Cisco **MPLS Tunnel Builder Pro**, Version 2.0

A new paradigm for providing Bandwidth Protection—Cisco MPLS Bandwidth Protection

**A Quick Review of MPLS**

Cisco Multiprotocol Label Switching (MPLS) is the ideal solution to meet the challenges posed by rapidly expanding new world networks. It is the key technology for delivery of Layer 2 and Layer 3 services. MPLS uses labels as designators to provide network-based VPNs and traffic engineering. Adding Cisco MPLS Traffic Engineering (TE), network designers can also significantly enhance services, assure bandwidth, augment Quality of Service (QoS), and deliver greater network reliability. With MPLS technology, networks can handle more traffic, users, media-rich data, and bandwidth-intensive applications.

**Cisco MPLS Tunnel Builder Pro Solution**

**Cisco MPLS Tunnel Builder Pro**—the web-based graphical application for configuring and visualizing MPLS tunnels in an MPLS TE-enabled network.

**Tunnel Builder Pro is an enhancement to Tunnel Builder, Version 1.0.**

Before Tunnel Builder, the management of traffic-engineered tunnels was a time-consuming process using a command line interface (CLI). Show commands were the only way of knowing the number of label switched paths (LSPs) that existed on any given router. Network information had to be manually recorded, and MPLS TE had to be configured from the command line with knowledge of the specific destination addresses and explicit paths.

Cisco MPLS Tunnel Builder changed all of these requirements. Now network designers and administrators can view the entire network topology and configure MPLS TE by using a straightforward point-and-click interface.

Tunnel Builder Pro adds the ability to compute and configure backup tunnels with MPLS TE Fast Reroute in Cisco IOS® Software. By using Tunnel Builder Pro, backup tunnels can be placed such that the network meets bandwidth assurances during link and node failures.

**Features of Cisco Tunnel Builder Pro**

- Recommends backup tunnels that will protect the network. **New!**
- Determines what parts of the network are not currently protected by backup tunnels, and creates detailed reports of why these elements are not protected. **New!**
- Supports specification of Shared Risk Link Groups (SRLGs)—a set of links sharing the same risk that need to be eliminated for the computation of backup tunnels. **New!**
SRLGs Allow Next-Hop (NHOP) Backup Tunnel to Bypass Multiple Links

Shared Risk Link Groups (SRLG) are sets of links that are likely to go down together—maybe because they have the same underlying fiber conduit. When an SRLG is specified for links, then Tunnel Builder Pro finds one or more NHOP backup tunnels that avoid all links in the SRLG.

If a link is not in an SRLG, Tunnel Builder Pro simply finds a backup tunnel that avoids the link being protected.

Network Map Provides Valuable Information

A network map provides MPLS topology, TE, and device configuration information. Both primary tunnels and Fast Reroute backup tunnels can be displayed.

Tunnel Builder provides on-demand updates, and displays fetch information from the network and the latest information.

A status window displays server and device informational messages, including the status of Backup Route Generator (BRG) requests—requests to generate backup tunnels and to check whether an element is Fast Reroute protected by existing backup tunnels.

Obtaining Information About Links and Nodes is a Click Away

At the setup pane, a click on one of the Fetch buttons will display the latest information from the network or the server.

Link Management Allows You to Manage the TE Resources on Your Links

Information about the interfaces for each link in the network map can be viewed, including:

- Bandwidth allocated and reservable per priority
- Maximum bandwidth
- Maximum reservable global pool bandwidth
- Maximum reservable sub-pool bandwidth
- Attribute bit settings
- TE metric

The link up/down status is shown.

“With MPLS technology, networks can handle more traffic, users, media-rich data, and bandwidth-intensive applications.”
**Node Management**
Find out information about nodes on the network, including:

- Interior Gateway Protocol (IGP) ID
- MPLS TE ID
- Cisco IOS Software release
- Interfaces on the nodes
- Static routes that map traffic onto MPLS TE tunnel interfaces

And autobandwidth can be configured.

**Flexible MPLS TE Tunnel Management**
Tunnel Builder Pro allows network operators to create, view, modify, or delete tunnels easily.

Choosing an existing explicit path, creating a new explicit path, or using a dynamic path can manipulate tunnels.

To modify a tunnel’s attributes (i.e., amount of bandwidth, affinity bits, autobandwidth), simply enter the desired values or click in the appropriate boxes.

**View Performance Statistics**
Using Cisco IOS Service Assurance Agent (SAA), performance statistics can be viewed on supported Cisco IOS platforms. Tunnel Builder Pro can invoke SAA, collect performance statistics, and display them in a window. What an easy way to measure performance characteristics between devices!

**Online Help is Available**
If you have questions while using Tunnel Builder, take advantage of Tunnel Builder’s online help system, which is available by clicking on the Help button.

**Tunnel Builder Pro Advantages**
- Protects bandwidth in the event of a single element failure, with bandwidth sharing between independent failures
- Protects more bandwidth than traditional CSPF-based approaches, through the use of a sophisticated backup tunnel placement algorithm
- Provides choice of primary tunnel traffic to protect the global pool or the sub-pool
- Reduces the need for cumbersome, error-prone CLI configurations
- Provides the ability to quickly check whether an existing set of backup tunnels provides guaranteed Fast Reroute protection for elements in the network
- Assures top performance, as the feature was designed and engineered by Cisco, the networking leader
- Integrates the latest Cisco IOS MPLS TE features with Tunnel Builder Pro
- Communicates directly with the routers, so there is no need to manually import or export configuration files

**Easy to Install and Use**
Follow simple installation instructions, and you’re ready to go!

How does it work? The information needed is just a click away. After installing Tunnel Builder Pro and fetching the network data, the network topology map will appear on the right side of the browser window, while tabs for various functions will be available on the left side.

Tunnel Builder Pro uses a client-server architecture, which offers the same operating model as Web browsing. Tunnel Builder Pro runs as a Java applet in a Netscape Navigator or Microsoft Internet Explorer Web browser. The Tunnel Builder Pro Java applet communicates with Tunnel Builder Pro server software that queries your network topology and returns the gathered information to the Tunnel Builder Pro client. The Tunnel Builder Pro server uses Cisco IOS Software to configure routers.

**System Requirements**

**Network Hardware Supported**
Cisco routers that support MPLS TE

**Operating Systems Supported**
- Solaris, Version 2.8 for the Tunnel Builder Pro server
- The client is a Web browser running on Microsoft Windows NT or Microsoft Windows 2000

**Disk Space Requirements**
At least 100 megabytes of free disk space is recommended. Disk space requirements for the operation of Tunnel Builder Pro depend on the network size.

**Hardware Requirements**
The following are required on the system where the BRG server is to be installed:
- A 1-GHz or faster processor
- At least 1 GB of physical RAM

**Web Browsers Supported**
Tunnel Builder requires one of the following Web browsers and the Java Plug-in specified below:
- Internet Explorer, Version 5.5 or later
- Netscape Navigator, Version 4.7 or later
- Windows 2000 and Windows NT clients—If you are using Netscape Version 4.7, you need to install the Java Plug-in Version 1.3.1 before running Tunnel Builder Pro.

For More Information, go to
http://www.cisco.com/go/mpls
## Ordering Information

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