



# CHAPTER 1

## Preparing to Install the MWTM

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This chapter can help you plan your installation of the MWTM 6.1.6. It describes the MWTM installation methods, supported platforms, and hardware and software requirements.

This chapter includes the following sections:

- [Installation Methods, page 1-1](#)
- [Licensing Information, page 1-1](#)
- [Supported Platforms and Nodes, page 1-2](#)
- [Supported Platform OS Images, page 1-2](#)
- [About Using Alternate Ports, page 1-6](#)
- [Server System Requirements, page 1-6](#)
- [Solaris Patch Requirements, page 1-10](#)
- [Linux Update Requirements, page 1-11](#)
- [Client System Requirements, page 1-11](#)
- [Additional Software Requirements, page 1-13](#)
- [SNMP Configuration Requirements, page 1-14](#)
- [MIB Reference, page 1-15](#)

## Installation Methods

You can install the MWTM client software from the web interface, see the following sections:

- [Installing the MWTM Client Using the Web Server, page 2-5](#)
- [Installing the MWTM Client on Linux Using the Web Server, page 3-5](#)
- [Installing the MWTM Client for Windows Using the Web Server, page 4-1](#)

## Licensing Information

A single license for the MWTM allows you to install one MWTM server and an unlimited number of MWTM clients.

We recommend a maximum of 50 clients per MWTM server. To connect more than 50 clients to a single server, the server requires additional memory and a more powerful CPU.

## Supported Platforms and Nodes

MWTM 6.1.6 supports the following operating system platforms:

- Sun Solaris version 9 or 10 with the latest recommended patches from Sun Microsystems, Inc. (MWTM server and client)
- RedHat Enterprise Linux versions
  - 4.0 AS Update 6
  - Version 5 Update 3 (MWTM server only)
- Windows XP Professional (MWTM client only)
- Cisco Unified Computing System (UCS) (MWTM server only)

The MWTM 6.1.6 supports the following Cisco nodes:

Cisco ITP Nodes <sup>1</sup>	Cisco IP-RAN Nodes	Cisco Mobile Internet Nodes
<ul style="list-style-type: none"> <li>• Cisco 2600 Series Routers Cisco 2650XM, Cisco 2651 and Cisco2651XM</li> <li>• Cisco 2811 Series Router</li> <li>• Cisco 7200 Series Routers Cisco 7202, Cisco 7204 and Cisco 7204VXR, Cisco 7206 and Cisco 7206VXR</li> <li>• Cisco 7300 Series Routers Cisco 7301, Cisco 7304</li> <li>• Cisco 7500 Series Routers Cisco 7505, Cisco 7507, Cisco 7507mx, Cisco 7507z, Cisco 7513, Cisco 7513mx, Cisco 7513z</li> <li>• Cisco 7600 Series Routers Cisco 7603, Cisco 7604, Cisco 7606, Cisco 7609, Cisco 7613</li> <li>• ITP on the Service and Application Module for IP (SAMI) card</li> </ul>	<ul style="list-style-type: none"> <li>• CiscoMWR-1941-DC-A series router</li> <li>• CiscoMWR-2941-DC series router</li> <li>• CiscoME-3400 Metro Ethernet switch</li> <li>• Cisco ONS 15454 chassis with ONS-RAN-SVC module(s)</li> <li>• Cisco 3825 Integrated Services Router</li> <li>• Cisco 7600 Series Routers</li> <li>• Cisco ASR9k and Cisco ASR1k</li> </ul>	<ul style="list-style-type: none"> <li>• Service Application Module for IP (SAMI)</li> <li>• Multiprocessor WAN Application Module (MWAM)</li> <li>• Cisco 7301 for Broadband Wireless Gateway (BWG) and Home Agent (HA)</li> <li>• Cisco 7600 Series Routers</li> </ul>

1. For more information about SNMP, refer to “Configuring SNMP Support” in the *Cisco IOS Release 12.2 Configuration Fundamentals Configuration Guide, Part 3, System Management*.

## Supported Platform OS Images

To see the latest information about supported platform OS images, perform one of these options:

- Enter the **mwtm osinfo** command

- From the MWTM web interface, click **Administrative**, then under System Information, select one of the **OS README** files.
- See the *Supported IOS Releases for the Cisco Mobile Wireless Transport Manager and the Cisco Signaling Gateway Manager* document at the following URL:

[http://www.cisco.com/en/US/docs/net\\_mgmt/mobile\\_wireless\\_transport\\_manager/6.1.5/ios\\_support/release/IOS\\_comp.html](http://www.cisco.com/en/US/docs/net_mgmt/mobile_wireless_transport_manager/6.1.5/ios_support/release/IOS_comp.html)

## Upgrading the MWTM

Use the following supported upgrade path when you install MWTM 6.1.6:

Current Installation	Upgrade Path
MWTM 6.0 MWTM 6.0.1 MWTM 6.0.2	<ol style="list-style-type: none"> <li>1. Install the MWTM 6.0.3 patch.</li> <li>2. Install the MWTM 6.1.0.</li> <li>3. Install the MWTM 6.1.1 patch.</li> <li>4. Install the MWTM 6.1.2 patch.</li> <li>5. Install MWTM 6.1.4 patch.</li> <li>6. Install MWTM 6.1.5 patch.</li> <li>7. Install MWTM 6.1.6 patch.</li> </ol>
MWTM 6.0.3 MWTM 6.0.4	<ol style="list-style-type: none"> <li>1. Install the MWTM 6.1.0.</li> <li>2. Install the MWTM 6.1.1 patch.</li> <li>3. Install MWTM 6.1.2 patch.</li> <li>4. Install MWTM 6.1.4 patch.</li> <li>5. Install MWTM 6.1.5 patch.</li> <li>6. Install MWTM 6.1.6 patch.</li> </ol>
MWTM 6.1.0	<ol style="list-style-type: none"> <li>1. Install the MWTM 6.1.1 patch.</li> <li>2. Install MWTM 6.1.2 patch.</li> <li>3. Install MWTM 6.1.4 patch.</li> <li>4. Install MWTM 6.1.5 patch.</li> <li>5. Install MWTM 6.1.6 patch.</li> </ol>
MWTM 6.1.1	<ol style="list-style-type: none"> <li>1. Install MWTM 6.1.2 patch.</li> <li>2. Install MWTM 6.1.4 patch.</li> <li>3. Install MWTM 6.1.5 patch.</li> <li>4. Install MWTM 6.1.6 patch.</li> </ol>
MWTM 6.1.2	<ol style="list-style-type: none"> <li>1. Install MWTM 6.1.4 patch.</li> <li>2. Install MWTM 6.1.5 patch.</li> <li>3. Install MWTM 6.1.6 patch.</li> </ol>

Current Installation	Upgrade Path
MWTM 6.1.4	1. Install MWTM 6.1.5 patch. 2. Install MWTM 6.1.6 patch.
MWTM 6.1.5	Install MWTM 6.1.6 patch.

**Note**

After upgrading, the MWTM performs staggered presence polling for each node in the network. Completion time depends upon the number of nodes in your network and your poll interval setting. For a typical network, the default poll setting is 15 minutes. During the first poll cycle, functionality can be limited.

**Related Topics**

- [Migrated Content](#)
- [Preserved Content](#)
- [Upgrading on the Same Server](#)

## Migrated Content

The MWTM migrates the following configuration information, as necessary, to be compatible with the MWTM 6.1.6 release:

**Table 1-1** *Migrated Content*

Migrated Content	Unmigrated Content
MWTM database—The MWTM migrates the entire database.	-
Customized point code formats and network configurations.	-
Simple Network Management Protocol (SNMP) parameters	User preferences
Global Title Translation (GTT), route table, and address table configuration files	
Seed node files	Network event filter settings and preferences
Notes about nodes and signaling point objects	<sup>1</sup> Event Configuration
IP access list	Event sound customizations
Trap access list	Views

Migrated Content	Unmigrated Content
Usernames, passwords, and all security (including SSL credentials, certificates, keys, and current state)	Address table and GTT preferences
System.properties file	
Troubleshooting commands (located in the UserCommands.ts and UserDefinedInputData.ts files)	
Trap forwarding information	
Log files	
OSS Host Configurations	

1. The MWTM saves a customized event configuration but does not migrate it. You must manually merge changes with the new SgmEvent.conf file in the /opt/CSCOSgm/etc (MWTM root directory) path.

The MWTM replaces the existing network event configuration with the newest configuration. The MWTM preserves the old event configuration file as SgmEvent.conf.sgm\_release#.

If you customized an earlier SgmEvent.conf file, remember that the equivalent file in a later release of MWTM will not automatically include those customizations. If you want to retain those customizations, replace the new configuration file with the old configuration file or manually merge the customizations in the new version. The later release of MWTM uses default values for any new fields or capabilities in the file.

## Preserved Content

The following content is preserved when upgrading to MWTM 6.1.6:

- Network event information, including the event log and customized event help files
- Event history
- Network preferences (for example, ITP network or IP-RAN network)
- All Reports Files
- OSS Host configurations are restored.

## Upgrading on the Same Server

When upgrading to MWTM 6.1.6, the MWTM must be at the MWTM 6.1.5 release. Migration from any release of SGM or MWTM prior to 6.0.3 is not supported. If you have SGM or MWTM from a release earlier than 6.0.3, you must first upgrade to MWTM 6.1.0, then install the MWTM 6.1.1 patch, then install the MWTM 6.1.2 patch.

Upgrading from MWTM 6.0.3 or 6.0.4 to MWTM 6.1.6 is possible when you install MWTM 6.1.0 directly over MWTM 6.0.3 or 6.0.4, then install the MWTM 6.1.1 patch, then install the MWTM 6.1.2 patch, install the MWTM 6.1.4 patch, install the MWTM 6.1.5 patch and then install the MWTM 6.1.6 patch.

If the current version is MWTM 6.1.5, then directly apply MWTM 6.1.6 patch.

**Note**

After upgrading to each patch release in the upgrade path, MWTM server has to be started at least once before going for next upgrade in order to have the new schema change in effect.

## About Using Alternate Ports

The MWTM client and server software must be set up to communicate on the same port. If you are installing the MWTM client on the same machine as the MWTM server, the install tool handles this automatically. If you are installing the MWTM client on a separate system from the server, *you must make sure the ports specified during the client installation match those installed for the MWTM server.* In most installation situations the default ports should be available for the MWTM client and server.

The MWTM server software uses the following default ports:

- web server—1774/tcp
- JSP server—1775/tcp
- naming server—44742/tcp

The MWTM client software must know which ports the MWTM server is using. By default, the client uses the following ports:

- web server—1774/tcp
- JSP server—1775/tcp
- naming server—44742/tcp

When you install the MWTM server, or the MWTM server and client, the MWTM install tool determines whether or not these ports are available (This is not done when you install only the MWTM client). If there are conflicts with the ports, the software provides you with the option to specify an alternate port number.

To determine the ports that are currently in use on your system, use the **netstat** command for Solaris, which includes the corresponding port type (TCP):

```
# netstat -a -n -f inet -P tcp
```

If you are specifying an alternate port, remember that ports 1 through 1023 are reserved for system processes.

For more information about MWTM ports, see the [User Guide for the Cisco Mobile Wireless Transport Manager 6.1.6](#).

## Server System Requirements

**Note**

Hardware and software version information is subject to change, based on enhancements to the product. For the most current version information, see the [Release Notes for the Cisco Mobile Wireless Transport Manager 6.1.6](#), available on Cisco.com.

[Table 1-2](#) describes system requirements for running the MWTM on a Solaris or Linux server. Server sizes are listed at the top and requirement types are listed at left. [Table 1-3](#) describes system requirements for running the MWTM on a Linux server for very large networks.

Table 1-2 Server System Requirements

	Demo / Proof of Concept		Medium Server		Large Server	
<b>Operating system</b>	Solaris 9,10	Linux RHEL 4.0 AS Update 6 and Version 5 Update 3, Cisco UCS	Solaris 9,10	Linux RHEL 4.0 AS Update 6 and Version 5 Update 3, Cisco UCS	Solaris 9,10	Linux RHEL 4.0 AS Update 6 and Version 5 Update 3, Cisco UCS
<b>IP-RAN: Number of nodes</b>	100	100	2,000	2,000	5,000	5,000
<b>IP-RAN: Number of links<sup>1</sup></b>	500	500	10,000	10,000	75,000	75,000
<b>IP-RAN: Number of interfaces<sup>2</sup></b>	5,000	5,000	100,000	100,000	250,000	250,000
<b>IP-RAN: Number of interfaces with stats<sup>3</sup></b>	2,500	125,000	50,000	50,000	125,000	125,000
<b>ITP: Maximum nodes</b>	10	10	100	100	200	200
<b>ITP: Maximum links</b>	200	200	4,000	4,000	10,000	10,000
<b>CSG2 SAMI cards</b>	100	100	2,000	2,000	5,000	5,000
<b>CSG1 cards in 7600s</b>	100	100	2,000	2,000	5,000	5,000
<b>GGSN/ MWAM cards</b>	20	20	400	400	1,000	1,000
<b>HA 4.x, GGSN, or BWG SAMI cards</b>	16	16	320	320	800	800
<b>HA 5.x SAMI cards</b>	100	100	2,000	2,000	5,000	5,000
<b>HA or BWG on 7301 nodes</b>	100	100	2,000	2,000	5,000	5,000
<b>PDSN 5.X SAMI Cards</b>	100	5	2,000	2,000	5,000	5,000
<b>Model</b>	legacy hardware Sun T5120, T5220	SunFire X2XXX, X41XX	Sun T5120, T5220 legacy hardware	SunFire X41XX	Sun T5140, T5240, T5440 legacy hardware	SunFire X4450
<b>NEBS model</b>	Sun Netra 210, 240, T5220	Sun Netra X42XX	Sun Netra T5220	Sun Netra X42XX	Sun Netra T5440	Sun Netra X4450

Table 1-2 Server System Requirements (continued)

	Demo / Proof of Concept		Medium Server		Large Server	
<b>Non-NEBS model</b>		Cisco UCS C200/C210, Sun Fire X2XXX/X41XX, Sun Netra X42XX		Cisco UCS C200/C210, Sun Fire X41XX		Cisco UCS C210 Using LSI MegaRAID SunFire X41XX/X42XX
<b>CPU type</b>	Sparc IIIi Quad-core for T5xxx series	Single-Core	Quad-core (T5120, T5220) Sparc IV+	Dual-core	UltraSparc T2 (T5140, T5240, T5440) Sparc IV+ (V490)	Quad-core
<b>CPU number</b>	1	1	1 (T5120, T5220) 2 (V490)	2	2 (T5140, T5240, T5440) 4 (V490)	2
<b>Minimum CPU speed</b>	1 GHz	2 GHz (multi-core), 3 GHz (single-core)	1.2 GHz (T5120, T5220) 1.5 GHz (V490)	2 GHz (multi-core)	1.2 GHz (T5140, T5240, T5440) 1.4 GHz Recommended (T5140, T5240, T5440) 1.5 GHz (V490)	2.2 GHz
<b>Minimum RAM</b>	2 GB	2 GB	4 GB	4 GB	12 GB	12 GB
<b>Minimum Swap</b>	6 GB	6 GB	8 GB	8 GB	12 GB	12 GB
<b>Minimum disk space<sup>4</sup></b>	10 GB	10 GB	200 GB	200 GB	500 GB	500GB
<b>Number of clients<sup>5</sup></b>	5	5	20	20	50	50
<b>Number of active alarms</b>	5,000	5,000	25,000	25,000	25,000	50,000
<b>Number of active events</b>	10,000	10,000	50,000	50,000	50,000	50,000
<b>Number of archived alarms/events<sup>6</sup></b>	200,000	200,000	200,000	200,000	200,000	200,000
<b>DVD-ROM drive</b>	On the local system or on an accessible remote system.					

1. The number of IP-RAN links are counted as the number of PWE3 virtual circuits or the number of RANO shorthauls in the network. If MWTM discovers both cell site and agg site devices, both MWR and Agg Node are counted.



2. The number of interfaces are counted as the number of entries in the ifTable on the devices. This number is usually higher than number of physical ports.
3. The number of interfaces that MWTM collect stats from. This excludes interfaces such as ds1, ds3, sonet, sdh, and atm layers that do not have valid statistics.
4. The disk space shown is for the file system where you installed the MWTM. For systems requiring longer periods of system and network status message and statistics archiving, more disk space is required.
5. For systems running multiple clients on the same server, add 512 MB RAM and 512 MB swap space for each client for medium deployments and add 1 GB RAM and 1 GB swap space for each client for large deployments.
6. Both events and alarms are included in the number of archived alarms/events.

**Note**

VMWare environments are supported as long as virtual machines meet the above equivalent requirements.

**Table 1-3 Server System Requirements for Very Large Networks**

Operating System	Linux RHEL 4.0 AS Update 6 and Version 5 Update 3
IP-RAN: Number of nodes	10,000
IP-RAN: Number of links <sup>1</sup>	300,000
IP-RAN: Number of interfaces <sup>2</sup>	800,000
IP-RAN: Number of interfaces with stats <sup>3</sup>	400,000
Number of Concurrent MWTM clients	50
Number of active alarms	50,000
Number of active events	100,000
Number of archived alarms/events <sup>4</sup>	500,000
Hard disk space	<ul style="list-style-type: none"> <li>• 1,000 GB minimum</li> <li>• RAID 10 with minimum 6 drives (10000rpm) required</li> <li>• Special Disk Partition Required</li> </ul>
non NEBs Compliant Systems Using LSI MegaRAID	<ul style="list-style-type: none"> <li>• Cisco UCS C210 for non NEBs Compliant Systems Using LSI MegaRAID</li> <li>• Sun Fire X44X0 or equivalent for non NEBs Compliant Systems</li> <li>• Sun Netra X44X0 or equivalent replacement NEBs Compliant Systems</li> </ul>
CPU type	Quad-core
CPU number	2
Minimum CPU speed	2.4 GHz
Minimum RAM	16 GB
Minimum Swap	16 GB

1. The number of IP-RAN links are counted as the number of PWE3 virtual circuits or the number of RANO shorthauls in the network. If MWTM discovers both cell site and agg site devices, both MWR and Agg Node are counted.
2. The number of interfaces are counted as the number of entries in the ifTable on the devices. This number is usually higher than number of physical ports.
3. The number of interfaces that MWTM collect stats from. This excludes interfaces such as ds1, ds3, sonet, sdh, and atm layers that do not have valid statistics.
4. Both events and alarms are included in the number of archived alarms/events.

**Note**

For the Solaris server, you must have the latest recommended patches from Sun Microsystems Inc. and required patches for the MWTM. For a list of the required patches for the MWTM, see [Solaris Patch Requirements, page 1-10](#). The MWTM installation program automatically verifies your operating system version and (if applicable) checks for the required level of Solaris patches.

[Table 1-3](#) describes system requirements for running the MWTM on a Linux server for very large networks.

**Note**

For more information on MWTM tuning for very large deployments, please go to MWTM home page and refer the [README - Large Deployment Tuning](#) document in the **System Documentation** section.

## Solaris Patch Requirements

The Solaris patches listed by version in this section are required to install the MWTM. These patches can be installed separately or as a jumbo patch from Sun Microsystems, Inc.

**Caution**

If the required patches are not installed, the MWTM might not operate as expected.

To verify the patches installed on your Solaris system, run the **showrev -p** command. The MWTM installation program also checks for these patches automatically, and reports any missing patches.

To obtain the patches, download and install the entire recommended patch cluster for your OS version from the Sun Microsystems website:

<http://sunsolve.sun.com>

## Solaris 9 Patches

The following minimum patch levels are required to run the MWTM on Solaris version 9:

**Patches required for all system configurations:**

- Patch 113096-03 or later
- Patch 111711-27 or later
- Patch 111712-26 or later
- Patch 112963-35 or later
- Patch 112785-65 or later

## Solaris 10 Patches

The following minimum patch levels are required to run the MWTM on Solaris version 10:

- Patch 121133-02 or later
- Patch 120900-04 or later
- Patch 119254-73 or later

- Patch 119578-30 or later
- Patch 118833-36 or later
- Patch 118918-24 or later
- Patch 120011-14 or later
- Patch 127127-11 or later
- Patch 137137-09 or later
- Patch 120272-28 or later
- Patch 138217-01 or later
- Patch 122640-05 or later
- Patch 125503-02 or later
- Patch 126897-02 or later
- Patch 140796-01 or later
- Patch 140860-01 or later
- Patch 140899-01 or later
- Patch 125891-01 or later
- Patch 126540-02 or later
- Patch 127755-01 or later
- Patch 138866-03 or later
- Patch 125555-07 or later

## Linux Update Requirements

MWTM requires RedHat Enterprise Linux version 4.0 AS Update 6 or version 5 Update 3 (MWTM server only). In addition:

- ncompress-4.2.4-44 or later RPM is required and must be installed.
- telnet-0.17-31 or later RPM is required and must be installed.
- crontabs-1.10-7 or later RPM is required and must be installed.
- vixie-cron-4.1-49 or later RPM is required and must be installed.
- tftp-server-0.39-2 or later RPM is required for managing ITP networks.

## Client System Requirements



### Note

Hardware and software version information is subject to change, based on enhancements to the product. For the most current version information, see the [Release Notes for the Cisco Mobile Wireless Transport Manager 6.1.6](#), available on Cisco.com.

Table 1-4 describes system requirements for running the MWTM on a Solaris or Windows XP Professional client. Operating systems are listed at the top and requirement types are listed at left.

**Table 1-4** Client System Requirements for Solaris or Windows

	Windows	Solaris
<b>Model</b>	XP Professional (IBM PC-compatible computer)	Sun Ultra Workstation
<b>Minimum CPU speed</b>	2.0 GHz Pentium 4 processor or later	1 GHz processor or greater
<b>Minimum RAM</b>	1 GB minimum is required (2 GB is strongly recommended)	1 GB or greater is required
<b>Browser</b>	Microsoft Internet Explorer version 6.0 (SP1) or later or Firefox version 3.0 or later is required to access the MWTM online help, to download the MWTM client software using the web interface, and to access the MWTM server home page and web-based MWTM features.	
<b>Additional Memory</b>	To configure GTT tables or MLR address tables, between 256 MB and 1 GB of additional RAM is required. <sup>1</sup>	<ul style="list-style-type: none"> <li>• If you are running more than one MWTM client on the same device, add 512 MB RAM and 512 MB page file for each additional client (medium deployment).</li> <li>• If you are running more than one MWTM client on the same device, add 1 GB RAM and 1 GB page file for each additional client (large deployment).</li> <li>• Larger networks require more RAM to maintain performance.</li> <li>• To configure GTT tables or MLR address tables, between 256 MB and 1 GB of additional RAM is required.<sup>1</sup></li> </ul>
<b>Minimum Swap<sup>2</sup></b>	1 GB or greater page file (2 GB is strongly recommended)	1 GB or greater is required (twice the RAM size is recommended)

Table 1-4 Client System Requirements for Solaris or Windows (continued)

	Windows	Solaris
<b>Minimum disk space</b>	<ul style="list-style-type: none"> <li>• 200 MB minimum on the drive where you install the MWTM client</li> <li>• 400 MB if installed from the MWTM web server</li> <li>• 20 MB minimum on the drive that contains the TEMP directory (for InstallShield's temporary files).</li> <li>• 15 MB minimum on the drive that contains the Program Files directory (for the uninstall files).</li> </ul>	<ul style="list-style-type: none"> <li>• 200 MB minimum is required (particularly if installing the client from the MWTM web server).</li> </ul>
<b>Hardware</b>	<ul style="list-style-type: none"> <li>• DVD-ROM drive (ISO 9660-compliant) on the host system, or access to the MWTM web server.</li> <li>• Monitor and video card that support displaying 16.7 million colors (24-bit color depth).</li> <li>• PostScript-compatible printer for printing graphs and charts.</li> </ul>	<ul style="list-style-type: none"> <li>• DVD-ROM drive on the server or on a remote host system that can be accessed by the Network File System (NFS).</li> <li>• Monitor and video card that support displaying 16.7 million colors (24-bit color depth) if you run the client on the host system.<sup>3</sup></li> <li>• PostScript-compatible printer for printing graphs and charts.</li> </ul>

1. For example, a client that is used to configure 500,000-line GTT tables (the largest supported size) requires at least 1 GB of additional RAM on the client.
2. Swap space is in addition to the recommended hard disk space.
3. For optimum performance on large networks, use a local Solaris client with a graphics card and an attached monitor, rather than remote access.

**Note**

To enable a remote Solaris workstation to access the MWTM on a local workstation, you can use the **xhost + UNIX** command. However, performance is always better if you access the MWTM by installing the MWTM client on the local workstation.

## Additional Software Requirements

### CiscoWorks

The MWTM does not require CiscoWorks, but the MWTM does integrate with CiscoWorks to provide added value. MWTM supports CiscoWorks LMS version 3.1 and 3.2.

If you want to integrate the MWTM with CiscoWorks, you should also know the following information:

- Name of the host on which CiscoWorks is installed.
- CiscoWorks web server port number. The default is 1741.

When integrating MWTM with CiscoWorks LMS, the recommended best selection of applications to install from the CiscoWorks LMS menu are listed below:

- 1) Common Services 3.3
- 2) LMS Portal 1.2
- 3) CiscoWorks Assistant 1.2

- 4) CiscoView 6.1.9
- 5) Integration Utility 1.9
- 6) Resource Manager Essentials 4.3
- 7) Campus Manager 5.2
- 8) Device Fault Manager HPOV-NetView adapters 3.2
- 9) Device Fault Manager 3.2
- 10) Internetwork Performance Monitor 4.2
- 11) All of the above
- 12) Health and Utilization Monitor 1.2

Cisco does not recommend options 7, 8, 9 and 12 from the above install menu. It is always a best practice to customize menu options 1, 2, 3, 4, 5, 6 and 10.

For details on integrating the MWTM with CiscoWorks, see the **mwtm cwsetup** command reference in the [User Guide for the Cisco Mobile Wireless Transport Manager 6.1.6](#).

## SNMP Configuration Requirements

This section provides requirements for setting up the SNMP configuration of the network elements (nodes) that the MWTM will manage.

When you configure your network for MWTM management, observe these requirements:

- Configure each network node to be accessible through IP networking to or from the MWTM server (that is, you must be able to access each node from the MWTM server).
- Configure nodes to use SNMP community names. The MWTM requires that the names be at least read-only (RO), but read-write (RW) names also work.
- Enable nodes to use technology-specific SNMP traps (The MWTM trap receiver supports SNMP traps for both version v1 and v2c, but not version v3).
- (Optional) To enable the MWTM to handle and display environmental events, enable MWTM-managed nodes to use ENVMON traps.
- Ensure that the host IP address used for traps is the MWTM server's IP address.

Also, if MWTM is not the only application listening for traps on the server, set the SNMP trap port number to a value greater than 1024. Because the MWTM listens for traps from trap multiplexing devices and NMS applications on port 44750 (recommended), port 44750 is a good port number to choose. The SNMP trap port number must be the same on all nodes in your network.

- To minimize lost traps, set the length of the message queue for each trap host to at least 100.
- To enable MWTM to view more than one line of Syslog, set the logging history size to 500.

To implement these requirements, enter the following IOS commands on all MWTM-managed nodes:

```
snmp-server community <snmp community string> RO 1
snmp-server enable traps snmp linkdown linkup coldstart warmstart
snmp-server enable traps config
snmp-server host <snmp-server-host-ip-address> public [port-number]
snmp-server queue-length 100
logging buffered 4096 debugging
logging history size 500
logging history debugging
```

where:

- *snmp-server-host-ip-address* is the IP address of the MWTM server.
- *port-number* is the SNMP port number on the MWTM server to send traps to (default is 162)

For more information about these commands, see the Cisco IOS Release 12.2 *Configuration Fundamentals Command Reference*.

Additional configuration requirements for MWTM-managed nodes depend on the type of network that you are managing. [Table 1-5](#) provides these additional requirements.

**Table 1-5 Network-specific Configuration Requirements**

Network Type	Configuration Requirement
ITP	<code>snmp-server enable traps cs7</code>
IP-RAN	<code>ipran-mib snmp-access &lt;inBand   outOfBand&gt;<sup>1</sup></code> <code>ipran-mib location &lt;cellSite   aggSite&gt;<sup>2</sup></code> <code>snmp-server trap link ietf</code> <code>snmp-server enable traps pw vc</code> <code>snmp-server enable traps ipran</code>
CSG	<code>snmp-server enable traps csg</code>
GGSN	<code>snmp-server enable traps gprs</code> <b>Note</b> Consult the GGSN IOS documentation for caveats related to SNMP trap flooding.
HA	<code>snmp-server enable traps ip local pool</code> <code>snmp-server enable traps ipmobile</code>
BWG	<code>snmp-server enable traps agw</code>
PDSN	<code>snmp-server enable traps cdma</code> <code>snmp-server enable traps ahdlc</code>
PDNGW	<code>snmp-server enable traps gprs</code>
SGW	<code>snmp-server enable traps gprs</code>
SPGW	<code>snmp-server enable traps gprs</code>

1. The `ipran-mib snmp-access` value determines how the MWTM collects data from the node. If you specify `outOfBand`, the MWTM collects performance information automatically from the chassis. If you specify `inBand`, the MWTM does not automatically collect performance information from the chassis, preventing the MWTM from consuming too much bandwidth when managing the node. Typically, `cellSite` routers are managed `inBand` while `aggSite` routers are managed `outOfBand`.
2. The `ipran-mib location` value determines how the network node appears in the MWTM application.

## MIB Reference

You can obtain the latest versions of the MWTM MIBs from one of the following locations:

- The zip file *mibs.zip*, located at the top of the MWTM DVD image
- As a download from the Cisco website:

<http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml>

For more information about MWTM MIBs, see the “MWTM MIB Reference” section in the *User Guide for the Cisco Mobile Wireless Transport Manager 6.1.6*.

