



# 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 (CBT) Release 3.5 is a troubleshooting tool designed for network administrators and RF technicians to monitor and resolve RF problems at the MSO cable plant.

This document describes configuration and operation procedures for CBT 3.5 with updates to cover newly supported operating systems, feature functions, MIB interoperability, and GUI enhancements.

For itemized information and features introduced in CBT 3.5, refer to the [Release Notes for Cisco Broadband Troubleshooter Release 3.5](#).

CBT 3.5 provides the following general functionality:

- Provides summary statistics for each upstream port attached to a Cisco 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 Subscriber Traffic Management (STM) tools:
  - Real-time display of STM 1.0 violators
  - Historical display of STM 1.0 violators along with the enforce-rules violated
  - Search for violators based on MAC address
- 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
  - CNR Trending
  - Scheduling and threshold based data polling
  - Generic trending that gets MIB variable data from the Cisco CMTS

- Locates the cable modem of a subscriber 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:
  - Cisco CMTS
  - Cable modem itself
  - Subscriber database of the MSO
- Provides several, flexible external interface options to integrate provisioning and subscriber information.
- Provides support for Cisco uBR-MC3GX60V cable interface line card.

CBT 3.5 can be installed on a server running Windows 7, Red Hat Enterprise Linux 5 Server (64 bit and 32 bit), or Sybase 10.0.1 for Windows and Solaris versions.

## System Requirements

This section lists the system requirements for:

- Each supported operating system (OS):
  - Server
  - Client
- The number of Cisco CMTS headend systems supported with CBT 3.5
- Cisco uBR7200 series and Cisco uBR10012 series universal broadband routers

CBT 3.5 supports the following OS platforms:

- Sun Fire V440 (for 500 CMTS support) with Solaris 10
- Sun Fire V240, V210 and V100 with Solaris 10
- Windows Box (Windows 7, Windows 2K, Windows XP, or Windows Vista Ultimate)
- Windows XP Workstation with Linux Enterprise Edition or Red Hat Enterprise Linux Server release 5

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

- [Windows Systems, page 1-3](#)
- [Linux Operating System, 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](#)
- [Minimum Cisco Universal Broadband Router and Cisco IOS Requirements, page 1-4](#)

## Windows Systems

Windows systems supported include Windows 7, Windows Vista Ultimate, Windows 2000, Windows XP, and Windows XP Workstation with Linux Enterprise Edition.

## Linux Operating System

Linux systems supported include Linux Red Hat Enterprise Linux 5 Server. We recommend upgrading from prior Linux versions. You must use Sybase10 on the Linux operating system.

## 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**:

- Red Hat Enterprise Edition 5 workstation

- Pentium 4, 3.2 gigahertz (GHz) processor or higher
- 1 GB DRAM
- 20 GB disk space

## PC Server Systems for Windows

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

- Windows 7, Windows Vista, Windows 2000, or Windows XP workstation
- Pentium 4, 3.2 gigahertz (GHz) or higher processor
- 1 GB RAM
- 20 GB disk space

## UNIX Client Machine with Solaris

The following client system supports CBT 3.5 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 3.5 with Linux:

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

## PC Client Machine with Windows

The following client system supports CBT 3.5 with Windows:

- Windows 7, Windows Vista, Windows 2000, or Windows XP workstation
- 1 GB RAM
- Pentium 4, at 3.2 GHz or higher

## Minimum Cisco Universal Broadband Router and Cisco IOS Requirements

You can use CBT 3.5 with the following universal broadband routers (uBRs):

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

On these routers, CBT 3.5 supports the following Cisco IOS releases:

- Cisco IOS Release 12.2(33)SCC and later releases
- Cisco IOS Release 12.2(33)SCD and later releases
- Cisco IOS Release 12.2(33)SCE and later releases
- Cisco IOS Release 12.2(33)SCF

## Enabling SNMP on Routers

CBT retrieves the Cisco IOS release number, router name, and router type using SNMP. You must enable SNMP on the routers using the following commands:

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

## Using SNMP MIBs in Cisco CBT 3.5

Following are the SNMP MIBs in CBT 3.5:

- CISCO-DVB-CABLE-SPECTRUM-MIB
- CISCO-DVB-EXT-MIB
- CISCO-TC
- CLAB-DEF-MIB
- CLAB-TOPO-MIB
- DOCS-IETF-BPI2-MIB
- DVB-CABLE-INA-DEVICE-MIB
- DVB-CABLE-INA-IF-MIB
- SNMP-TARGET-MIB
- DOCS-IF3-MIB
- 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 3.5 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 3.5.

All read and create objects in the `ccsSpectrumRequestTable` and `ccsSNRRRequestTable` can be set with spectrum management tools in CBT 3.5. These objects require a WRITE community string:

- `ccsSpectrumRequestTable`
  - `ccsSpectrumRequestIfIndex`
  - `ccsSpectrumRequestMacAddr`
  - `ccsSpectrumRequestLowFreq`
  - `ccsSpectrumRequestUpperFreq`
  - `ccsSpectrumRequestResolution`
  - `ccsSpectrumRequestOperation`
  - `ccsSpectrumRequestStatus`
- `ccsSNRRRequestTable`
  - `ccsSNRRRequestMacAddr`
  - `ccsSNRRRequestOperation`
  - `ccsSNRRRequestStatus`

**Note**

The `docsIf3CmtsCmRegStatusTcsId` MIB object is not supported on the Cisco uBR-E-28U line card on the Cisco uBR7225 Series Router.

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

- *Cisco CMTS Universal Broadband Router MIB Specifications Guide 12.2SC*  
[http://www.cisco.com/en/US/docs/cable/cmts/mib/12\\_2sc/reference/guide/ubrmibv5.html](http://www.cisco.com/en/US/docs/cable/cmts/mib/12_2sc/reference/guide/ubrmibv5.html)
- *SNMP Object Navigator*  
<http://www.cisco.com/cgi-bin/Support/Mibbrowser/unity.pl>