



CHAPTER 1

Product Overview

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Multiple service operators (MSOs) and cable companies provide subscribers with a variety of cable services such as TV, video on demand, data, and voice telephony. Cisco Broadband Troubleshooter Release 3.3 (CBT 3.3) is a troubleshooting tool designed for network administrators and radio frequency (RF) technicians at a multiple service operator site. The network administrator and the RF technician use Cisco Broadband Troubleshooter Release 3.3 (CBT 3.3) to monitor and resolve RF problems in the MSO cable plant.

CBT 3.3 introduces several enhancements that make it more powerful than any prior release. This document describes configuration and operation procedures for CBT 3.3, with updates to cover newly supported operating systems, feature functions, MIB interoperability, and graphical user interface (GUI) enhancements.

Refer to the [Release Notes for Cisco Broadband Troubleshooter Release 3.3](#) for itemized information and features introduced in CBT 3.3.

CBT 3.3 provides the following general functionality:

- Provides summary statistics for each upstream port attached to a cable modem termination system (CMTS).
- Analyzes data captured from a Cisco CMTS and sorts problem modems into the following categories:
 - Provisioning problems
 - Reverse path noise problems
 - Reverse path attenuation problems
 - Packet corruption problems, showing the cyclic redundancy check (CRC) error value
- Shows the number of flapping modems and provides summary statistics on each one.
- Provides the following spectrum management tools so you can analyze data without using a spectrum analyzer:
 - Trace Window
 - Spectrogram
 - Carrier-to-noise ratio (CNR) analysis
- Locates a subscriber's cable modem with wildcard searches for any of the following identifiers:
 - MAC address
 - Phone number

- Account ID
- Name
- Street address
- Zip code
- Shows detailed information for a cable modem in a real-time status report, with information from the following sources:
 - The Cisco CMTS
 - The cable modem itself
 - The MSO subscriber database
- Provides several, flexible external interface options to integrate provisioning and subscriber information.
- Introduces support for Wideband SIP and SPA support on the Cisco uBR10012 router. For additional information about DOCSIS 3.0 Downstream Channel Bonding for Wideband on the Cisco CMTS, see the “Related Documentation” section of the Preface.

**Note**

CBT 3.3 does not differentiate visually between normal cable modems and cable modems in DOCSIS 3.0 downstream channel bonding in the Trace Window, or additional dialog boxes and spectrum information displays, but fully supports both types of cable modems.

This release supports Cisco Broadband Troubleshooter installed on a server that is running the Solaris, Linux, or Windows operating systems.

System Requirements

This section lists the system requirements for:

- Each supported operating system (OS):
 - Server
 - Client
- The number of Cisco CMTS headend systems to be supported with CBT 3.3
- Cisco uBR7100 series, Cisco uBR7200 series, and Cisco uBR10012 series universal broadband routers

CBT 3.3 generally supports these OS platforms:

- Sun Fire V440 (for 500CMTS support) with Solaris 10
- Sun Fire V240, V210 and V100 with Solaris 10
- Windows Box (Windows 2K or XP)
- Windows XP Workstation with Linux Enterprise Edition

This section provides additional system-level information in these topics:

- [Windows Systems, page 1-3](#)
- [UNIX Server Systems with Solaris, page 1-3](#)
- [UNIX Server Systems with Linux, page 1-3](#)
- [PC Server Systems for Windows, page 1-4](#)
- [UNIX Client Machine with Solaris, page 1-4](#)

- [UNIX Client Machine with Linux, page 1-4](#)
- [PC Client Machine with Windows, page 1-4](#)
- [Enhanced Support for Operating Systems and Web Server Applications, page 1-4](#)
- [Minimum Cisco Universal Broadband Router and Cisco IOS Requirements, page 1-5](#)

Windows Systems

Windows systems supported include Windows 2000, Windows XP, and Windows XP Workstation with Linux Enterprise Edition.

UNIX Server Systems with Solaris

The following environment supports 10 Cisco CMTS headend systems:

- UNIX Server Sun Fire Systems with Solaris 10
- Sun Fire V100 server: small
- UltraSPARC-III processor: one at 550 MHz
- Memory: 256 MB (one 256-MB DIMM)
- 7200 RPM IDE disk drive: one at 80 GB

The following environment supports 50 or 100 Cisco CMTS headend systems:

- Sun Fire V210 server: Medium
- UltraSPARC IIIi Cu processor: two at 1.34 GHz
- Layer 2 cache per processor: 1 MB
- Memory: 2 GB (four 512-MB DIMMS)
- 10000 RPM Ultra 3 SCSI LVD disk drive: two at 73 GB

The following environment supports 500 Cisco CMTS headend systems:

- Sun Fire V440 server: Small
- UltraSPARC IIIi Processor: two at 1.593 GHz
- Internal cache per processor: 1 MB
- Memory: 4 GB (eight 12-MB DIMMS)
- 10000 RPM Ultra320 SCSI disk drive: four at 73 GB

UNIX Server Systems with Linux

The following environment supports 10, 50, or 100 Cisco CMTS headend systems:

- Linux Red Hat Enterprise Edition workstation
- Pentium 4, 3.2 gigahertz (GHz) processor or higher
- 2-GB DRAM
- 20-GB disk space

PC Server Systems for Windows

The following environment supports 10, 50, or 100 Cisco CMTS headend systems:

- Windows 2000, or Windows XP workstation
- Pentium 4, 3.2 gigahertz (GHz) processor or higher
- 2-GB RAM
- 20-GB disk space

UNIX Client Machine with Solaris

The following client system supports CBT 3.3 on Solaris:

- Sun Fire V100 server: Small
- UltraSPARC-III processor: one at 550 MHz
- Memory: 256 MB (one 256-MB DIMM)

UNIX Client Machine with Linux

The following client system supports CBT 3.3 with Linux:

- Pentium 4, 3.2 gigahertz (GHz) processor or higher
- 1-GB RAM
- Red Hat 10 or 9

PC Client Machine with Windows

The following client system supports CBT 3.3 with Windows:

- Windows 2000, or Windows XP workstation
- 1-GB RAM
- Pentium 4, at 3.2 GHz or higher

Enhanced Support for Operating Systems and Web Server Applications

CBT 3.3 offers enhanced support for the following operating systems and web server software environments:

- DST patch
- Java Runtime Environment (JRE)
- Linux operating system
- Solaris operating system
- Tomcat Application Server
- Windows operating system

DST Patch for Operating Systems

CBT 3.3 introduces the operating system patch associated with recent Daylight Savings Time (DST) requirements.

Java Runtime Environment in CBT 3.3

CBT 3.2 supported Java Runtime Environment (JRE) through JRE version 1.4.1. CBT 3.3 now comes with Java J2SE Runtime Environment 5.0 embedded in it.

We also recommend upgrading to JRE 5.0 on the client side to benefit from the latest enhancements, caveat resolutions, and security features, specifically for the Solaris platform.

Linux Operating System

CBT 3.3 introduces support for Red Hat Enterprise Linux products and the Red Hat desktop operating system. We recommend upgrading from prior Linux versions, such as Linux Red Hat 7, 8, and 9, as these prior versions have reached the end of their support lifetimes.

Solaris Operating System

CBT 3.3 introduces support for the Solaris operating system through Solaris 10. The prior CBT 3.2 supported Solaris through Solaris 8. Cisco recommends upgrade to Solaris 10 for use with CBT 3.3 to gain support for high-performance server machines that require Solaris 10, and related CBT 3.3 enhancements.

Tomcat Application Server

CBT 3.3 introduces upgraded support for the Tomcat Application Server. In CBT 3.2, support was limited to jakarta-tomcat-4.1. CBT 3.3 extends support to include apache-tomcat-5.5.15. The latest Tomcat version introduces scalability and reliability enhancements supported in CBT 3.3, performance optimizations, and reduced garbage collection.

CBT 3.3 includes the latest Tomcat application upgrade, and it is not necessary to download this application server separate from CBT 3.3 installation.

Windows Operating System

CBT 3.3 supports the latest Windows Operating Systems from Microsoft, such as Windows 2000 or Windows XP. No additional Windows upgrades are required for CBT 3.3.

Minimum Cisco Universal Broadband Router and Cisco IOS Requirements

You can use Cisco Broadband Troubleshooter with the following universal broadband routers (uBRs):

- Cisco uBR7100 series universal broadband router
- Cisco uBR7200 series universal broadband router
- Cisco uBR10012 universal broadband router

On these routers, CBT 3.3 supports the following Cisco IOS releases:

- Cisco IOS Release 12.3(9a)BC, Cisco IOS Release 12.3(17a)BC, Cisco IOS Release 12.3(21)BC, and later releases of the 12.3BC

Minimum Cisco Universal Broadband Router and Cisco IOS Requirements to Use Spectrum Management Features in CBT

To use the spectrum management features that Cisco Broadband Troubleshooter provides, you must have the following:

- Cisco uBR7200 series universal broadband router or Cisco uBR10012 universal broadband router
- Cisco IOS Release 12.3(9a)BC

For more information, see [“Configuring the Cisco CMTS to Use the CBT Spectrum Management Tools” section on page 14.](#)

Enabling SNMP on Routers

You must enable SNMP on the routers by entering the following commands:

```
Router# configure terminal
Router(config)# snmp-server community public RO
Router(config)# snmp-server community private RW
```



Note

CBT retrieves the Cisco IOS release number, router name, and router type by using SNMP.

Using SNMP MIBs in Cisco CBT 3.3

Cisco Broadband Troubleshooter Release 3.3 (CBT3.3) uses the following SNMP MIBs with Cisco IOS Release 12.3(21)BC and later releases:

- RFC1213-MIB
- IANAifType-MIB
- IF-MIB
- SNMPv2-MIB
- SNMPv2-TC
- CISCO-SMI
- OLD-CISCO-CHASSIS-MIB
- CISCO-PRODUCTS-MIB
 - DOCS-IF-MIB
 - DOCS-IF-EXT-MIB
 - CISCO-CABLE-SPECTRUM-MIB
 - CISCO-DOCS-EXT-MIB
- CISCO-PING-MIB
- INET-ADDRESS-MIB
- SNMP-FRAMEWORK-MIB
 - DOCS-CABLE-DEVICE-MIB

- CISCO-PROCESS-MIB
- DOCS-QOS-MIB
- ENTITY-MIB
- CISCO-CABLE-QOS-MONITOR-MIB
- CISCO-DOCS-REMOTE-QUERY-MIB

When extracting the downloaded CBT 3.3 file, these MIBs are placed by default in the following path:
<CBT Install Directory>/httpServer/webapps/ROOT/WEB-INF/mibs

**Note**

Not all the tables contained in these MIBs are used with CBT 3.3.

Generally, all read and create objects in the `ccsSpectrumRequestTable` and `ccsSNRRequestTable` can be set with spectrum management tools in CBT 3.3. These objects require a WRITE community string:

- `ccsSpectrumRequestTable`
 - `ccsSpectrumRequestIfIndex`
 - `ccsSpectrumRequestMacAddr`
 - `ccsSpectrumRequestLowFreq`
 - `ccsSpectrumRequestUpperFreq`
 - `ccsSpectrumRequestResolution`
 - `ccsSpectrumRequestOperation`
 - `ccsSpectrumRequestStatus`
- `ccsSNRRequestTable`
 - `ccsSNRRequestMacAddr`
 - `ccsSNRRequestOperation`
 - `ccsSNRRequestStatus`

For additional MIBs information for the Cisco CMTS, refer to the following resources on Cisco.com:

- *Cisco CMTS Universal Broadband Router MIB Specifications Guide 12.3BC*
<http://www.cisco.com/en/US/docs/cable/cmts/mib/reference/guide/mibv5ubr.html>
- *Cisco CMTS Universal Broadband Router MIB Specifications Guide 12.2SC*
<http://www.cisco.com/en/US/docs/cable/cmts/mib/reference/guide/ubrmibv5.html>
- *SNMP Object Navigator*
<http://www.cisco.com/pcgi-bin/Support/Mibbrowser/unity.pl>

