


Quickly Diagnose Radio Frequency Problems with Cisco Broadband Troubleshooter



Cisco Broadband Troubleshooter is an easy-to-use customer care tool that provides a client-server architecture and graphical user interfaces (GUIs) for network administrators, technicians, and customer service representatives to streamline radio frequency (RF) problem resolution. The tool decentralizes RF monitoring and analysis, automatically sorts and categorizes problem conditions, improves staff effectiveness, and increases customer satisfaction.

Introduction

Provisioning and servicing a cable network today can be administratively intensive, time-consuming, and, therefore, costly. The shared nature of a cable plant means that potential problems in one area can affect major portions of the network. Technicians, working at a network operations center (NOC) or in the field, need a tool to monitor, analyze, and diagnose problems between the cable plant and connected Data-over-Cable Service Interface Specifications (DOCSIS) or EuroDOCSIS customer premises equipment (CPE). Customer service representatives (CSRs) require a tool to more effectively ascertain the status of a subscriber device, the cable modem termination system (CMTS), and the portion of the network to which the subscriber is connected.

To maintain network performance, NOC personnel and others often spend too much time trying to identify the source of problems and too little time solving or preventing problems. This reactive approach to network and performance management is inefficient. Network managers and others need troubleshooting tools that can either identify potential problems before they seriously affect customers or quickly determine the network devices causing performance disruptions. The ability to determine device availability and analyze network patterns—both on-demand and historical—are high-priority requirements in today's cable hybrid fiber-coaxial (HFC) networks.

Product Description

The Cisco Broadband Troubleshooter addresses these needs. The product provides a fault-analysis tool that enables network managers, RF technicians, and CSRs to quickly and easily isolate performance, cable plant, and RF CPE problems. On-demand and scheduled diagnostics can be issued. Cisco Broadband Troubleshooter automates reporting and expert analysis of the measured RF statistics. Diagnostics are available from both customer-account and network-event perspectives.

Cisco Broadband Troubleshooter automates the analysis and interpretation of the Cisco patent-pending “flap list” maintained in Cisco CMTS products: the Cisco uBR10012, Cisco uBR7200 Series, and Cisco uBR7100 Series Universal Broadband Routers. A flap is defined as a cable modem or set-top box being registered with the CMTS, deregistering, and then immediately reregistering. The flap list helps isolate problems between the



cable plant such as ingress noise or incorrect power levels, and specific cable modems or set-top boxes. A cable modem or set-top box is added to the flap list when the device fails the registration process, when upstream communication errors affect messaging between the CMTS and cable modem or set-top box, and when the cable modem or set-top box upstream transmit power has been adjusted beyond an administrator-specified threshold. Cisco Broadband Troubleshooter automatically sorts flap-list problems into the following categories:

- Provisioning
- Reverse attenuation
- Packet corruption—reporting cyclic redundancy check (CRC) errors
- Reverse noise

Cisco Broadband Troubleshooter further displays online percentages for cable modems or set-top boxes per upstream, as well as minimum and maximum power levels. With this information, technicians can quickly identify and resolve problems. CSRs are equipped with information to improve service calls and inform customers about problems, which reduces troubleshooting time, and minimizes guessing about problem areas.

Cisco Broadband Troubleshooter is built on a Web-based, client-server architecture, and provides flexibility and scalability. Cisco Broadband Troubleshooter supports concurrent multiuser access, as well as remote access to the server that hosts the product. Because only a single instance of Cisco Broadband Troubleshooter needs to be administered for installation, support, and upgrade, ease of management is achieved.

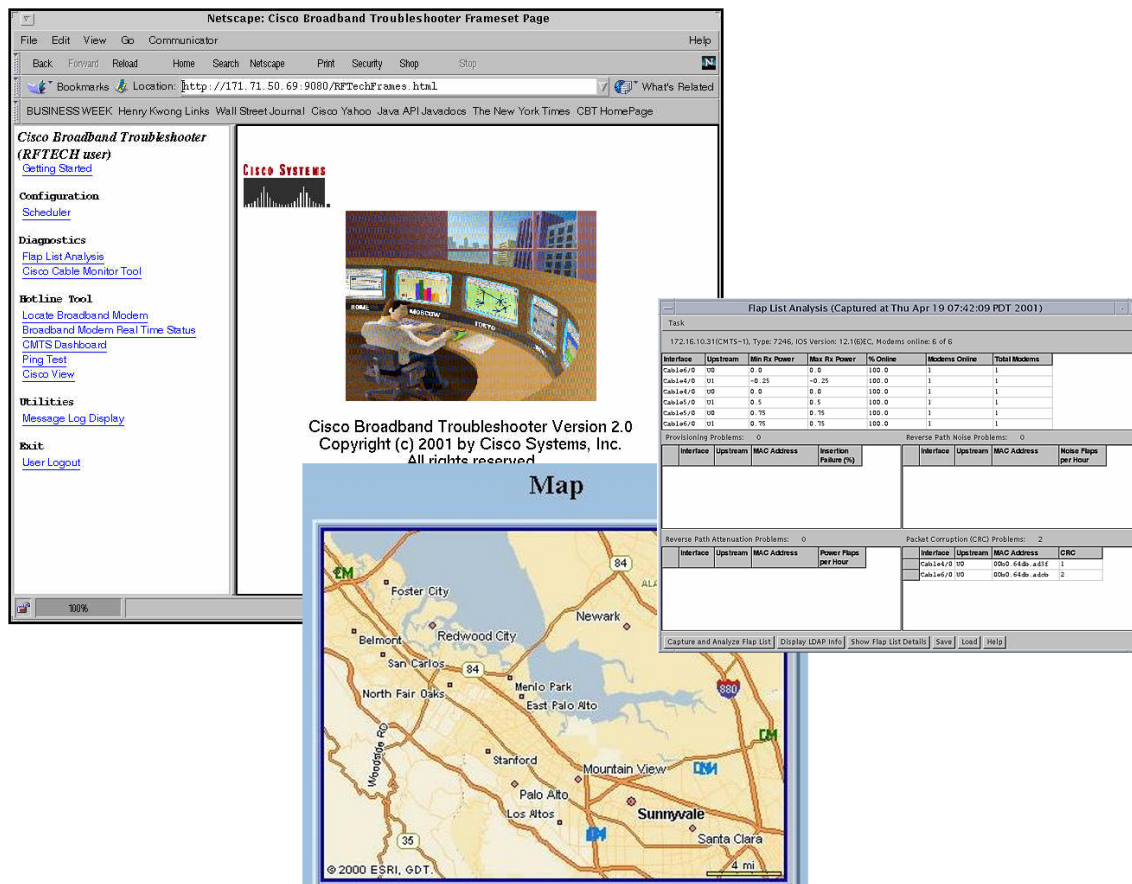
Cisco Broadband Troubleshooter provides three levels of security access: administrator, RF technician, and CSR. Based on the entered password and assigned privilege level, the user will see a different GUI presenting the menu selections and options appropriate to the user's privilege level.

Cisco Broadband Troubleshooter (Figure 1) works with:

- CiscoView (optional)—Users can obtain a real-time graphical representation of the back panel and status of interface ports on any DOCSIS- or EuroDOCSIS-compliant cable modem or set-top box if CiscoView is installed.
- An optional mapping tool, RouteMAP™ IMS from ESRI—Users can view the entire network of cable modems or set-top boxes down to the street level if this third-party tool is purchased and installed. Visualizing the cable modem or set-top box status and location on a map helps identify problem areas faster than reviewing a long table of data. For information about RouteMAP™ IMS from ESRI, visit www.esri.com/cbt_routemapims on the Web.



Figure 1 Cisco Broadband Troubleshooter



Cisco Broadband Troubleshooter is also part of an end-to-end Cisco solution for managing cable and multiservice networks. This solution includes the Cisco Cable Manager, which provides fault, performance, and configuration management for Cisco CMTS and CPE cable products, as well as third-party DOCSIS- or EuroDOCSIS-compliant devices. Both Cisco Cable Manager and Cisco Broadband Troubleshooter complement the CiscoWorks solution, which provides management capabilities for Cisco routers, as well as the Cisco Subscriber Registration Center (CSRC) tool for provisioning cable modems and set-top boxes.



Cisco Broadband Troubleshooter Release 2.0 Product Features

Feature	Benefit
<ul style="list-style-type: none">Automated analysis and interpretation of Cisco's patent-pending flap list	<ul style="list-style-type: none">Streamlines troubleshooting since the system automatically sorts, categorizes, and isolates RF problems to provisioning, noise, attenuation, or CRC errors
<ul style="list-style-type: none">Views of network health, CMTS and CM through CiscoView application	<ul style="list-style-type: none">Provides increased visibility on the networkPromotes "at-a-glance" problem identification
<ul style="list-style-type: none">Scheduled and on-demand query and capture of network health	<ul style="list-style-type: none">Supports trend analysis to enable better network planning and performance monitoring
<ul style="list-style-type: none">Diagnostics available from both customer account and network-event perspectives	<ul style="list-style-type: none">Promotes proactive problem isolation
<ul style="list-style-type: none">Pinpointing cable modems experiencing problems to geographic locations through 3rd-party mapping tool (option)	<ul style="list-style-type: none">Improves staff effectiveness since the system visually depicts and isolates problems to address and street levels
<ul style="list-style-type: none">Client-server architecture that supports concurrent multi-user and remote access	<ul style="list-style-type: none">Increases maintenance efficiencyOffers flexibility, scalability, and ease of management since technicians at the NOC or in the field can distribute troubleshooting workload
<ul style="list-style-type: none">Point-and-click interface and HTML-based online help	<ul style="list-style-type: none">Reduces training time
<ul style="list-style-type: none">Three account levels	<ul style="list-style-type: none">Protects access to the system

Applications

- NOC**—Cisco Broadband Troubleshooter is ideal for remote monitoring of the HFC plant and cable modems or set-top boxes connected to a Cisco CMTS. The real-time status summary and automatic flap-list interpretation enable NOC personnel to easily identify, prioritize, and resolve problems appropriately. By distinguishing problems that can be remotely solved from those requiring a technician visit, Cisco Broadband Troubleshooter streamlines workflow and technician field dispatch. With remote access to comprehensive information on current plant and equipment problems, NOC personnel are able to improve network reliability, solve problems before they seriously affect customers, and reduce costs for maintenance and operation.
- Headend or remote site**—Technicians can use Cisco Broadband Troubleshooter on a laptop computer with a network connection. By viewing the same status information as a NOC technician, a field technician can speed problem resolution on-site and solve problems at the physical location. Cisco Broadband Troubleshooter helps RF technicians characterize trouble patterns in the HFC network and plant segment.
- CSR location**—Cisco Broadband Troubleshooter provides a light, quick, and easy-to-use customer-care RF troubleshooting tool; CSRs can take proactive action and more effectively communicate and identify problems to customers.

System Requirements

Cisco Broadband Troubleshooter 2.0 runs on Solaris workstations and PCs. Minimum system requirements are shown below:

Solaris	PC
Server	
Solaris Ultra 5 workstation configured with: <ul style="list-style-type: none"> • Solaris 2.6 or 2.7 operating system • 400 MB of available disk space • 128 MB of memory • CD-ROM drive • SNMP or Telnet connectivity between server and managed routers 	PC system configured with: <ul style="list-style-type: none"> • Windows NT or Windows 2000 • Pentium II 200 MHz processor or higher • 250 MB of available disk space • 128 MB of memory • CD-ROM drive • SNMP or Telnet connectivity between server and managed routers
Client	
Solaris Ultra 5 workstation configured with: <ul style="list-style-type: none"> • 128 MB of memory • IP connection to the Cisco Broadband Troubleshooter 2.0 server • Netscape 4.5 or later releases 	PC system configured with: <ul style="list-style-type: none"> • Windows 98, Windows 2000, or Windows NT • Pentium I or II 200 MHz processor or higher • 64 MB or memory • IP connection to the Cisco Broadband Troubleshooter 2.0 server • Netscape 4.5 or later releases, or Internet Explorer 4.0 or later releases

Supported Network Elements

- Cisco CMTS Products—Cisco uBR10012, Cisco uBR7200 Series, and Cisco uBR7100 Series Universal Broadband Routers
- Routers running appropriate Cisco IOS® Software versions:
 - Cisco uBR10012 requires Cisco IOS Release 12.2(2)XF or later
 - Cisco uBR7200 Series requires Cisco IOS Release 11.3NA or later for Telnet and version 12.1EC or later for SNMP
 - Cisco uBR7100 Series requires Cisco IOS Release 12.1(5)EC1 minimum for DOCSIS models and Cisco IOS Release 12.1(7)EC minimum for EuroDOCSIS models
- Cisco CPE products—Cisco CVA120 Series Cable Voice Adapter, Cisco uBR900 Series Cable Access Router
- DOCSIS and EuroDOCSIS-compliant cable modems and set-top boxes

Cisco Service and Support

Service and support for Cisco Broadband Troubleshooter is available through the Cisco Software Application Services program. These services provide 24-hour technical assistance, full access to the information and support resources on the Cisco.com Web site, and software maintenance updates within a single release.

Available as an option are advanced Software Application Support Plus Upgrades, which include proactive shipment of all minor (update) and major (upgrade) product releases.



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