



Release Notes for Cisco MPLS Tunnel Builder Pro Version 2.1

December 6, 2002

This document describes Cisco MPLS Tunnel Builder Pro, Version 2.1. Tunnel Builder Pro includes a Backup Route Generator (BRG), which provides Fast ReRoute backup tunnels to protect for single element failures in a network. Tunnel Builder Pro is an enhancement to the Cisco MPLS Tunnel Builder application and incorporates many of its features.

Use these release notes in conjunction with the [Cisco MPLS Tunnel Builder Pro Installation and User Guide](#).

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System Requirements

This section describes the following:

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Network Hardware Supported

Tunnel Builder Pro can be used on any hardware platform that supports MPLS Traffic Engineering (TE).

Cisco IOS Releases Supported

The Tunnel Builder Pro application supports devices running Cisco IOS Release 12.0(22)S or later with MPLS TE enabled.

Operating Systems Supported

The Tunnel Builder Pro server can run on Solaris, Version 2.8.

The Tunnel Builder Pro client can run on Microsoft Windows 2000 and Microsoft Windows NT.



Note

A higher version of the operating system is not necessarily supported.

Disk Space Requirements

The installation of Tunnel Builder Pro requires that you have at least 90 MB of free disk space.

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
- At least 10 MB of free disk space

Other Workstation Requirements

To ensure that BRG performs as expected, the target installation workstation(s) must have the directory \$JAVA_HOME/bin in the user's path.

Tunnel Builder Pro 2.1 is a standalone network management application. It is not certified for operation with other network management applications running on the same workstation. In addition, TunnelBuilder Pro 2.1 does not provide direct notification of MPLS configuration changes to other network management applications such as Cisco VPN Solution Center or Cisco element management systems.

Web Browsers Supported

Tunnel Builder Pro 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—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.

Licensing

To install Cisco MPLS Tunnel Builder Pro, you must enter two authorized license keys. These license keys are specified on your *Right to Use* document included in your product. The keys authorize the following:

- A maximum number of TE-enabled routers in the TE topology for any single seed router
- Use of the Backup Route Generator (BRG), which computes the placement of backup tunnels

The application prompts you for these two license keys during setup.

If you exceed the limit of the license, you are notified by a message, like the following:

```
Number of TE routers (xxx) in the 1.2.3.4 network exceeds the number allowed by your  
Tunnel Builder license (yyy). Please contact your administrator.
```

Where:

- xxx is the number of TE routers in your network
- 1.2.3.4 is the seed router from which you tried to fetch
- yyy is the upper bound of your license

You can choose to upgrade the maximum number of TE-enabled routers supported for any single seed router in Tunnel Builder Pro. You will need a new *Right to Use* document and a new authorized license key for each level through which you upgrade.

Right to Use documents and authorized license keys are available for the following levels:

- Up to 50 MPLS TE-enabled routers
- Up to 100 MPLS TE-enabled routers
- Up to 150 MPLS TE-enabled routers



Note

If you obtain an *evaluation* license, you can use the software only for a limited amount of time.

Downloading the Cisco MPLS Tunnel Builder Pro Kit



Note

Before you download the Tunnel Builder kit, make sure you have your license key and *Right to Use* document from your Cisco representative or product manager.



Note

If you are interested in evaluation software, make sure that you have an evaluation license key from your Cisco representative or product manager before you download the files.

To download the Tunnel Builder images and readme file, perform the following steps:

Step 1

Enter the following URL:

`http://www.cisco.com/cgi-bin/tablebuild.pl/tb`

Step 2

Select a file. On the next screen, read the Software License agreement and download the file.

For the Tunnel Builder product or evaluation kit, download the following files, one at a time, where the *x* represents the version build number:

- tb-2.1.1-kit-sol.tar
- tb-2.1.1-readme.txt
- tb-2.1.1-setup-sol.sh

Now you ready to copy your files to the web server doc directory.

Installing and Starting Cisco MPLS Tunnel Builder Pro

To install and start the Tunnel Builder Pro application on Solaris systems, perform the following steps.



Note

Default values are in brackets.

Step 1 Copy the `tb-*-kit-sol.tar` and `tb-*-setup-sol.sh` files to a directory under your web server doc directory in which you plan to install the application. For example, `/scratch/suitespot/docs/TunnelBuilderPro`.

Step 2 Make sure that you can execute the `tb-*-setup-sol.sh` script:

```
chmod 755 tb-*-setup-sol.sh
```

Step 3 Log in as root.

```
$ su root
password: password
```

Step 4 Run the `./tb-*-setup-sol.sh` file.

```
web-server-doc-dir% ./tb-*-setup-sol.sh
```

The setup file, `tb-*-setup-sol.sh`, runs a script that asks you where you want to locate the Tunnel Builder Pro files. Enter the full path of your web server doc directory.

Where (in what directory) would you like the Tunnel Builder Pro client and server to be installed?

```
/scratch/suitespot/docs/TunnelBuilderPro
```

You will have several configuration options.

Please enter the Cisco license key.

Please enter (eval) for evaluation version of BRG, (perm) for permanent version of BRG, or (none) for Non-BRG version.

If you entered **eval** or **perm**, one of the following requests appears:

```
Please enter the license key for evaluation version.
Please enter the license key for permanent version.
```

If you entered **eval** for the BRG license key, the following prompt appears:

```
Please enter the expiration date for your license in the form dd-mm-yy
```

```
What port would you like to use for the Tunnel Builder Pro client and server
communication? [7271]
```

If you entered **eval** or **perm**, the following question appears:

```
What RMI port would you like to use for the BRG Server? [1098]
```

```
Do you want the TunnelBuilder server to use telnet or ssh to access the routers? [telnet]
```

All routers will be accessed using the method that you selected.

```
Would you like to receive SNMP trap notification of links and tunnels changing status?
[no]
```

If you entered **yes**, the following two questions appear. If you entered **no**, they do not appear.

```
What port would you like to use for receiving UDP datagrams? [162]
```



Note If port 162 conflicts with other network management applications, then enter another port number. Port 162 is the standard port for UDP communication.

What SNMP community string would you like to use? [public]

Would you like to run the Tunnel Builder Pro server in debug mode? [no]

Would you like to enable logging of Tunnel Builder Pro commands and logging of commands sent to the router? [no]

Step 5 When the installation script is complete, you are asked if you want to run the server automatically. To start the server manually, execute a **startTopoServer** command from your web server doc directory.

```
cd /scratch/suitespot/docs/TunnelBuilderPro/serverkit
web-server-doc-dir% ./startTopoServer
```

Step 6 To start the Tunnel Builder Pro application, use your web browser to find and select the ServerControl.html file. For example:

```
http://server-host-name/TunnelBuilderPro/clientkit/ServerControl.html
```

To access the Tunnel Builder Pro from your laptop, use your web browser to find and select the ServerControlLaptop.html file. For example:

```
http://server-host-name/TunnelBuilderPro/clientkit/ServerControlLaptop.html
```



Note If you have not previously downloaded and installed the Java Plug-in Version 1.3.1, you may be prompted to do so at this point.

The Tunnel Builder Pro application is displayed in your browser window.



Note When your evaluation software expires, follow the procedures described under [“Shutting Down Cisco MPLS Tunnel Builder Pro”](#) and [“Stopping the RMI Daemon and the BRG Server”](#).

Reinstallation Requirements for Upgrading

You need to reinstall the Cisco MPLS Tunnel Builder software to do any of the following upgrades:

- To Cisco MPLS Tunnel Builder Pro Version 2.1 from Cisco MPLS Tunnel Builder Version 2.0
- To Cisco MPLS Tunnel Builder Pro Version 2.1 from Cisco MPLS Tunnel Builder Pro Version 2.0
- To the next license level from your current license level

Shutting Down Cisco MPLS Tunnel Builder Pro

To shut down Tunnel Builder Pro, locate the Tunnel Builder Server process on the machine and kill the process ID.

To locate the process IDs for the Tunnel Builder server, enter the following command:

```
ps -ef | grep serverkit
```

Once the process ID is found, enter this command:

```
kill -9 process-id
```

Stopping and Restarting the BRG Server

You can use the following arguments in the BRG `install.sh` script that is found in the `installation-directory/serverkit/installed/bin` directory:

- `s` starts the RMI Daemon.
- `i` installs the BRG server with a specified port.
- `c` stops the BRG server and cleans out the log and log file for the specified port.
- `k` stops the BRG server.
- `r` stops the RMI Daemon on a specified port, stops the BRG server, clears the log and log file, and restarts the BRG server.
- `D` passes a property setting to Java during the installation procedure. For example, `-D property=value`.
- `p` specifies a new Property file to pass to BRG.
- `h` provides help information.

When invoked without options, `install.sh` assumes the “`r`” argument; that is, it stops the server, clears the log file, and then restarts the server.

The instructions for manually shutting down and restarting the server follow.

Stopping the RMI Daemon and the BRG Server

In its default state, the `install` script cleans the contents of any existing log directory.

The directory log contains the configuration of the RMI Daemon that is persistent from one start of the daemon to another. If the port is changed, remove the log directory.

To stop the RMI Daemon and the BRG server without starting a new installation, do the following from the `serverkit/installed` subdirectory of the installation directory:

- If the default port number 1098 is being used, enter the **install** command as follows:

```
./bin/install.sh -k
```

- If the default port is not being used, enter the following command:

```
./bin/install.sh -k ABCD
```

where `ABCD` is the port number.

Restarting the RMI Daemon and the BRG Server

The Tunnel Builder Pro installation process automatically starts the BRG server if you have the appropriate license. Restarting the BRG server is usually unnecessary, but after an incident such as a machine reboot, you need to restart it.

To start the RMI Daemon and the BRG server, run the script `install.sh` as follows:

```
$ su root
password: password

$ cd installation-directory/serverkit/installed

$ ./bin/install.sh -p data/system.properties -Djava.security.policy=data/server.policy
ABCD
```

where *installation-directory* is the directory in which Tunnel Builder Pro was installed and *ABCD* is the RMI port chosen at installation time. It must match the RMI port specified in the `serverkit/TBconfig.txt` file.

New Features of Cisco MPLS Tunnel Builder Pro

Cisco MPLS Tunnel Builder Pro Version 2.1 includes the following new features:

- Traffic Engineering (TE) metric support—The TE metric feature allows you to specify what attribute the backup tunnel route generator algorithm should use when it creates paths for Fast ReRoute backup tunnels.

In Tunnel Builder Pro Version 2.0, the algorithm creates a path for an FRR backup tunnel that first satisfied the constraints on the tunnel (that is, bandwidth requirements) and second minimized the number of hops in the path (that is, the hop count).

In Tunnel Builder Pro Version 2.1 there are two options. If you check the **Use TE Metrics** check box in the Backup Tunnels pane, the algorithm minimizes the sum of the TE metrics on the path while ensuring that constraints are satisfied, instead of minimizing the number of hops. If the TE metric values differ on the two ends of the same link in a tunnel path, the algorithm uses the higher of the two metrics in the computation. If you uncheck the **Use TE Metrics** check box, decisions about the placement of backup tunnels are based on the total hop count instead of the sum of the TE metrics.

By default, **Use TE Metrics** is checked, and the product may generate paths for backup tunnels that are different from paths produced by Tunnel Builder Pro Version 2.0 because Version 2.0 minimizes only the hop count.

- SSH support—During installation, you can choose either Secure Shell (SSH) or Telnet as the means to access the routers on your network. The default is Telnet. Once you select SSH or Telnet, the server uses only that method to access all routers.

If you select SSH for router access, all routers on the network must be running a version of Cisco IOS software that supports SSH.

**Note**

The Cisco IOS image that supports SSH will support Data Encryption Standard (DES) encryption or DES and Triple DES (3DES) encryption. In the DES software images, DES is the only encryption algorithm available. In the 3DES software images, both DES and 3DES encryption are available.

If the seed router supports both DES and 3DES data encryption, then all routers on the network must be loaded with an image that supports DES and 3DES data encryption. In this case, by default, the seed router uses 3DES encryption.

If the seed router supports only DES data encryption, then all routers on the network can be loaded with an image that supports DES only or with an image that supports both DES and 3DES data encryption. A router that supports DES and 3DES understands the DES encryption sent by the seed router.

Caveats

Caveats describe unexpected behavior in Cisco MPLS Tunnel Builder Pro software releases. Severity 1 caveats are the most serious; severity 2 caveats are less serious. Severity 3 caveats are moderate caveats, and only selected severity 3 caveats are included in caveats documentation.

Open Caveats—Cisco MPLS Tunnel Builder Pro

This section describes possible unexpected behavior by Cisco MPLS Tunnel Builder Pro.

- **CSCdv05063—Overwriting SeedRouters.txt during an installation upgrade**

The `../serverkit/SeedRouters.txt` file is overwritten during an upgrade of an existing TunnelVision installation.

Workaround: Back up the existing `SeedRouters.txt` file and copy it back into the `../serverkit` directory after an installation upgrade is performed.

Related Documentation

The documentation for Tunnel Builder Pro contains both online help and the [Cisco MPLS Tunnel Builder Pro Installation and User Guide](#).

Obtaining Documentation

These sections explain how to obtain documentation from Cisco Systems.

World Wide Web

You can access the most current Cisco documentation on the World Wide Web at this URL:

<http://www.cisco.com>

Translated documentation is available at this URL:

http://www.cisco.com/public/countries_languages.shtml

Documentation CD-ROM

Cisco documentation and additional literature are available in a Cisco Documentation CD-ROM package. The Documentation CD-ROM is updated monthly and may be more current than printed documentation. The CD-ROM package is available as a single unit or through an annual subscription.

Ordering Documentation

You can order Cisco documentation in these ways:

- Registered Cisco.com users (Cisco direct customers) can order Cisco product documentation from the Networking Products MarketPlace:
http://www.cisco.com/cgi-bin/order/order_root.pl
- Registered Cisco.com users can order the Documentation CD-ROM through the online Subscription Store:
<http://www.cisco.com/go/subscription>
- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco Systems Corporate Headquarters (California, U.S.A.) at 408 526-7208 or, elsewhere in North America, by calling 800 553-NETS (6387).

Documentation Feedback

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Obtaining Technical Assistance

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<http://www.cisco.com>

Technical Assistance Center

The Cisco Technical Assistance Center (TAC) is available to all customers who need technical assistance with a Cisco product, technology, or solution. Two levels of support are available: the Cisco TAC Web Site and the Cisco TAC Escalation Center.

Cisco TAC inquiries are categorized according to the urgency of the issue:

- Priority level 4 (P4)—You need information or assistance concerning Cisco product capabilities, product installation, or basic product configuration.
- Priority level 3 (P3)—Your network performance is degraded. Network functionality is noticeably impaired, but most business operations continue.
- Priority level 2 (P2)—Your production network is severely degraded, affecting significant aspects of business operations. No workaround is available.
- Priority level 1 (P1)—Your production network is down, and a critical impact to business operations will occur if service is not restored quickly. No workaround is available.

The Cisco TAC resource that you choose is based on the priority of the problem and the conditions of service contracts, when applicable.

Cisco TAC Web Site

You can use the Cisco TAC Web Site to resolve P3 and P4 issues yourself, saving both cost and time. The site provides around-the-clock access to online tools, knowledge bases, and software. To access the Cisco TAC Web Site, go to this URL:

<http://www.cisco.com/tac>

All customers, partners, and resellers who have a valid Cisco service contract have complete access to the technical support resources on the Cisco TAC Web Site. The Cisco TAC Web Site requires a Cisco.com login ID and password. If you have a valid service contract but do not have a login ID or password, go to this URL to register:

<http://www.cisco.com/register/>

If you are a Cisco.com registered user, and you cannot resolve your technical issues by using the Cisco TAC Web Site, you can open a case online by using the TAC Case Open tool at this URL:

<http://www.cisco.com/tac/caseopen>

If you have Internet access, we recommend that you open P3 and P4 cases through the Cisco TAC Web Site.

Cisco TAC Escalation Center

The Cisco TAC Escalation Center addresses priority level 1 or priority level 2 issues. These classifications are assigned when severe network degradation significantly impacts business operations. When you contact the TAC Escalation Center with a P1 or P2 problem, a Cisco TAC engineer automatically opens a case.

To obtain a directory of toll-free Cisco TAC telephone numbers for your country, go to this URL:

<http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml>

Before calling, please check with your network operations center to determine the level of Cisco support services to which your company is entitled: for example, SMARTnet, SMARTnet Onsite, or Network Supported Accounts (NSA). When you call the center, please have available your service agreement number and your product serial number.

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