)	Disk Read I/O Bandwidth (MBps)	Disk Write I/O Bandwidth (MBps)	Disk Size (GB)	Database InnoDB Buffer Pool (GB)
1 - 5000	4	12	12	4	4	100	8
5001 - 10000	4	16	16	6	6	100	12
10001 - 15000	4	28	28	8	8	100	24
15001 - 20000	4	40	40	10	10	200	36
20001 - 25000	8	52	52	12	12	200	48

Number of VMs	vCPU Allocation	Memory Allocation (GB)	Memory Reservation (GB)	Disk Read I/O Bandwidth (MBps)	Disk Write I/O Bandwidth (MBps)	Disk Size (GB)	Database InnoDB Buffer Pool (GB)
25001 - 30000	8	64	64	14	14	200	60
30001 - 35000	8	76	76	16	16	300	72
35001 - 40000	16	90	90	18	18	600	84
40001 - 45000	16	90	90	20	20	600	84
45001 - 50000	16	90	90	22	22	600	84

You can configure the Database InnoDB Buffer Pool parameter in the `/etc/my.cnf` file.



**Note** To determine the currently configured disk read I/O bandwidth and disk write I/O bandwidth, use the **Collect Diagnostics** option from the Cisco UCS Director Shell Admin menu.

## Database Parameters

VMs	Thread Cache Size	Maximum Connections	innodb lock wait timeout	Query Cache Size (MB)	Maximum Connection Errors	Connection Timeout	innodb read I/O Threads	innodb write I/O Threads
1 - 5000	1000	1000	100	128	10000	20	64	64
5001 - 10000	1000	1000	100	128	10000	20	64	64
10001 - 15000	1000	1000	100	128	10000	20	64	64
15001 - 20000	1000	1000	100	128	10000	20	64	64
20001 - 25000	2000	2000	100	128	10000	20	64	64
25001 - 30000	2000	2000	100	128	10000	20	64	64
30001 - 35000	4000	2000	100	128	10000	20	64	64

VMs	Thread Cache Size	Maximum Connections	innodb lock wait timeout	Query Cache Size (MB)	Maximum Connection Errors	Connection Timeout	innodb read I/O Threads	innodb write I/O Threads
35001 - 40000	4000	4000	100	128	10000	20	64	64
40001 - 45000	4000	4000	100	128	10000	20	64	64
45001 - 50000	4000	4000	100	128	10000	20	64	64

Configure these parameters in the `/etc/my.cnf` file.

## Guidelines and Limitations for Optimized Multi-Node Setup

Before you configure an optimized multi-node setup, review the following guidelines:

- Plan the locations and IP addresses of your nodes carefully. You cannot change the types of any nodes. For example, you cannot reconfigure a database node as a primary node or a primary node as a database node.
- Install licenses only on the primary node.
- After you configure the nodes, the list of operations available in the shelladmin changes for the database node and the primary node.
- If you modify your standalone configuration to a multi-node setup, you cannot revert to the standalone configuration unless you took a snapshot of the standalone configuration.
- Connector packs are installed only on the primary node, while Cisco UCS Director patch releases are installed on the database node. As a result, you may notice a discrepancy of software versions between the primary node and the database node.

## Best Practices for an Optimized Multi-Node Setup

Before you configure a multi-node setup for Cisco UCS Director, consider the following best practices:

- To maximize output and minimize network latency, we recommend that the primary node and the database node reside on the same host.
- Network latency (average RTT) between the primary or service node and the physical, virtual compute, storage, and network infrastructures should be minimized. A lower average RTT results in increased overall performance.
- You can reserve more CPU cycles (MHz) and memory than recommended for better performance at system load.

See [System Requirements for the Primary Node, on page 2](#) and [System Requirements for the Database Node, on page 2](#).

- You must configure passwordless authentication between the application node and the database node to:
  - Use the backup and restore feature available in Cisco Intersight on claimed UCS Director instances.
  - Enforce default password reset capability for SSH root and shelladmin users.

You are prompted to reset the default SSH root user and shelladmin user passwords before logging into the Cisco UCS Director administrator interface. You will be prompted to reset these passwords only if you have not reset the passwords prior to upgrading to release 6.7(4.0). In an optimized multi-node environment, you must reset the password for these user accounts on the application node and the database node.

See [Setting Up Passwordless Authentication](#).

