



CHAPTER 1

Preparing to Install the MWTM

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

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Installation Methods

You can install the MWTM server and client software on the same workstation or on different workstations. You can install the MWTM server and client software either locally or remotely using one of the following methods:

- From a locally-mounted DVD-ROM drive
- From a Network File System-exported DVD-ROM drive
- From the MWTM web server (MWTM client software only)

For more information about installing the MWTM client software from the web interface, see the following sections:

- [Installing the MWTM Client on Solaris Using the Web Server, page 2-22](#)
- [Installing the MWTM Client for Windows Using the Web Server, page 4-2](#)

Licensing Information

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

The MWTM recommends a maximum of 20 clients per MWTM server. To connect more than 20 clients to a single server, that server will require additional memory and a more powerful CPU.

Supported Platforms and Nodes

Release 6.0 of the MWTM 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 version 4.0 AS AMD64 (MWTM server only)
- Windows XP Professional (MWTM client only)

The MWTM 6.0 supports the following Cisco ITP nodes:

- Cisco 2600 Series Routers: Cisco 2650XM, Cisco 2651 and Cisco2651XM
- Cisco 2811 Series Router
- Cisco 7200 Series Routers: Cisco 7202, Cisco 7204 and Cisco 7204VXR, Cisco 7206 and Cisco 7206VXR
- Cisco 7300 Series Routers: Cisco 7301, Cisco 7304
- Cisco 7500 Series Routers: Cisco 7505, Cisco 7507, Cisco 7507mx, Cisco 7507z, Cisco 7513, Cisco 7513mx, Cisco 7513z
- Cisco 7600 Series Routers: Cisco 7603, Cisco 7604, Cisco 7606, Cisco 7609, Cisco 7613



Note 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.

The MWTM 6.0 supports the following Cisco RAN-O nodes:

- CiscoMWR-1941-DC-A: Cisco MWR-1941-DC-A series router
- Cisco ONS 15454 chassis with ONS-RAN-SVC module(s)

Supported OS Images

To see the latest information about supported OS images, use one of the following procedures:

- Enter the **mwtm osinfo** command.
- Select **ITP or RAN-O OS README** from the MWTM Web Administrative page.

The MWTM supports the following ITP nodes and corresponding IOS releases:

| | 2600 | 2811 | 7200 | 7300 | 7500 | 7600 |
|---------------|------|------|------|------|------|------|
| 12.2(4)MB9 | X | | X | | X | |
| 12.2(4) MB9a | X | | X | | X | |
| 12.2(4) MB10 | X | | X | | X | |
| 12.2(4) MB11 | X | | X | | X | |
| 12.2(4) MB12 | X | | X | | X | |
| 12.2(4) MB13 | X | | X | | X | |
| 12.2(18) SW | | | | X | | |
| 12.2(18) IXA | | | | | | X |
| 12.2(18) IXB | | | | | | X |
| 12.2(18) IXB1 | | | | | | X |
| 12.2(18) IXB2 | | | | | | X |
| 12.2(18) IXC | | | | | | X |
| 12.2(19) SW | X | | X | X | X | |
| 12.2(20) SW | X | | X | X | X | |
| 12.2(21) SW1 | X | | X | X | X | |
| 12.2(23) SW | X | | X | X | X | |
| 12.2(23) SW1 | X | | X | X | X | |
| 12.2(25) SW | X | | X | X | X | |
| 12.2(25) SW1 | X | | X | X | X | |
| 12.2(25) SW2 | X | | X | X | X | |
| 12.2(25) SW3 | X | | X | X | X | |
| 12.2(25) SW4 | X | | X | X | X | |
| 12.2(25) SW4a | X | | X | X | X | |
| 12.2(25) SW5 | X | | X | X | X | |
| 12.2(25) SW6 | X | | X | X | X | |
| 12.2(25) SW7 | X | | X | X | X | |

| | 2600 | 2811 | 7200 | 7300 | 7500 | 7600 |
|--------------|------|------|------|------|------|------|
| 12.2(25) SW8 | X | | X | X | X | |
| 12.4(11) SW | X | X | X | X | | |

The following features require these ITP IOS releases (or later):

| Features | IOS Releases (Or Later) |
|---|--|
| GTT accounting statistics reports or GTT and route table deployment | <ul style="list-style-type: none"> • 12.2(4) MB13 • 12.2(18) SW • 12.2(18) IXA • 12.4(11) SW |
| Route table or GTT table deployment | <ul style="list-style-type: none"> • 12.2(4) MB13 • 12.2(18) IXA |
| GTT encoding scheme support | <ul style="list-style-type: none"> • 12.2(25) SW • 12.2(18) IXA • 12.4(11) SW |
| MLR address table configuration support | <ul style="list-style-type: none"> • 12.2(25) SW3 • 12.2(18) IXA • 12.4(11) SW |
| MSU rates support | <ul style="list-style-type: none"> • 12.2(25) SW7 • 12.2(18) IXB • 12.4(11) SW |
| ITP provisioning | <ul style="list-style-type: none"> • 12.2(18) SW • 12.2(18) IXA • 12.4(11) SW |

The MWTM supports the following RAN-O platforms and corresponding software releases:

| RAN-O Platform | Supported Software Releases |
|----------------|-----------------------------|
| MWR-1941-DC-A | 12.4(11) MR |
| ONS 15454 | 7.2 |
| ONS-RAN-SVC | 12.2(29) SM |

Upgrading the MWTM

You can upgrade to MWTM 6.0 from the Cisco Signaling Gateway Manager (SGM) 4.1 or from the latest version of MWTM 5.0. You can upgrade on the same machine, or upgrade on different machines. You might want to upgrade using different machines if you are running SGM 4.1 on Solaris 8 or RedHat

Enterprise Linux 3.0, which are unsupported for MWTM 6.0 (only Solaris 9 and 10 or RedHat Enterprise Linux 4.0 are supported). In this scenario, you keep the SGM 4.1 installation on one machine, and simply perform a backup, then restore the data onto another machine running MWTM 6.0.

**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.

The following upgrade scenarios are supported:

- [Upgrading from SGM 4.1 to MWTM 6.0 on the Same Machine, page 1-8](#)
- [Upgrading from SGM 4.1 to the MWTM 6.0 on Different Machines, page 1-8](#)
- [Upgrading from the MWTM 5.0 to 6.0 on the Same Machine, page 1-8](#)
- [Upgrading from the MWTM 5.0 to 6.0 on Different Machines, page 1-8](#)

For details on migrated, non-migrated, and preserved content:

- [Migrated SGM 4.1 Content, page 1-5](#)
- [Migrated MWTM 5.0 Content, page 1-6](#)
- [Preserved SGM 4.1 Content, page 1-7](#)
- [Preserved MWTM 5.0 Content, page 1-7](#)

Migrated SGM 4.1 Content

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

Table 1-1 *Migrated SGM 4.1 Content*

| Migrated Content |
|---|
| SGM database—The MWTM migrates only node and signaling point objects from the SGM database. |
| Customized point code formats and network configurations |
| SNMP parameters |
| GTT, route table, and address table configuration files |
| Seed node files |
| Notes about nodes and signaling point objects |
| IP access list |
| Trap access list |
| Usernames, passwords, and all security (including SSL credentials, certificates, keys, and current state) |

Table 1-1 Migrated SGM 4.1 Content

| Migrated Content |
|--|
| System.properties file |
| Troubleshooting commands (located in the UserCommands.ts file) |
| Trap forwarding information |

The MWTM replaces the following configuration information with the latest configuration:

- Network event configuration. The MWTM preserves the earlier event configuration file as *SgmEvent.conf.sgm_release#*.

If you customized an earlier *SgmEvent.conf* file, take note 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. The later release of MWTM uses default values for any new fields or capabilities in the file.

The MWTM does not migrate the following configuration elements when you upgrade to a new version and release:

Table 1-2 Non-Migrated SGM 4.1 Content

| Non-Migrated Content |
|---|
| All linksets, links, ASs, ASPs, ASPAs, and SGMP information |
| Notes related to any of the above objects |
| User preferences |
| Network event filter settings and preferences |
| Event configuration |
| Event sound customizations |
| Views |
| Address table and GTT preferences |

Migrated MWTM 5.0 Content

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

Table 1-3 Migrated MWTM 5.0 Content

| Migrated Content |
|---|
| MWTM database—The MWTM migrates only RAN-O and MWR node objects from the MWTM database. |
| SNMP parameters |
| Seed node files |

Table 1-3 Migrated MWTM 5.0 Content

| Migrated Content |
|--|
| Notes about node objects |
| Username, passwords, and all security (including SSL credentials, certificates, keys, and current state) |
| System.properties file |
| Log files |

The MWTM does not migrate the following configuration elements when you upgrade to a new version and release:

Table 1-4 Non-Migrated MWTM 5.0 Content

| Non-Migrated Content |
|---|
| All node interface information |
| User preferences |
| Network event filter settings and preferences |
| Event configuration |
| Event sound customizations |
| Views |

Preserved SGM 4.1 Content

The following content is preserved when upgrading from SGM 4.1:

- Network event information, including the event log and customized event help files
- ITP statistics

Preserved MWTM 5.0 Content

The following content is preserved when upgrading from MWTM 5.0:

- Collected performance data to the following file:
`/opt/CSCOsgm/data/IPRanStats.csv`
- Event history

Upgrading from SGM 4.1 to MWTM 6.0 on the Same Machine

When upgrading SGM to the MWTM, SGM must be at release 4.1. Migration from any release of SGM prior to 4.1 is not supported. If you have SGM from a release earlier than 4.1, you must first upgrade to SGM 4.1.

Upgrading from SGM 4.1 to the MWTM 6.0 automatically occurs when you install the MWTM 6.0 directly over SGM 4.1.

Upgrading from SGM 4.1 to the MWTM 6.0 on Different Machines

If you are upgrading SGM 4.1 to MWTM 6.0 on two different machines:

-
- Step 1** On your SGM 4.1 machine, run the `sgm backup` command (see the *Cisco Signaling Gateway Manager 4.1 User Guide*).
 - Step 2** On the second machine, install the MWTM 6.0.
 - Step 3** Copy the SGM 4.1 backup to the `/opt` directory on your MWTM 6.0 machine.
 - Step 4** On the MWTM 6.0 machine, run the `mwtmUpgrade.sh` script, located in the following directory:
`/opt/CSCOsgm/install`



Note `/opt/CSCOsgm` is the default installation directory. If you installed the MWTM in a directory other than `/opt`, then the `CSCOsgm` directory is located in that directory.

The MWTM restores your SGM 4.1 backup data to the MWTM 6.0.

Upgrading from the MWTM 5.0 to 6.0 on the Same Machine

Upgrading from the MWTM 5.0 to the MWTM 6.0 automatically occurs when you install the MWTM 6.0 directly over the MWTM 5.0.

Upgrading from the MWTM 5.0 to 6.0 on Different Machines

If you are upgrading the MWTM 5.0 to 6.0 on two different machines:

-
- Step 1** On your MWTM 5.0 machine, run the `mwtm backup` command (see the *Cisco Mobile Wireless Transport Manager 5.0 User Guide*).
 - Step 2** On the second machine, install the MWTM 6.0.

Step 3 Copy the MWTM 5.0 backup to the */opt* directory on your MWTM 6.0 machine.

Step 4 On the MWTM 6.0 machine, run the *mwtmUpgrade.sh* script, located in the following directory:

```
/opt/CSCOSgm/install
```



Note */opt/CSCOSgm* is the default installation directory. If you installed the MWTM in a directory other than */opt*, then the CSCOSgm directory is located in that directory.

The MWTM restores your 5.0 backup data to 6.0.

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.

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, refer to the *Release Notes for the Cisco Mobile Wireless Transport Manager 6.0*, available on Cisco.com.

The subsequent table describes system requirements for running the MWTM on a Solaris or Linux server. Network sizes are listed at the top and requirement types are listed at left.

| | Demo / Proof of Concept | | Small | | Large | |
|---------------------------------------|--------------------------|----------------------------|--------------------------|----------------------------|--------------------|----------------------------|
| Operating system | Solaris 9,10 | Linux RHEL 4.0 AS AMD64 | Solaris 9,10 | Linux RHEL 4.0 AS AMD64 | Solaris 9,10 | Linux RHEL 4.0 AS AMD64 |
| RAN-O: Number of cell sites | 50 | | 500 | | 1000 | |
| ITP: Number of nodes | 10 | | 50 | | 100 | |
| ITP: Number of links | 20 | | 250 | | 1000 | |
| Model | SunFire V210, V215, V240 | SunFire X2100, X4100 | SunFire V210, V215, V240 | SunFire X4100 | SunFire V490 | SunFire X4100 |
| NEBS model | Sun Netra 210, Netra 240 | N/A | Sun Netra 210, Netra 240 | N/A | Sun Netra 1290 | N/A |
| CPU type | Sparc IIIi | Single-Core | Sparc IIIi | Dual-Core | Sparc IV+ | Dual-Core |
| CPU number | 1 | | 2 | 1 | 4 | 2 |
| Minimum CPU speed | 1 GHz | 2 GHz (AMD), 3 GHz (Intel) | 1 GHz | 2 GHz (AMD), 3 GHz (Intel) | 1 GHz | 2 GHz (AMD), 3 GHz (Intel) |
| Minimum RAM | 2 GB | | 4 GB | | 8 GB (2GB per CPU) | |
| Minimum Swap | 4 GB | | 8 GB | | 16 GB (2 x RAM) | |
| Minimum disk space¹ | 1 GB | | 1 GB | | 2 GB | |
| Number of clients | 2 | | 10 | | 20 | |

1. MWTM statistics reporting requires approximately 1 MB of hard disk space for every ten links in your network. Also, by default, the MWTM event database can hold a maximum of 5000 events. If you change the default MWTM settings to significantly increase the size of the message archive, or if you increase the default aging intervals for reports, additional hard disk space might be required, and the performance of the MWTM server and clients is impacted.

**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 1-11](#).

The MWTM installation program automatically verifies your operating system version and (if applicable) checks for the required level of Solaris patches.

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 111711-16 or later
- Patch 111712-16 or later
- Patch 112785-56 or later
- Patch 112963-25 or later
- Patch 113096-03 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 119254-27 or later
- Patch 119578-29 or later
- Patch 118833-23 or later

Linux Update Requirements

MWTM requires RedHat Enterprise Linux version 4 Update 3 (or later) AS AMD64.

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, refer to the *Release Notes for the Cisco Mobile Wireless Transport Manager 6.0*, available on Cisco.com.

The subsequent table 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.

| | Windows XP Professional | Solaris |
|--------------------------|--|--|
| Model | IBM PC-compatible computer | Sun Ultra Workstation |
| Minimum CPU speed | 2.0 GHz Pentium 4 processor or later | 1 GHz processor or greater |
| Minimum RAM | 512 MB minimum is required (1 GB strongly recommended) | 1 GB RAM or greater is required (1 GB recommended). |
| Additional Memory | To configure GTT tables or MLR address tables, between 256 MB and 1 GB of additional RAM is required. For example, a client used to configure 500,000-line GTT tables (the largest supported size) requires at least 1 GB of additional RAM on the client. | <ul style="list-style-type: none"> • If you are running more than one MWTM client on the same device, an additional 256 MB RAM is required for each additional client. • Larger networks require more RAM to maintain performance. • To configure GTT tables or MLR address tables, between 256 MB and 1 GB of additional RAM is required. For example, a client used to configure 500,000-line GTT tables (the largest supported size) requires at least 1 GB of additional RAM on the client. |
| Minimum Swap | N/A | 2 GB or greater is required (swap space twice the size of RAM is recommended). Swap space is in addition to the recommended hard disk space. |

| | Windows XP Professional | Solaris |
|---------------------------|---|--|
| Minimum disk space | <ul style="list-style-type: none"> • 200 MB minimum on the drive where you install the MWTM client is required (400 MB if installing the client from the MWTM web server, plus 20 MB minimum on the drive on which you save the downloaded client package). • 20 MB minimum on the drive that contains the TEMP directory is required (for InstallShield's temporary files). • 20 MB minimum on the drive that contains the Program Files directory is required (for the uninstall files). | <ul style="list-style-type: none"> • 200 MB minimum is required (particularly if installing the client from the MWTM web server). |
| Hardware | <ul style="list-style-type: none"> • A DVD-ROM drive (ISO 9660-compliant) on the host system, or access to the MWTM web server. • A monitor and video card that support displaying 16.7 million colors (24-bit color depth). • A PostScript-compatible printer is required for printing graphs and charts. | <ul style="list-style-type: none"> • To install software, a DVD-ROM drive on the server or on a remote host system that can be accessed by the Network File System (NFS). • A monitor and video card that support displaying 16.7 million colors (24-bit color depth) are required if you will run the MWTM client on the host system. • A PostScript-compatible printer is required for printing graphs and charts. <p>Note For optimum performance on large networks, it is recommended to use a local Solaris client with a graphics card and an attached monitor, rather than remote access.</p> |

**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 remote workstation.

Additional Software Requirements

Web Browser Software

Microsoft Internet Explorer version 6.0 (SP1) or later, or Mozilla version 1.7 or later (including Firefox 1.5.x or 2.0 or later) browser software is required to access the MWTM's online help, to download the MWTM client software using the web interface, and to access the MWTM server home page and the web-based MWTM features.

CiscoWorks

The MWTM does not require CiscoWorks, but the MWTM does integrate with CiscoWorks to provide added value. CiscoWorks LMS 2.6 is the version supported by the MWTM.

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

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 6.0*.

ITP Router Configuration Requirements

When you configure IP Transfer Points (ITPs), keep the following MWTM considerations in mind:

- You must configure the ITPs to use SNMP community names. The MWTM requires that the names be at least read-only (RO), but read-write (RW) names also work.
- You must enable the ITPs to use both CS7 traps and SNMP traps. (The MWTM trap receiver supports SNMP traps for both version v1 and v2c, but not version v3).

You can also enable the ITPs to use ENVMON traps, to enable the MWTM to handle and display environmental events, but this is not required.

- The host IP address used for traps must be the MWTM server's IP address.

Also, for full access to MWTM commands and functions, set the SNMP trap port number to a value greater than 1024. By default, the MWTM listens for traps from trap multiplexing devices and NMS applications on port 44750, so this is a good port number to choose. The SNMP trap port number must be the same on all ITPs in your network.

- To minimize lost traps, set the length of the message queue for each trap host to at least 100. The more links handled by the host, the higher you should set the queue length. For example, if you have a fully loaded 7507 handling a large number of links, you might set the queue length to 500.
- To enable the MWTM to log more than one line of Syslog, set the logging history size to 500.

To implement these requirements on an ITP, enter the following IOS commands on the ITP:

```
snmp-server community public RO
snmp-server enable traps cs7
snmp-server enable traps snmp
snmp-server enable traps envmon
snmp-server host mwtm-ip-address public [udp-port port-number]
snmp-server queue-length 100
logging history size 500
```

where:

- *public* is the SNMP community name the ITP is to use.
- *mwtm-ip-address* is the IP address of the MWTM server.
- *port-number* is the SNMP trap port number of the ITPs and of the MWTM server, either **162** or **44750**.

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

**Note**

If, in addition to the MWTM, you are using other network management products to receive traps from ITPs, those ITPs might require additional IOS commands to enable them to use additional traps.

RAN-O Router Configuration Requirements

When you configure the RAN-O network, keep the following MWTM considerations in mind:

- You must configure each network element to be reachable via IP networking to or from the MWTM server (you must be able to ping each MWR from the MWTM server).
- You must configure network elements to use SNMP community names. MWTM requires that the names be at least read-only (RO), but read-write (RW) names also work.
- You should enable network elements to use SNMP traps. (The MWTM trap receiver supports SNMP traps for both version v1 and v2c, but not version v3.)

You can also enable network elements to use ENVMON traps, to enable MWTM to handle and display environmental events, but this is not required.

- The host IP address used for traps must be the MWTM server's IP address.
- To minimize lost traps, set the length of the message queue for each trap host to at least 100.
- To enable MWTM to log more than one line of Syslog, set the logging history size to 500.

To implement these requirements on a network element, enter the following IOS commands on the network element:

```

ipran-mib snmp-access <inBand | outOfBand>
ipran-mib location <cellSite | aggSite>
...
...
...
snmp-server community <snmp community string> RO 1
snmp-server ifindex persist
snmp-server trap link ietf
no snmp-server sparse-tables
snmp-server queue-length 100
snmp-server enable traps snmp linkdown linkup coldstart warmstart
snmp-server enable traps ipran
snmp-server enable traps cpu threshold
snmp-server host <snmp-server-host-ip-address> version 2c v2c
[port-number]
snmp-server queue-length 100
logging history size 500

```

where:

- The `ipran-mib snmp-access` value determines how the MWTM collects data from the MWR. If you specify `outOfBand` as the value, the MWTM collects performance information automatically from the chassis. If you specify `inBand` as the value, the MWTM does not automatically collect performance information from the chassis, preventing the MWTM from consuming too much bandwidth when managing the MWR chassis. Typically, all `cellSite` routers are managed `inBand` while all `aggSite` routers are managed `outOfBand`.
- The `ipran-mib location` value determines how the MWR chassis appears in the MWTM application.
- `snmp community string` should be replaced with the SNMP community name the network element is to use.
- The `ifindex persist` keyword ensures that the SNMP values for the network interfaces are preserved when the router reboots.
- The `no snmp-server sparse-tables` keyword is required for the MWTM, and ensures that the SNMP engine on the router always returns a value even if the attribute is null or zero.
- `snmp-server-host-ip-address` is the IP address of the MWTM server.
- `port-number` is the SNMP trap port number of the network element and of the MWTM server, either 162 (the default) or 44750.

For more information about these commands, see the *Cisco IOS Release 12.4 Configuration Fundamentals Command Reference*.



Note

If, in addition to MWTM, you are using other network management products to receive traps from network elements, those network elements might require additional IOS commands to enable them to use additional traps.

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 CD 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 6.0*.

