



## CHAPTER 2

# Prerequisites

---

This chapter describes the factors that you must consider before installing CiscoWorks LAN Management Solution 3.1 on both Windows and Solaris systems.

This chapter contains:

- [System and Browser Requirements for Server and Client](#)
- [Terminal Server Support for Windows 2003 Server](#)
- [Solaris Patches](#)
- [LAN Management Solution Port Usage](#)
- [Required Device Credentials for LMS Applications](#)

# System and Browser Requirements for Server and Client

Before you begin to install LAN Management Solution 3.1 applications, you must check if your system meets the recommended prerequisites.

The recommended LAN Management Solution 3.1 server and client requirements on both Operating Systems are based on the license that you use on a single server or multi-server setup.

## Disk Space requirements without HUM

The disk space required to install all LMS applications with HUM Add-on, on both Solaris and Windows is:

- 25 GB free space for LMS applications and data, in the CiscoWorks installation directory— For LMS 100 (Windows) and LMS 300 device license types.
- 35 GB free space for LMS applications and data, in the CiscoWorks installation directory— For LMS 1,500, LMS 5,000, and LMS 10,000 device license types.

## Disk Space requirements with HUM

The disk space required to install all LMS applications with HUM Add-on, on both Solaris and Windows is:

- 45 GB free space for LMS and HUM applications and data, in the CiscoWorks installation directory— For LMS 100 (Windows) and LMS 300 device license types and for HUM 50 and HUM 300 device license types
- 85 GB free space for LMS and HUM applications and data, in the CiscoWorks installation directory— For LMS 1,500, LMS 5,000, and LMS 10,000 device license types and for HUM 1,000 device license types

## Disk Space requirement with HUM on a Standalone Server

The disk space required to install HUM Add-on in Standalone mode, on both Solaris and Windows is:

- 20 GB free space for HUM applications and data, in the CiscoWorks installation directory— For HUM 50 and HUM 300 device license types.
- 50 GB free space for HUM applications and data, in the CiscoWorks installation directory— For HUM 1,000 device license types.

The hardware requirements vary based on the type of device restricted license you use.

- [Table 2-2](#) lists the server hardware requirements for installing the LAN Management Solution 3.1 components on Solaris systems.
- [Table 2-4](#) lists the server hardware requirements for installing the LAN Management Solution 3.1 components on Windows systems.
- [Table 2-6](#) lists the client system requirements for all platforms.

If you are running additional Cisco or third-party applications on the servers, the requirements might be higher.

**Note**

---

LMS 3.1 is not supported on Windows 2000 and Solaris 8 servers.

---

This section contains the following:

- [Operating System Requirements](#)
- [Server Requirements on Solaris Systems](#)
- [Server Requirements on Windows Systems](#)
- [Server Requirements on Virtualization Systems](#)
- [System Requirements on Client Servers](#)

## Operating System Requirements

[Table 2-1](#) lists the Operating System requirements for LMS 3.1.

**Table 2-1**      **Operating System Requirements**

Operating System	Supported Systems
Solaris	<p>The following Solaris systems are supported in LMS 3.1:</p> <ul style="list-style-type: none"> <li>• Solaris 9</li> <li>• Solaris 10</li> </ul> <p>The following Solaris 10 releases are supported in LMS 3.1:</p> <ul style="list-style-type: none"> <li>– Solaris 10, 10/08 release</li> <li>– Solaris 10, 05/08 release</li> <li>– Solaris 10, 08/07 release</li> <li>– Solaris 10, 11/06 release</li> </ul> <p>LMS 3.1 is installed on global zone of Solaris 10 Operating System by default.</p> <p>LMS3.1 will support LMS in whole-root non-global zone. Sparse root zone is not supported.</p> <p>If the whole-root non-global zone is configured in the server, installing LMS 3.1 in global zone is not supported.</p> <p>There is no specific hardware or software requirement for zone support. LMS works in the same way in non-global zones, as it works on global zone.</p> <p>For details, see <a href="#">Support for Zone-based Virtualization in Solaris 10</a>.</p> <p>LMS 3.1 also supports Logical domains (LDoms) and ZFS file system.</p> <p>See <a href="#">Solaris Patches</a> for more information on Solaris patches to be installed on these Operating Systems.</p>
Windows Systems	<p>The following Windows systems are supported in LMS 3.1:</p> <ul style="list-style-type: none"> <li>• Windows Server 2003 Standard Edition</li> <li>• Windows Server 2003 Enterprise Edition</li> <li>• Windows Server 2003 R2 Standard Edition</li> <li>• Windows Server 2003 R2 Enterprise Edition</li> <li>• Windows Server 2003 Standard Edition with Service Pack 1 and 2</li> <li>• Windows Server 2003 Enterprise Edition with Service Pack 1 and 2</li> <li>• Windows Server 2003 R2 Standard Edition with Service Pack 1 and 2</li> <li>• Windows Server 2003 R2 Enterprise Edition with Service Pack 1 and 2</li> </ul> <p>Both 32 bit and 64 bit Operating Systems are supported on the above versions</p>

The following Virtualization systems are supported in LMS 3.1:

- VMware ESX Server 3.0.x
- VMware ESX Server 3.5.x
- VMware ESXi 3.5 Update 2

## Server Requirements on Solaris Systems

[Table 2-2](#) lists the server requirements for installing the LAN Management Solution 3.1 components on Solaris systems without HUM.

[Table 2-3](#) lists the server requirements for installing the LAN Management Solution 3.1 components on Solaris systems with HUM.

**Table 2-2** Recommended Server Hardware Requirements on Solaris Systems without HUM

Component	Recommended Server System Requirement
LMS 300	<ul style="list-style-type: none"> <li>• UltraSPARC CPU with 2 GB RAM memory requirement and 4 GB swap space on Solaris 9.</li> <li>• UltraSPARC CPU with 4 GB RAM memory requirement and 8 GB swap space on Solaris 10.</li> </ul> <p>The memory requirements for LMS 300 device license type vary on Solaris 9 and Solaris 10 systems.</p>
LMS 1,500	UltraSPARC 2 CPUs with 4 GB RAM memory requirement and 8 GB swap space.
LMS 5,000	<ul style="list-style-type: none"> <li>• Standalone server:             <ul style="list-style-type: none"> <li>– UltraSPARC 2 CPUs with 4 GB RAM memory requirement and 8 GB swap space.</li> </ul> </li> <li>• Solution server:             <ul style="list-style-type: none"> <li>– UltraSPARC 4 CPUs with 8 GB RAM memory requirement and 16 GB swap space.</li> </ul> </li> </ul> <p>To manage 5,000 devices for all applications including HUM, you must setup:</p> <ul style="list-style-type: none"> <li>– HUM on a Standalone server (with only CS and HUM installed), which manages 1000 devices</li> <li>– All other CiscoWorks applications on another server</li> </ul>

**Table 2-2 Recommended Server Hardware Requirements on Solaris Systems**

Component	Recommended Server System Requirement
LMS 10,000 <ul style="list-style-type: none"> <li>• Standalone server:               <ul style="list-style-type: none"> <li>– RME will support up to 10,000 devices.</li> <li>– DFM, IPM and Campus will support up to 5,000 devices.</li> </ul> </li> </ul> More than one server must be used to manage up to 10,000 devices.	<ul style="list-style-type: none"> <li>• Standalone server:               <ul style="list-style-type: none"> <li>– UltraSPARC 2 CPUs with 4 GB RAM memory requirement and 8 GB swap space.</li> </ul> </li> </ul>

Table 2-3 lists the server requirements for installing the LAN Management Solution 3.1 components on Solaris systems with HUM.

**Table 2-3 Recommended Server Hardware Requirements on Solaris Systems with HUM**

Component	Recommended Server System Requirement
<b>LMS Bundle Hardware Configuration</b>	
HUM 50— 50 devices + LMS 300	<ul style="list-style-type: none"> <li>• One UltraSPARC CPU with 2 GB RAM memory and 4 GB swap space on Solaris 9</li> <li>• One UltraSPARC CPU with 4 GB RAM memory and 8 GB swap space on Solaris 10</li> </ul>
HUM 300—300 devices + LMS 1500	Two UltraSPARC CPUs with 4 GB RAM memory and 8 GB swap space for Solaris 9 and 10.
<b>Standalone Hardware Configuration</b>	
HUM 50— 50 devices	<ul style="list-style-type: none"> <li>• One UltraSPARC CPU with 2 GB RAM memory and 4 GB swap space on Solaris 9</li> <li>• One UltraSPARC CPU with 4 GB RAM memory and 8 GB swap space on Solaris 10</li> </ul>
HUM 300—300 devices	Two UltraSPARC CPUs with 4 GB RAM memory and 8 GB swap space for Solaris 9 and 10.
HUM 1000— Upto 1000 devices	Four UltraSPARC CPUs with 8 GB RAM memory and 16 GB swap space for Solaris 9 and 10.

The following are the supported processors on a Solaris system:

- UltraSPARC III
- UltraSPARC IIIi processor
- UltraSPARC IV processor
- UltraSPARC IV+ processor
- UltraSPARC T1 processor
- UltraSPARC T2 processor
- UltraSPARC T2+ processor (Supported only on Solaris 10)
- SPARC64 VI processor (Supported only on Solaris 10)

See [Solaris Patches, page 2-12](#) for information on required and recommended server patches on Solaris systems.



**Note**

LMS 100 devices restricted license type is not supported on Solaris systems.

## Server Requirements on Windows Systems

[Table 2-4](#) lists the server requirements for installing the LAN Management Solution 3.1 components on Windows systems without HUM.

[Table 2-5](#) lists the server requirements for installing the LAN Management Solution 3.1 components on Windows systems with HUM.

For a list of Windows HotFix patches, see the [Frequently Asked Questions](#).

**Table 2-4** *Recommended Server Hardware Requirements on Windows Systems without HUM*

Component	Recommended Server System Requirement
LMS 100	1 CPU with 2 GB RAM memory requirement with a swap space of 4 GB.
LMS 300	1 CPU with 2 GB RAM memory requirement with a swap space of 4 GB.
LMS 1,500	2 CPUs with 4 GB RAM memory requirement with a swap space of 8 GB.

**Table 2-4 Recommended Server Hardware Requirements on Windows Systems (continued)**

Component	Recommended Server System Requirement
<p>LMS 5,000</p> <ul style="list-style-type: none"> <li>• Standalone server: <ul style="list-style-type: none"> <li>– DFM, IPM, RME and Campus will support up to 5,000 devices.</li> </ul> </li> <li>• Solution server: <ul style="list-style-type: none"> <li>– Maximum of 5,000 devices in each application.</li> </ul> </li> </ul> <p>To manage 5,000 devices for all applications including HUM, you must setup:</p> <ul style="list-style-type: none"> <li>– HUM on a Standalone server (with only CS and HUM installed), which manages 1000 devices</li> <li>– All other CiscoWorks applications on another server</li> </ul>	<ul style="list-style-type: none"> <li>• Standalone server: <ul style="list-style-type: none"> <li>– 2 CPUs with 4 GB RAM memory requirement and 8 GB swap space.</li> </ul> </li> <li>• Solution server: <ul style="list-style-type: none"> <li>– 4 CPUs with 8 GB RAM memory requirement and 16 GB swap space.</li> </ul> </li> </ul>
<p>LMS 10,000</p> <ul style="list-style-type: none"> <li>• Standalone server: <ul style="list-style-type: none"> <li>– RME will support up to 10,000 devices.</li> <li>– DFM, IPM and Campus will support up to 5,000 devices.</li> </ul> </li> </ul> <p>More than one server must be used to manage up to 10,000 devices.</p>	<ul style="list-style-type: none"> <li>• Standalone server: <ul style="list-style-type: none"> <li>– 2 CPUs with 4 GB RAM memory requirement and 8 GB swap space.</li> </ul> </li> <li>• Solution server: <ul style="list-style-type: none"> <li>– 4 CPUs with 8 GB RAM memory requirement and 16 GB swap space.</li> </ul> </li> </ul>

Table 2-5 lists the server requirements for installing the LAN Management Solution 3.1 components on Windows systems with HUM.

**Table 2-5 Recommended Server Hardware Requirements on Windows Systems with HUM**

Component	Recommended Server System Requirement
<b>LMS Bundle Hardware Configuration</b>	
HUM 50— 50 devices + LMS 300	One CPU with 2 GB RAM memory and 4 GB swap space running Windows 2003 Server.
HUM 300—300 devices + LMS 1500	2 CPUs with 4 GB RAM memory and 8 GB swap space running Windows 2003 Server.
<b>Standalone Hardware Configuration</b>	
HUM 50— 50 devices	One CPU with 2 GB RAM memory and 4 GB swap space.
HUM 300—300 devices	One CPU with 2 GB RAM memory and 4 GB swap space.
HUM 1000—Upto 1000 devices	Two CPUs with 4 GB RAM memory and 8 GB swap space.

The following are the supported processors on a Windows system:

For Intel:

- Intel® Xeon® processor (Dual Core)
- Intel® Core™ Duo processor T2600 - T2300
- Intel® Pentium® processor Extreme Edition 965 (Dual Core)
- Intel® Pentium® D processor 960 (Dual Core)
- Intel® Pentium® 4 processor with Hyper-Threading Technology
- Quad-Core Intel Xeon processor 5400 series
- Quad-Core Intel Xeon processor 5300 series
- Quad-Core Intel Xeon processor 7300 series

For AMD:

- Dual-Core AMD Opteron Processor
- AMD Opteron Processor
- AMD Athlon 64 FX Processor
- AMD Athlon™ 64 X2 Dual-Core

## Server Requirements on Virtualization Systems

LMS 3.1 runs on VMware systems. See [Operating System Requirements](#) for a list of virtualization systems supported.

The server requirements on VMware servers remains the same as the server requirements on Windows systems.

However, the following hardware are optimized to run in virtualized environment:

- Intel-VT processors
  - Intel® vPro™ processor technology
  - Intel® Xeon® processor 5000 sequence
  - Intel Xeon processor 7000 sequence
  - Intel Xeon processor 3000 sequence
  - Intel® Itanium® Processor 9000 sequence
- AMD-V

## System Requirements on Client Servers

Table 2-6 lists the client system requirements for all platforms.

**Table 2-6 Recommended Client Hardware and Software Requirements**

Component	Recommended Client System Requirement
Operating System	<p>The hardware recommended for the client systems are:</p> <ul style="list-style-type: none"> <li>• Windows systems:           <p>PC-compatible system with single CPU 2.4 GHz or equivalent processor running:</p> <ul style="list-style-type: none"> <li>– Windows Server 2003 Standard and Enterprise Editions with Service Pack 1 and 2</li> <li>– Windows Server 2003 R2 Standard and Enterprise Editions with Service Pack 1 and 2</li> </ul> <p>Both 32 bit and 64 bit Operating Systems are supported on the above versions</p> <ul style="list-style-type: none"> <li>– Windows XP Professional with Service Pack 2, Service Pack 3</li> <li>– Windows Vista Business Edition with Service Pack 1</li> </ul> <p>LAN Management Solution 3.1 supports only the US English and Japanese versions of these operating systems. Set the default locale to US-English for the US-English version and Japanese for the Japanese version.</p> </li> <li>• Solaris systems:           <p>Sun UltraSPARC processor with Solaris 9 and Solaris 10 with latest patches and upgrades. See <a href="#">Solaris Patches</a> for information on required and recommended server patches on Solaris systems.</p> </li> </ul>
Memory requirements	<p>512 MB minimum RAM</p> <p>Either of the following:</p> <ul style="list-style-type: none"> <li>• For Solaris: 1 GB swap space</li> <li>• For Windows: 1 GB virtual memory</li> </ul> <p>We recommend that you set virtual memory and swap space to twice the size of RAM.</p>
JVM Requirements	Java Plug-in version 1.6.0_05.
Browser Requirements	<ul style="list-style-type: none"> <li>• Internet Explorer 6.0 Service Pack 1, Service Pack 2</li> <li>• Internet Explorer 7.0</li> <li>• Firefox 2.0</li> </ul> <p><b>Note</b> Solaris systems support only Firefox 2.0 browsers.</p>

# Terminal Server Support for Windows 2003 Server

You can install Common Services and LMS applications on a system with Terminal Services enabled in Remote Administration mode. However, you cannot install Common Services on a system with Terminal Services enabled in Application mode.

If you have enabled Terminal Server in Application mode, you should disable the Terminal Server, reboot the system, and start the installation again.

Table 2-7 summarizes the Terminal Services features in Windows 2003 Server.

**Table 2-7** Terminal Services on Windows 2003 Server

Windows 2003 Server	Features
Terminal Server	Remote access and virtual system. Each client has its own virtual OS environment.
Remote Desktop Administration	Remote access only. All clients use the same (and the only) OS.

## Enabling and Disabling Terminal Services on Windows 2003 Server

To enable/ disable Terminal Server, go to **Manage Your Server > Add or Remove a Role > Terminal Server**.

To enable/ disable Remote Desktop Administration, go to **Control Panel > System > Remote**.

## Enabling and Disabling FIPS on Windows 2003 Server

Sometimes, Federal Information Processing Standard (FIPS) compliant encryption algorithms are enabled for Group security policy on Windows server.

When the FIPS compliance is turned on, the SSL authentication may fail on CiscoWorks Server. You should disable the FIPS compliance for the CiscoWorks to work properly.

To enable/disable FIPS on Windows 2003 server:

- 
- Step 1** Go to **Start > Settings > Control Panel > Administrative tools > Local Security Policy**.  
The Local Security Policy window appears.
  - Step 2** Click **Local Policies > Security Options**.
  - Step 3** Select **System cryptography: Use FIPS compliant algorithms for encryption, hashing, and signing**.
  - Step 4** Right-click the selected policy and click **Properties**.
  - Step 5** Select **Enabled** or **Disabled** to enable or disable FIPS compliant algorithms.
  - Step 6** Click **Apply**.  
You must reboot the server for the changes to take effect.
-

# Solaris Patches

LMS 3.1 is installed on global zone of Solaris 10 Operating System by default. Installation of LMS 3.1 in whole-root non-global zone in Solaris 10 is supported.

The Solaris system requires the following patches to be installed on the server:

- [Required and Recommended Solaris Patches](#)
- [Cluster Patches](#)

## Required and Recommended Solaris Patches

Table 2-8 lists the required and recommended patches for Solaris 9.

The required patches are mandatory for all LMS features to function properly. Some of the LMS features may not work if the mandatory patches are not installed on your system.

The recommended patches are optional.

For example, the required patch for LMS is 112963-20. If you install the patches 112963-21 through 112963-24, the following error message appears and installation may fail:

```
INFO: Patch 112963-20 is superceded by a newer patch.
```

To complete the installation of LMS applications, you must downgrade to patch 112963-20 on Solaris 9 system.

For more information, see <http://www.sun.com>.

**Table 2-8**      **Solaris Patches**

Operating System	Required Server Patches	Required Client Patches	Recommended Server Patches	Recommended Client Patches
Solaris 9	114224-01 113580-01 112839-04 112233-12 114006-01 118558-39 112874-31 113225-09 111722-05	112771-14 112661-06 113244-05	113326-01 112998-03 113713-14 112964-07 113575-05 112970-07	112808-06
Solaris 10	<ul style="list-style-type: none"> <li>• Required Server Patch is 122032-05.</li> <li>• Minimum system level must be 11/06 release or higher.</li> </ul> <p>To find out the current operating system level, enter the following command:</p> <pre># more /etc/release</pre> <p>For example, the system displays the following information:</p> <pre>Solaris 10 11/06 s10s_u2wos_09a SPARC Copyright 2006 Sun Microsystems, Inc. All Rights Reserved. Use is subject to license terms. Assembled 11 November 2006</pre>			

Use `showrev -p` command to verify that these patches have been applied.

**Note**

LMS was tested only with these patches. Later versions of these patches have not been tested since they were not released when LMS was tested.

The table below lists the messages that appear during installation if you do not have the recommended and required Solaris patches on the system.

If you do not have...	Message
Required Server patches	<p>Warning message appears with a prompt to continue or quit the installation.</p> <pre>This system does not have the following required Server patches Installation can proceed without the required Server patches.However, you must install the required patches listed above before running CiscoWorks. Do you want to continue the installation? (y/n) [y]:</pre>
Required Client patches	<p>Warning message appears with a prompt to continue or quit the installation.</p> <pre>This system does not have the following required Client patches. These patches are required if only this system is used as a CiscoWorks client.</pre>
Recommended Server patches	<p>Warning message appears with a prompt to continue or quit the installation.</p> <pre>This system does not have the following recommended Server patches.</pre>
Recommended Client patches	<p>Warning message appears with a prompt to continue or quit the installation.</p> <pre>This system does not have the following recommended Client patches. These patches are recommended if only this system is used as a CiscoWorks client.</pre>

We recommend you download and install the latest required and recommended patches from <http://www.sun.com> before you run LMS applications.

### Cluster Patches

You should also install the cluster patches recommended by Sun Microsystems on both Solaris 9 and Solaris 10 servers.

You can download the cluster patches from <http://www.sun.com>. See the same website for the installation instructions of Cluster patches.

The minimum recommended cluster patch levels on Solaris Systems are:

- Solaris 9 — Cluster patches released on Dec/11/06.
- Solaris 10 — Cluster patches released on Apr/17/07.

If you have not installed the cluster patches on Solaris 9 system, the following warning messages appear to ensure you install the Cluster Patches required for Solaris 9:

```
WARNING: Ensure that you have installed the recommended Solaris 9 cluster patches released
on Dec/11/06, in this server.
```

```
WARNING: If these cluster patches are not installed, please download and install them
from http://www.sun.com/.
```

```
WARNING: Otherwise, some features of the CiscoWorks applications will not function
properly.
```

```
Do you want to continue the installation ? (y/n) [y]:
```

If you have not installed the cluster patches on Solaris 10 system, the following warning messages appear to ensure you install the Cluster Patches required for Solaris 10:

```
WARNING: Ensure that you have installed the recommended Solaris 10 cluster patches
released on Apr/17/07, in this server.
```

```
WARNING: If these cluster patches are not installed, please download and install them from
http://www.sun.com/.
```

```
WARNING: Otherwise, some features of the CiscoWorks applications will not function
properly.
```

```
Do you want to continue the installation ? (y/n) [y]:
```

## LAN Management Solution Port Usage

Table 2-9 lists the ports used by the various CiscoWorks components

**Table 2-9 LAN Management Solution Port Usage**

Protocol	Port Number	Service Name	Applications	Direction (of Establishment) of Connection
TCP	49	TACACS+ and ACS	CiscoWorks Common Services, RME, Campus, DFM and IPM	Server to ACS
TCP	25	Simple Mail Transfer Protocol (SMTP)	CiscoWorks Common Services (PSU), RME	Server to SMTP Server
TCP	22	Secure Shell (SSH)	CiscoWorks Common Services, Campus, and RME	Server to Device
TCP	23	Telnet	CiscoWorks Common Services, Campus, and RME	Server to Device
UDP	69	Trivial File Transfer Protocol (TFTP)	CiscoWorks Common Services and RME	Server to Device Device to Server

**Table 2-9 LAN Management Solution Port Usage (continued)**

<b>Protocol</b>	<b>Port Number</b>	<b>Service Name</b>	<b>Applications</b>	<b>Direction (of Establishment) of Connection</b>
UDP	161	Simple Network Management Protocol (SNMP)	CiscoWorks Common Services, CiscoView, RME, Campus, DFM, IPM and HUM	Server to Device Device to Server
TCP	514	Remote Copy Protocol	CiscoWorks Common Services	Server to Device
UDP	162	SNMP Traps (Standard Port)	Campus and DFM	Device to Server
UDP	514	Syslog	CiscoWorks Common Services and RME	Device to Server
UDP	1431	Trap Listener to MAC Notification Traps	Campus	Device to Server
UDP	9000	DFM trap receiving (if port 162 is occupied)	DFM	Device to Server
UDP	16236	UT Host acquisition	Campus	End host to Server
TCP	443	CiscoWorks HTTP server in SSL mode	CiscoWorks Common Services	Client to Server Server Internal
TCP	1741	CiscoWorks HTTP Protocol	CiscoWorks Common Services, CiscoView, Campus, RME, DFM and IPM	Client to Server
TCP	43242	ANIServer	Campus	Client to Server
TCP	42342	OSAGENT	CiscoWorks Common Services	Client to Server
TCP	42352	ESS HTTP (Alternate port is 44352/tcp)	CiscoWorks Common Services	Client to Server
TCP	8898	Log Server	DFM	Server Internal
TCP	9002	DynamID authentication (DFM Broker)	DFM	Server Internal
TCP	9007	Tomcat shutdown	CiscoWorks Common Services	Server Internal
TCP	9009	Ajp13 connector used by Tomcat	CiscoWorks Common Services	Server Internal
UDP	9020	DFM Trap Receiving	DFM	Server Internal
TCP	10002	OpsXML message bus, OpsXMLRuntime	CiscoWorks Assistant	Server Internal
UDP	14004	Lock port for ANI Server singlet on check	Campus	Server Internal
TCP	15000	Log server	DFM	Server Internal
TCP	40050-40070	CSTM ports used by CS applications, such as OGS, Device and Credential Repository (DCR)	CiscoWorks Common Services	Server Internal

Table 2-9 LAN Management Solution Port Usage (continued)

Protocol	Port Number	Service Name	Applications	Direction (of Establishment) of Connection
TCP	40401	LicenseServer	CiscoWorks Common Services	Server Internal
TCP	42340	CiscoWorks Daemon Manager - Tool for Server Processes	CiscoWorks Common Services	Server Internal
TCP	42344	ANI HTTP Server	CiscoWorks Common Services	Server Internal
UDP	42350	Event Services Software (ESS) (Alternate port is 44350/udp)	CiscoWorks Common Services	Server Internal
TCP	42351	Event Services Software (ESS) Listening (Alternate port is 44351/tcp)	CiscoWorks Common Services	Server Internal
TCP	42353	ESS Routing (Alternate port is 44352/tcp)	CiscoWorks Common Services	Server Internal
TCP	43441	CMF Database	CiscoWorks Common Services	Server Internal
TCP	43455	RME Database	RME	Server Internal
TCP	43443	ANIDbEngine	Campus	Server Internal
TCP	43445	Fault History Database	DFM	Server Internal
TCP	43446	Inventory Service Database	DFM	Server Internal
TCP	43447	Event Promulgation Module Database	DFM	Server Internal
TCP	44400-44420	CSTM Port for DFM, HUM	DFM, HUM	Server Internal
TCP	47000-47040	CSTM Port for RME	RME	Server Internal
TCP	49154	UPMDbEngine	HUM	Server Internal
TCP	49155	OpsxmlDbEngine, JDBC / ODBC	CiscoWorks Assistant	Server Internal
TCP	49157	IPM Database	IPM	Server Internal
TCP	50001	SOAPMonitor	RME	Server Internal
TCP	55000-55020	CSTM Port for Campus Manager	Campus	Server Internal

# Required Device Credentials for LMS Applications

You must configure several important device credentials correctly on every Cisco device that will be managed and monitored through LMS. You must also enter the correct device credentials in the Device and Credential Repository (**Common Services > Device and Credentials > Device Management**).

Table 2-10 lists all the applications and the device credentials required for proper functioning of the applications.

**Table 2-10 Applications and Device Credentials**

Application	Telnet/SSH Password	Enable Password	SNMP Read Only	SNMP Read / Write
<b>Common Services</b>	Not required	Not required	Required	Required
<b>Campus Manager</b>	Not required	Not required	Required	Required
<b>CiscoView</b>	Not required	Not required	Required	Required
<b>Device Fault Manager</b>	Not required	Not required	Required	Not required
<b>Internetwork Performance Monitor</b>	Not required	Not required	Required	Required
<b>Health and Utilization Monitor</b>	Not required	Not required	Required	Not required
<b>Resource Manager Essentials</b>				
Inventory	Not required	Not required	Required	Not required
Configuration Management (Telnet)	Required	Required	Required	Not required
Configuration Management <sup>1</sup> (TFTP) <sup>2</sup>	Not required	Not required	Required	Required
NetConfig	Required	Required	Required	Required
Config Editor	Required	Required	Required	Required
NetShow	Required	Required	Required	Not required
Software Management	Required <sup>3</sup>	Required <sup>3</sup>	Required	Required

1. Configuration download also uses TFTP. Hence, SNMP Read/Write credentials are required.
2. The file vlan.dat can be fetched only if the Telnet password and Enable password are supplied.
3. Required in the case of a few devices like PIX devices, Cisco 2950 series switches.

