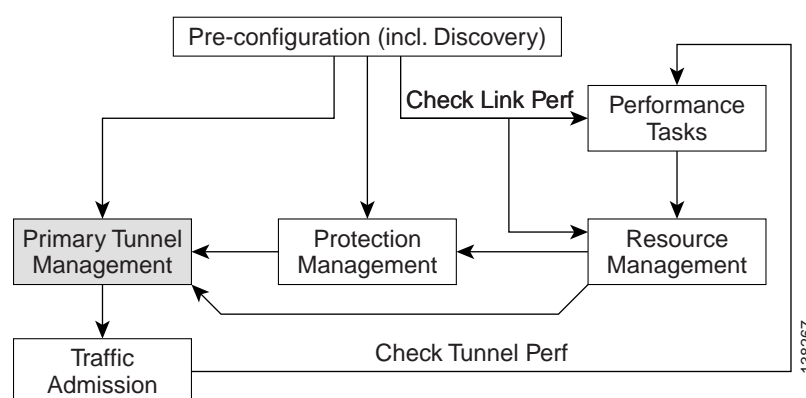




## Advanced Primary Tunnel Management



In addition to the basic tunnel management tools described in [Chapter 5, “Basic Tunnel Management”](#), ISC TEM gives access to a set of advanced tunnel planning tools that provide optimal placement of tunnels to ensure efficient use of network resources.

The advanced tools are available for managed tunnels only. The difference between managed and unmanaged tunnels is described in [Managed/Unmanaged Primary Tunnels](#), page 1-3.

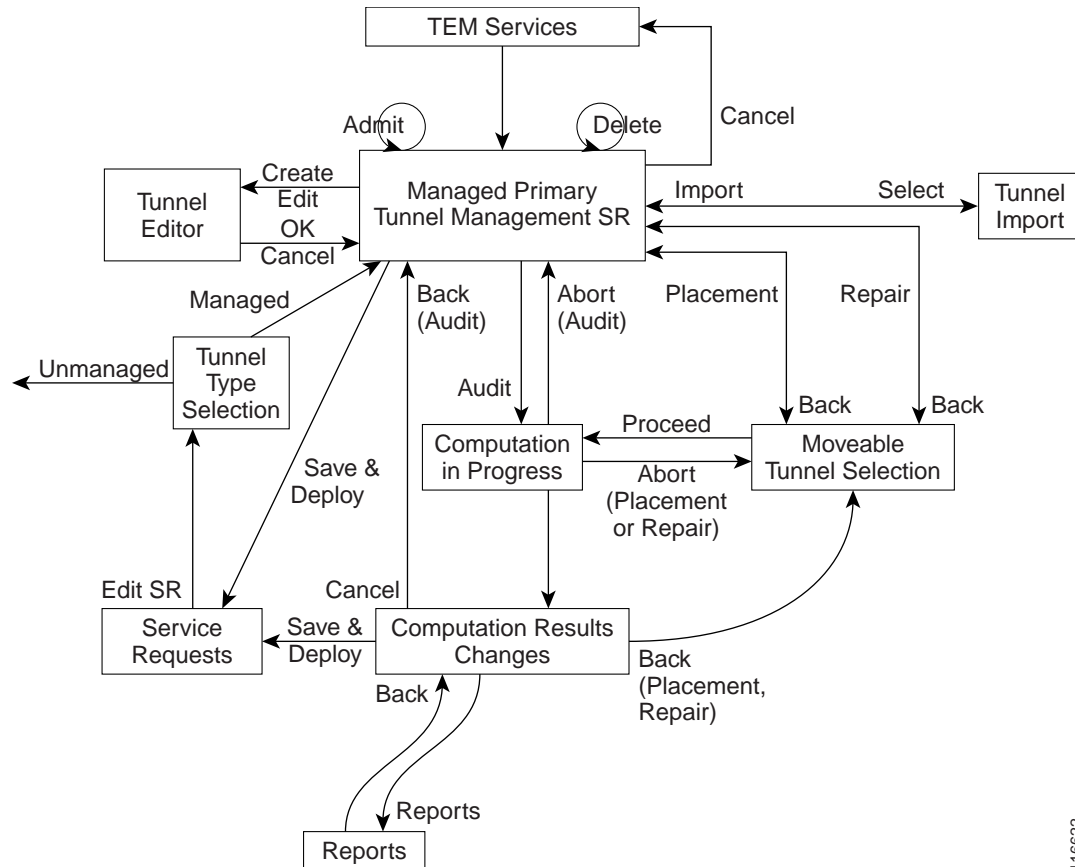
This chapter includes the following sections:

- [Tunnel Operations](#), page 6-2
  - [Create Primary Tunnel](#), page 6-2
  - [Edit Primary Tunnel](#), page 6-8
  - [Delete Primary Tunnel](#), page 6-8
  - [Admit Primary Tunnel](#), page 6-8
  - [Import Primary Tunnel](#), page 6-8
- [Planning Strategy](#), page 6-11
- [Placement Tools](#), page 6-11
  - [Tunnel Audit](#), page 6-12
  - [Tunnel Placement](#), page 6-17
  - [Tunnel Repair](#), page 6-22
  - [Grooming](#), page 6-26

# Tunnel Operations

This section explains the advanced tunnel operations in ISC TEM that incorporate the planning tools. An overview of the primary tunnel management process is provided in [Figure 6-1](#).

**Figure 6-1 Primary Tunnel Management Processes**



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For **Tunnel Type Selection**, when you select **Unmanaged** the TE Unmanaged Primary Tunnel SR window appears (see [Chapter 5, “Basic Tunnel Management”](#)).

All other elements in [Figure 6-1](#) are described in this chapter.

## Create Primary Tunnel

To create a TE managed primary tunnel with the RG license installed, use the following steps:

- Step 1 Navigate **Service Inventory > Inventory and Connection Manager > Traffic Engineering Management**.
- Step 2 Click **Create Managed TE Tunnel**. The TE Managed Primary Tunnels SR window appears as shown in [Figure 6-2](#).

Figure 6-2 TE Managed Primary Tunnels SR

The screenshot shows the Cisco IP Solution Center interface. The top navigation bar includes links for Home, Shortcuts, Account, Index, Help, About, and Logout. The user is logged in as 'admin'. The main content area is titled 'TE Managed Primary Tunnels SR'. It displays the SR Job ID (8), SR ID (New), Provider (Provider2), and SR State (REQUESTED). The Description field is empty. Below the description, there is a table of tunnels with columns: #, Op, Tunnel ID, T#, Head, Dest, Policy, BW, AutoBW, Deploy Status, Verified, and Allow Reroute. The table shows 5 records. At the bottom, there are buttons for Close, Display, Details, Admit, Create, Edit, and Delete. A footer bar contains buttons for Import, Placement Tools, Proceed with Changes, Save & Deploy, and Cancel.

**TE Managed Primary Tunnels SR**

SR Job ID: 8      Provider: Provider2      SR State: REQUESTED  
 SR ID: New      Creator:      Type: ADD

Description:

Show Existing Tunnels with All matching \* Find

Showing 1 - 5 of 23 records

#	Op	Tunnel ID	T#	Head	Dest	Policy	BW	AutoBW	Deploy Status	Verified	Allow Reroute
1.	<input type="checkbox"/>	ISC-P1	2	isctmp11	isctmp10	ISC-P1-isctmp11:tunnel-te2	2	false	DEPLOYED	succeed	false
2.	<input type="checkbox"/>	ISC-P2	1000	isctmp11	isctmp1	ISC-P2-isctmp11:tunnel-te1000	200	false	DEPLOYED	succeed	false
3.	<input type="checkbox"/>	ISC-P122	1003	isctmp11	isctmp12	ISC-P122-isctmp11:tunnel-te1003	500	false	DEPLOYED	succeed	false
4.	<input type="checkbox"/>	ISC-P123	1004	isctmp11	isctmp8	ISC-P122-isctmp11:tunnel-te1003	500	false	DEPLOYED	succeed	false
5.	<input type="checkbox"/>	ISC-P3	1	isctmp10	isctmp6	ISC-P2-isctmp11:tunnel-te1000	1000	false	DEPLOYED	succeed	false

Rows per page: 5      Go to page: 1 of 5

Close Display Details Admit Create Edit Delete

Import Placement Tools Proceed with Changes Save & Deploy Cancel

For an explanation of the various window elements, see [Create Managed TE Tunnel](#), page A-41.

**Step 3** Click **Create**. The Create TE Managed Primary Tunnel window appears as shown in [Figure 6-3](#).

Figure 6-3 Create TE Managed Primary Tunnel

SR Job ID: New

SR ID: New

SR State: REQUESTED

Tunnel ID: \*

Creator:

Type: ADD

Head Device \*:

Select

Destination Device \*:

Select

Tunnel Policy \*:

Select

Tunnel Bandwidth (Kbps):

Tunnel Number:

Auto Gen ☒

Customer:

Auto BW:

Enable: ☐

Freq (sec):

Min (Kbps):

Max (Kbps):

Path Options:

Showing 1 - 2 of 2 records

<input type="checkbox"/>	Option #	Path Name	Path Type	Lock Down
<input type="checkbox"/>	1	System Path	Explicit	<input type="checkbox"/>
<input type="checkbox"/>	2	Dynamic Path	Dynamic	<input type="checkbox"/>

Rows per page: 5

Go to page: 1 of 1

Go

Add

Delete

OK

Cancel

Note: \* - Required Field

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For an explanation of the various window elements, see [Create Managed TE Tunnel, page A-41](#).

The **Path Options** section provides three path types, **System Path**, **Explicit Path**, and **Dynamic Path**. A **System Path** is an ISC system generated explicit path (immovable). The first path has to be an explicit path.

An **Explicit Path** is a fixed path from a specific head to a specific destination device.

A **Dynamic Path** is provisioned by allowing the head router to find a path. The **dynamic** keyword is provisioned to the routers.

**Step 4** To select a **Head Device**, click the corresponding **Select** button to open the window shown in [Figure 6-4](#).

Figure 6-4 Select Device for TE Head Router

Device for **TE Head Router**

Show Devices with:  matching

Showing 1 - 5 of 14 records

#	Device Name	IGP ID	MPLS TE ID	Admin Status
1.	<input type="radio"/> isctmp1	192.168.118.176	192.168.118.176	UP
2.	<input type="radio"/> isctmp11	192.168.118.166	192.168.118.166	UP
3.	<input type="radio"/> isctmp10	192.168.118.167	192.168.118.167	UP
4.	<input type="radio"/> isctmp12	192.168.118.168	192.168.118.168	UP
5.	<input type="radio"/> isctmp13	192.168.118.171	192.168.118.171	UP

Rows per page:  Go to page:  of 3

For an explanation of the various window elements, see [Create TE Managed Primary Tunnel, page A-44](#).  
 Select a head device and click **Select**.

- Step 5** To select a **Destination Device**, click the corresponding **Select** button to open the window shown in [Figure 6-5](#).

Figure 6-5 Select Device for TE Tail Router

Device for **TE Tail Router**

Show Devices with:  matching

Showing 1 - 5 of 15 records

#	Device Name	IGP ID	MPLS TE ID	Admin Status
1.	<input type="radio"/> 192.168.118.178	192.168.118.178	192.168.118.178	UP
2.	<input type="radio"/> isctmp1	192.168.118.176	192.168.118.176	UP
3.	<input type="radio"/> isctmp11	192.168.118.166	192.168.118.166	UP
4.	<input type="radio"/> isctmp10	192.168.118.167	192.168.118.167	UP
5.	<input type="radio"/> isctmp12	192.168.118.168	192.168.118.168	UP

Rows per page:  Go to page:  of 3

For an explanation of the various window elements, see [Create TE Managed Primary Tunnel, page A-44](#).  
 Select a tail device and click **Select**.

- Step 6** To select a **Tunnel Policy**, click the corresponding **Select** button to open the window shown in [Figure 6-6](#).



**Note**

If no tunnel policies are available, the reason could be that they are all unmanaged. To create a managed tunnel, use the **Policy Manager** (see [Create Primary Tunnel, page 6-2](#)) and make sure to check the **Managed** check box.

**Figure 6-6** Select Managed TE Tunnel Policy

#	Policy Name	Pool Type	Setup Priority	Hold Priority	Affinity	Affinity Mask	Delayed Constraint	FRR Protection
1.	man1	GLOBAL	0	0	0x0	0xFFFF		None
2.	pm-none	GLOBAL	0	0	0x0	0xFFFF		None

For an explanation of the various window elements, see [Create TE Managed Primary Tunnel, page A-44](#).

- Step 7** Specify a tunnel bandwidth greater than zero. Add other tunnel information as desired.
- Step 8** Optionally, if you want to specify an explicit path rather than using the system path provided by ISC TEM, delete the system path and subsequently add the explicit path. For a more detailed explanation of this step, see [Create Primary Tunnel, page 5-8](#).
- Step 9** In the Create TE Managed Tunnel window, click **OK** to accept the entered tunnel information or **Cancel** to quit and return to the TE Managed Primary Tunnels SR window.

The TE Managed Primary Tunnel SR window in [Figure 6-7](#) appears displaying the new tunnel with the Op field set to ADD to signify that an SR has been added.



**Note**

The added tunnel can be reverted to its original state by selecting it and clicking **Delete**. The tunnel is removed from the tunnel list.

Figure 6-7 TE Managed Primary Tunnel SR - Added Tunnel

**TE Managed Primary Tunnels SR**

SR Job ID: 8      Provider: Provider2      SR State: REQUESTED  
 SR ID: New      Creator:      Type: ADD

Description:

Show SR Tunnels with All matching  Find

Showing 1 - 1 of 1 record

#	Op	Tunnel ID	T#	Head	Dest	Policy	BW	AutoBW	Deploy Status	Verified	Allow Reroute
1.	<input type="checkbox"/> ADD	ISC-P153		isctmp11	isctmp10	ISC-P122- isctmp11:tunnel- te1003	100	false	REQUESTED	unknown	true

Rows per page: 5

Tunnel Audit    Go to page: 1 of 1    Go

Close    Display    Tunnel Placement    Create    Edit    Delete

Tunnel Repair

Import    Placement Tools    Proceed with Changes >>    Save & Deploy    Cancel

**Step 10** In the TE Managed Primary Tunnel SR window, you can create or edit more tunnels, or if you are done with all the changes, proceed in one of the following two ways depending on which of the following buttons are active (**Save & Deploy** is not available after the **Create** operation):

- **Proceed with Changes:** The changes you entered impacts tunnel placement. Click on this to continue with one of the planning flows described in the Placement Tools (see [Placement Tools, page 6-11](#)) until the SR can be saved and deployed.
- **Save & Deploy:** The changes you entered do not impact tunnel placement. Click on this to save and deploy the SR. This function is further described in [Create Managed TE Tunnel, page A-41](#).

**Note**

When you click Save & Deploy, a background process is started. To avoid a potential conflict with another deployment, wait until the SR has completed the Requested and Pending states before deploying another SR with Save & Deploy. To see the state of deployment, go to the Service Request window under Inventory and Connection Manager or open the Task Manager under Monitoring.

**Note**

With the exception of TE Traffic Admission SRs, TE SRs are always deployed immediately from the specific TE SR screen, not from the Service Requests page in **Inventory and Connection Manager**.

**Step 11** If Save & Deploy was selected in [Step 10](#), the Service Requests window (**Service Inventory > Inventory and Connection Manager > Service Requests**) opens and displays the state of the deployed SR.

For more information on working with service requests, see [Appendix B, “Managing Service Requests.”](#)

If the SR does not go to the **Deployed** state, go to the Task Logs window to see the deployment log (**Monitoring > Task Manager > Logs**) as described in [Task Monitoring, page 10-1](#).

## Edit Primary Tunnel

The only difference between creating and editing tunnels is that in the tunnel editor, the head and destination devices and tunnel number fields are not editable. Otherwise, you create and edit the same attributes.

Only **Proceed with Changes** or **Save & Deploy**, not both, are available depending on whether the changes you entered impacts tunnel placement.

To edit a primary tunnel, see [Chapter 5, “Basic Tunnel Management.”](#)

## Delete Primary Tunnel

To delete one or more tunnels, see [Chapter 5, “Basic Tunnel Management.”](#)

## Admit Primary Tunnel

The Admit function is used to admit selected tunnels not previously verified into the managed topology. This feature is used only for discovered tunnels that failed verification. During the discovery process, verification is performed with the Tunnel Placement algorithm, as if the tunnels were admitted for the first time.

Verification means that the discovered managed tunnel is verified against the network topology and ISC TEM checks if there is enough bandwidth along the tunnel path (both are specified in the tunnel).

In general, verification will fail if there is not enough bandwidth due to the existence of other tunnels or a limitation on link capacity/bandwidth.

More specifically, this can happen when a priority 0 tunnel is created independently of ISC TEM and a TE Discovery task is run. If the tunnel does not satisfy all the managed tunnel constraints (that is, if it is reserving more bandwidth than is available in a link that it passes through) TE discovery will mark it as ‘verified = false’. It will not be managed by ISC TEM until you use the Admit button to make it verified. Typically this would have to be accompanied with some other tunnel or resource change to ensure that the constraint is now satisfied.

To admit a primary tunnel, use the following steps:

- 
- |        |  |
|--------|--|
| Step 1 | In the <b>TE Managed Primary Tunnel SR</b> , select one or more unverified tunnels to migrate.   |
| Step 2 | Click <b>Admit</b> . The unverified tunnel(s) are verified and, if successful, an <b>ADMIT</b> flag will appear in the <b>Op</b> column.             |
| Step 3 | Select <b>Proceed with Changes &gt;&gt; &gt; Tunnel Placement</b> to determine if the tunnels can be placed. If not, edit the tunnels and try again. |
- 

## Import Primary Tunnel

This feature allows you to update tunnels in bulk through a file-based import mechanism. The data is migrated into the managed primary tunnel service request.

## Construct XML Import File

To import tunnels from a file, first construct an XML import file conforming to the structure defined in the system supplied Document Type Definition (DTD) file (see [Appendix D, “Document Type Definition \(DTD\) File”](#)), and save the XML file together with the DTD file on the ISC server under the same directory. To create a valid import file, use the provided command line validation tool (see [Command Line Validation Tool, page 6-9](#)).

The following files are necessary for importing data into the ISC TEM application and are included in the installation:

- DTD file for the import file in  
`< installedDir >/resources/java/xml/com/cisco/vpnsc/ui/te`
  - **TeImport.dtd**  
(a sample file, ‘**sample.xml**’, is also included)
- Shell script for executing the command line validator in the `<installedDir>/bin` directory.
  - **ImportTeTunnels**  
Usage: **importTeTunnels** *<importfile>*

*importfile* is a XML file and must specify **TeImport.dtd** as its DTD. **TeImport.dtd** must be in the same directory as *importfile*.

## Command Line Validation Tool

The purpose of a command line validator is to help construct a valid import file off-line that corresponds to **TeImport.dtd**. The tool helps screen out errors associated with files that are not well-formed and files that do not conform to the rules set by the DTD.

For instructions on how to use the DTD file, see the DTD file documentation.

The tool reads the import file line-by-line, echoes each line in on the output as it parses, and reports any parsing error it encounters. The parsing and validation continues even when parsing errors are encountered for as long as the file structure makes sense.



### Note

This tool does not check for cross field validation or data integrity errors with respect to the ISC TEM application.

## Import Procedure

The file-based import feature is only enabled when there are no uncommitted new, changed, or deleted tunnels in the service request.

It provides a way of adding, editing, deleting, or migrating many tunnels at a time.

To start the import procedure, use the following steps:

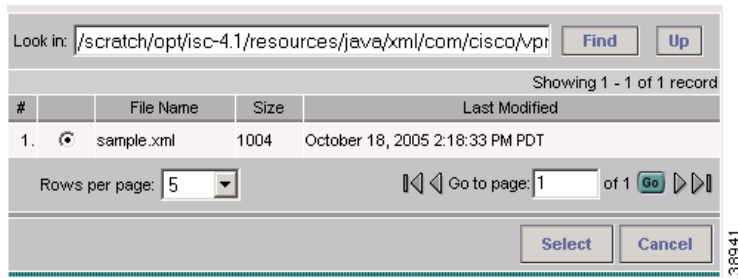
- Step 1 Prepare the XML import file in accordance with the DTD file.
- Step 2 Go to **Service Inventory > Inventory and Connection Manager > Traffic Engineering Management**.
- Step 3 Select provider if this has not been done earlier in the session.
- Step 4 Click **Create Managed TE Tunnel**. The TE Managed Primary Tunnels SR window appears as shown in [Figure 6-2](#).

**Step 5** Click **Import** to start the import process. The Select Import File window in [Figure 6-8](#) appears.



**Note** The Import button is only enabled when there are no uncommitted new, changed, or deleted tunnels in the service request.

**Figure 6-8** *Select Import File*



For an explanation of the various window elements, see [Import Tunnel, page A-50](#).

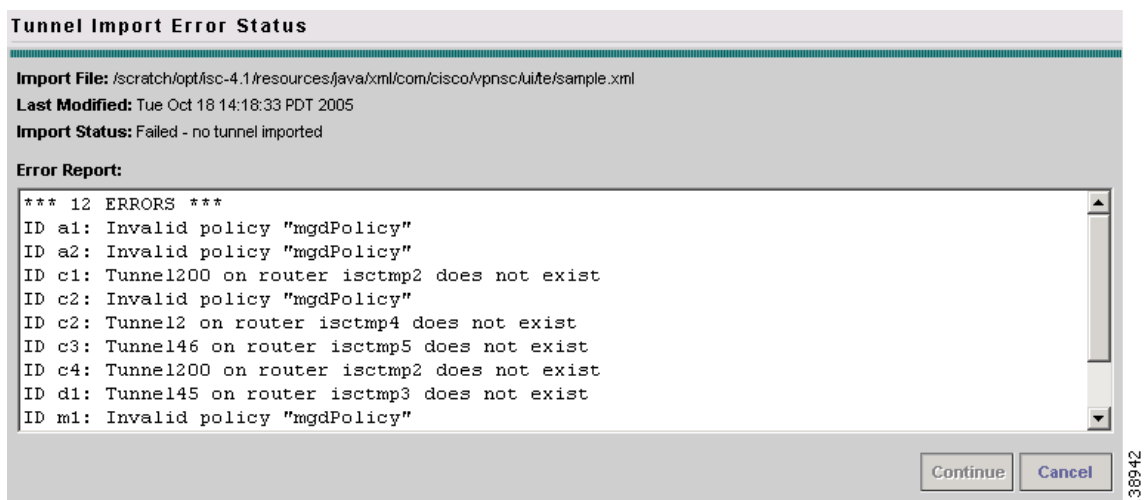
The Select Import File window lists all the XML files and any directories under the directory name shown in the **Look in** field.

The default directory shown in the **Look in** field in [Figure 6-8](#) corresponds to the installation directory in which the DTD and sample XML files reside.

**Step 6** Select the desired XML file to be used for the import operation.

The system then parses the file. If any error is detected, it will be reported in the Tunnel Import Error Status window shown in [Figure 6-9](#).

**Figure 6-9** *Tunnel Import Error Status*



For an explanation of the various window elements, see [Import Tunnel, page A-50](#).

The Tunnel Import Error Status window shows the URL of the file, its last modified timestamp, the import status, and any error/warning messages.

- Step 7** If the import operation failed, **Cancel** to return to the previous screen. If it is partially successful, the **Continue** button is enabled, thereby providing an additional option to accept system treatment for errors/warnings and continue with the import operation.
- Step 8** If the file is parsed successfully or you click **Continue**, all valid tunnels in the file are added to the service request and the TE Managed Primary Tunnels SR window is re-displayed in the SR view. The imported tunnels are displayed with the appropriate tunnel **Op** type.
- 

## Planning Strategy

The main objective of using the planning tools is to achieve optimal overall network utilization while causing minimal impact on any existing traffic on the network.

In most cases, the following strategy can be applied:

- Attempt to admit the new traffic optimising on utilisation (Placement feature) without allowing existing traffic to be moved. This offers the possibility of accommodating the new traffic without any changes to the existing traffic, while still optimising reserved bandwidth utilisation under the constraint that existing tunnels do not move.
- If this fails, attempt to admit the same new traffic minimising change to existing traffic (Repair feature) to see if the new traffic can be accommodated without affecting any more existing tunnels than necessary.
- If this succeeds in placing the new traffic, but you feel that the overall reserved bandwidth utilisation is higher than would be preferred, consider grooming the network.
- If the Repair fails, review the parameters that control how many changes can be considered. Alternatively the specification to the desired traffic could be changed, or resource modifications could be made.

This strategy reflects the different approaches taken by the different algorithms in searching for solutions. However, other combinations are possible.

## Placement Tools

Planning tools for primary tunnels are available in two buttons on the TE Primary Tunnel SR screen as shown in [Figure 6-10](#) and [Figure 6-11](#) depending on whether a change has been made to the managed primary tunnels.

- **Proceed with Changes:** Used when you have made changes (add/change/delete/admit) to the tunnels. Tunnel operations are described in [Tunnel Operations, page 6-2](#). Then choose one of the placement tools to verify primary placement with the system and continue with deployment. This button is also available in Resource Management.
- **Placement Tools:** Used to perform planning function on the existing network.
  - The Tunnel Audit option should be used to verify the constraint-based placement of existing managed primary tunnels with the existing network topology. You can use this option to find out the optimality of your primary placement. If you are requiring protection levels above "Best Effort" on your primary tunnels, it is also important to perform an audit after any changes have been made in the protection network. If the audit results in warnings/violations, you can use the Tunnel Repair option help you find a solution.

- The **Groom** option is used for optimizing your primary placement. In all primary computation, a quality report is produced which displays the optimality and utilization of the bandwidth pools. You can perform a Tunnel Audit first to determine if grooming is needed on your network.

They are accessed from two buttons in the TE Managed Primary Tunnels SR window as shown in [Figure 6-10](#) and [Figure 6-11](#).

**Figure 6-10** Proceed with Changes Button



**Figure 6-11** Placement Tools Button



The planning tools are described in detail in the following sections.



**Note**

If tunnel attributes that are not supported by the placement tools (such as auto-bw frequency) are changed in conjunction with attributes that are supported, the attributes appear correctly in the TE Computation Results window. But if only unsupported attributes are changed, the TE Computation Results window still shows no achieved changes and the Save & Deploy button is grayed out so the change cannot be deployed.

## Tunnel Audit

When any type of change is required, whether tunnel modifications or TE resource modifications, a Tunnel Audit is run to determine what inconsistencies the change might cause, if any. Tunnel Audit can also be used anytime to check the for optimality of network utilization.

The audit can be performed from the primary tunnel window or from the **TE Resource Modifications** window.

Tunnel Audit can also be invoked from the Resource Management window (see [Chapter 4, “TE Resource Management”](#)).

To perform an audit on the created tunnel, use the following steps:

- Step 1 Navigate **Service Inventory > Inventory and Connection Manager > Traffic Engineering Management**.
- Step 2 Click **Create Managed TE Tunnel**. The TE Managed Primary Tunnels SR window appears as shown in [Figure 6-2](#).

Tunnel Audit can be used in two ways:

- When one or more tunnels have been created or their attributes altered (see [Create Primary Tunnel, page 6-2](#)), Tunnel Audit can be activated by selecting **Proceed with Changes >>**.
- When no changes have taken place, Tunnel Audit can be accessed by selecting **Placement Tools**.

**Step 3** As an example, assume that a new primary tunnel SR has been created. The TE Managed Primary Tunnel SR window shown in [Figure 6-12](#) appears.

**Figure 6-12** TE Managed Primary Tunnel SR (Audit)

The screenshot shows the 'TE Managed Primary Tunnels SR' window. At the top, it displays 'SR Job ID: 8', 'Provider: Provider2', 'SR State: REQUESTED', 'SR ID: New', 'Creator:', and 'Type: ADD'. Below this is a 'Description:' field. A search bar shows 'Show SR Tunnels with All matching'. A table lists one tunnel with the following details:

#	Op	Tunnel ID	T#	Head	Dest	Policy	BW	AutoBW	Deploy Status	Verified	Allow Reroute
1.	<input type="checkbox"/> ADD	ISC-P153		isctmp11	isctmp10	ISC-P122-isctmp11:tunnel-te1003	100	false	REQUESTED	unknown	true

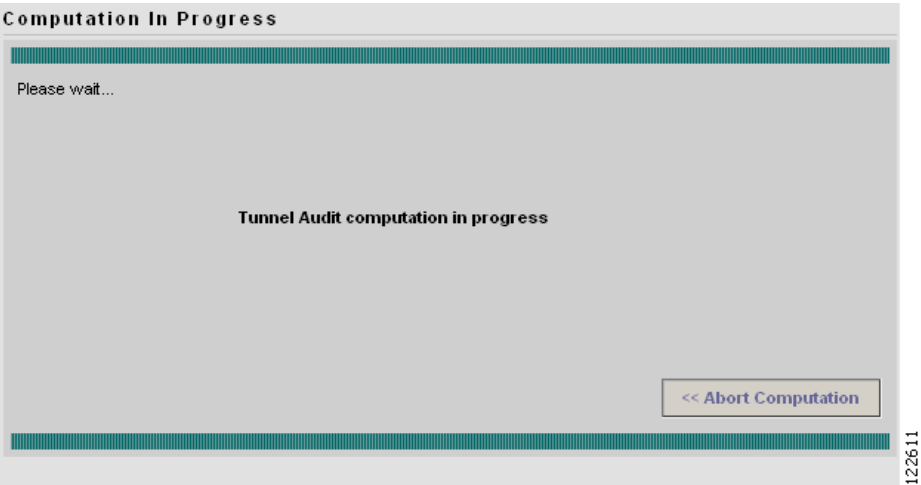
Below the table, it says 'Showing 1 - 1 of 1 record'. There are buttons for 'Tunnel Audit', 'Tunnel Placement', 'Tunnel Repair', 'Create', 'Edit', 'Delete', 'Import', 'Placement Tools', 'Proceed with Changes >>', 'Save & Deploy', and 'Cancel'. A 'Rows per page' dropdown is set to 5. A 'Go to page' field shows '1 of 1'.

For an explanation of the various window elements, see [Create Managed TE Tunnel, page A-41](#).

**Step 4** Select **Proceed with Changes >> > Tunnel Audit**.

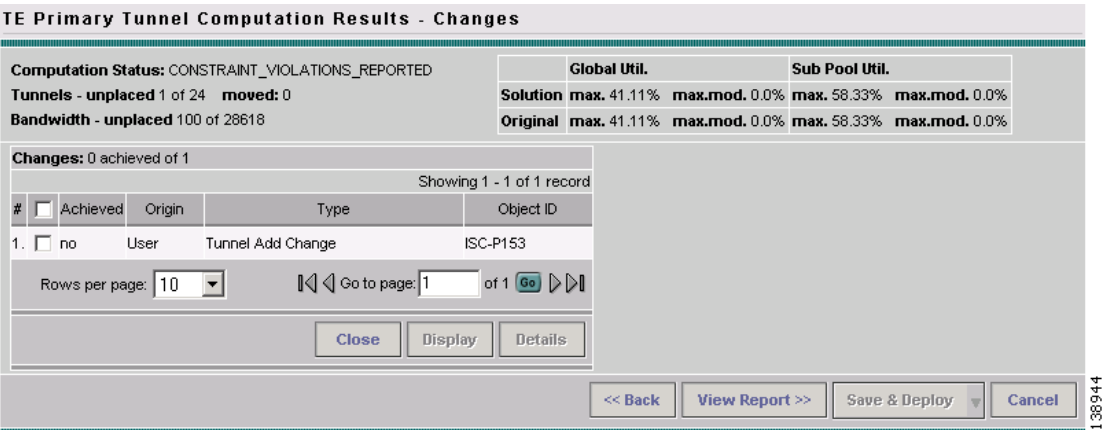
The Computation In Progress window shown in [Figure 6-13](#) appears.

Figure 6-13 Computation In Progress - Audit



To abort the computation and return to the previous window, click << **Abort Computation**.  
 Step 5 The TE Primary Tunnel Computation Results - Changes window in Figure 6-14 appears.

Figure 6-14 TE Primary Tunnel Computation Results - Changes



For an explanation of the various window elements, see [Planning Tools, page A-52](#).

  
**Note**

Certain attributes, such as Description, that do not impact the computation carried out by the placement tools and updates to these are not displayed in the Computation Result Window.

Step 6 To obtain detailed information about the tunnel and whether the change request was achieved, select the specific tunnel and click **Detail**. The detail section in the right side of the window appears as shown in [Figure 6-15](#).

Figure 6-15 TE Primary Tunnel Computation Results - Audit Changes (Details)

**TE Primary Tunnel Computation Results - Changes**

Computation Status: CONSTRAINT\_VIOLATIONS\_REPORTED  
Tunnels - **unplaced** 1 of 24 **moved**: 0  
Bandwidth - **unplaced** 100 of 28618

	Global Util.		Sub Pool Util.	
<b>Solution</b>	max. 41.11%	max.mod. 0.0%	max. 58.33%	max.mod. 0.0%
<b>Original</b>	max. 41.11%	max.mod. 0.0%	max. 58.33%	max.mod. 0.0%

Changes: 0 achieved of 1  
Showing 1 - 1 of 1 record

#	<input checked="" type="checkbox"/>	Achieved	Origin	Type	Object ID
1.	<input checked="" type="checkbox"/>	no	User	Tunnel Add Change	ISC-P153

Rows per page: 10 Go to page: 1 of 1

Change Type: Tunnel Add Change  
**Achieved:** no  
**Description:** A new tunnel has been requested, for which a path must be calculated by the system

**Requested Tunnel**  
**ID:** ISC-P153  
**Head:** isctmp11  
**Tail:** isctmp10  
**Policy:** ISC-P122-isctmp11:tunnel-te1003  
**Bandwidth:** 100  
**Computed Path:**

Close Display Details

<< Back View Report >> Save & Deploy Cancel

For an explanation of the various window elements, see [Planning Tools, page A-52](#).

A **qualityReport** is always generated. If the computation was successful, this will be the only report. If a warning or a violation was encountered, one or more warning or violation reports will also be generated.

- Step 7** To view an audit report, click **View Report >>**. The TE Primary Tunnel Computation Results - Report window in [Figure 6-16](#) appears.

Figure 6-16 TE Primary Tunnel Computation Results - Audit Report

**TE Primary Tunnel Computation Results - Report**

Computation Status: CONSTRAINT\_VIOLATIONS\_REPORTED  
Tunnels - **unplaced** 1 of 24 **moved**: 0  
Bandwidth - **unplaced** 100 of 28618

	Global Util.		Sub Pool Util.	
<b>Solution</b>	max. 41.11%	max.mod. 0.0%	max. 58.33%	max.mod. 0.0%
<b>Original</b>	max. 41.11%	max.mod. 0.0%	max. 58.33%	max.mod. 0.0%

**Report:**  
Showing 1 - 2 of 2 records

#	<input type="checkbox"/>	Report Type	Summary Info
1.	<input type="checkbox"/>	qualityReport	
2.	<input type="checkbox"/>	violationNoTunnelForDemand	ISC-P153

Rows per page: 10 Go to page: 1 of 1

Details

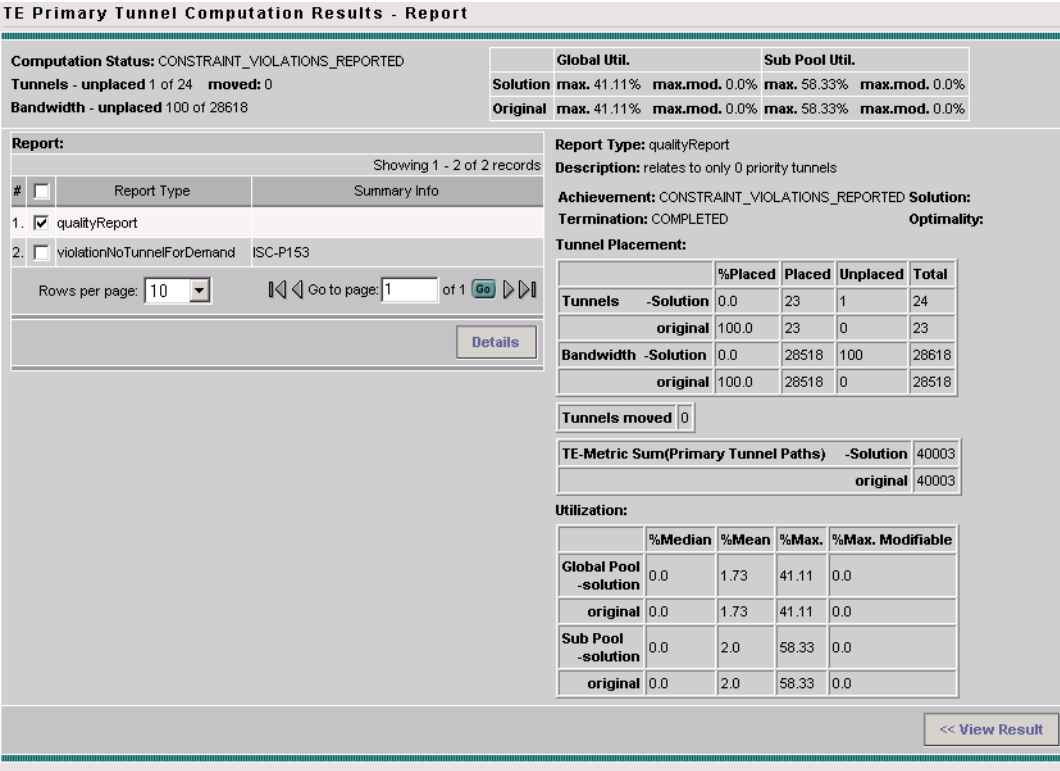
<< View Result

For an explanation of the various window elements, see [Planning Tools, page A-52](#).

In this case, as shown in [Figure 6-16](#), both a **qualityReport** and a violation report have been generated.

- Step 8** To view the contents of the **qualityReport**, select the **qualityReport** and click the **Detail** button. The TE Primary Tunnel Computation Results - Report (details) window in [Figure 6-17](#) appears.

Figure 6-17 TE Managed Primary Tunnels SR - Audit qualityReport (Details)



For an explanation of the various window elements, see [Planning Tools](#), page A-52.

The qualityReport fields in the right window pane are described in [TE Primary Tunnel Computation Results - Report](#), page A-57.

- Step 9 To view the contents of the violation report, select the violation report and click the **Detail** button. The TE Primary Tunnel Computation Results - Report (details) window in [Figure 6-18](#) appears.

Figure 6-18 TE Managed Primary Tunnels SR - Audit Violation Report (Details)

**TE Primary Tunnel Computation Results - Report**

<b>Computation Status:</b> CONSTRAINT_VIOLATIONS_REPORTED		<b>Global Util.</b>		<b>Sub Pool Util.</b>	
<b>Tunnels - unplaced</b> 1 of 24 <b>moved:</b> 0		<b>Solution</b>	max. 41.11%	max.mod. 0.0%	max. 58.33%
<b>Bandwidth - unplaced</b> 100 of 28618		<b>Original</b>	max. 41.11%	max.mod. 0.0%	max. 58.33%

**Report:**

Showing 1 - 2 of 2 records

#	Report Type	Summary Info
1.	<input type="checkbox"/> qualityReport	
2.	<input checked="" type="checkbox"/> violationNoTunnelForDemand	ISC-P153

Rows per page: 10    Go to page: 1 of 1    Go

[Details](#)

**Report Type:** violationNoTunnelForDemand

**Description:** No path implements a requested PrimaryTunnel, even though there exists a valid path in the network that this tunnel could take

**Requested Primary Tunnel**

<b>Name:</b> ISC-P153	<b>Pool:</b> GLOBAL
<b>Head:</b> isctmp11	<b>FRR Protection:</b> None
<b>Tail:</b> isctmp10	<b>Propagation Delay:</b> Not Constrained
<b>Bandwidth:</b> 100	<b>Affinity Bits/Mask:</b> 0x0:0xFFFF

**Requested Path:**

[<< View Result](#)

For an explanation of the various window elements, see [Planning Tools, page A-52](#).

The report fields in the right window pane are described for each report in [Appendix C, “Warnings and Violations.”](#)

- Step 10** Click **<< View Result** to return to the Changes window ([Figure 6-14](#) or [Figure 6-15](#)). If the proposed changes were achieved, you can click on **Save & Deploy** to save the achievable changes to the repository and implement the tunnel modifications on the network.



**Note**

**Save & Deploy** will discard any changes that were not achievable.

- Step 11** The Service Requests window (**Service Inventory > Inventory and Connection Manager > Service Requests**) appears and displays the state of the deployed SR.

For more information on working with service requests, see [Appendix B, “Managing Service Requests.”](#)

## Tunnel Placement

The Placement feature supports the admission of new tunnels into the network and the modification of tunnels already admitted into the network. ISC TEM will attempt to implement the changes in such a way that network utilization is optimized.

To place a created tunnel, use the following steps:

- Step 1** Navigate **Service Inventory > Inventory and Connection Manager > Traffic Engineering Management**.
- Step 2** Click **Create Managed TE Tunnel**. The TE Managed Primary Tunnels SR window appears as shown in [Figure 6-2](#).

- Step 3** When one or more tunnels have been created or their attributes altered (see [Create Primary Tunnel](#), page 6-2), select **Proceed with Changes >> > Tunnel Placement**. The Movable Tunnel Selection (Placement) window shown in [Figure 6-19](#) appears.

**Figure 6-19 Movable Tunnel Selection - Placement**

**Movable Tunnel Selection**

Computation Type: Tunnel Placement

Maximum computation duration (Timeout in sec) \*: 100

Number of reroutable tunnels selected as movable: 0 of 0 Non-reroutable tunnels 23

Show Tunnels with: All matching \* Find

Showing 1 - 5 of 23 records

#	<input type="checkbox"/> Movable	Allow Reroute	Tunnel ID	T#	Head	Dest	Policy	BW
1.	<input type="checkbox"/> NA	false	ISC-P1	2	isctmp11	isctmp10	ISC-P1-isctmp11:tunnel-te2	2
2.	<input type="checkbox"/> NA	false	ISC-P2	1000	isctmp11	isctmp1	ISC-P2-isctmp11:tunnel-te1000	200
3.	<input type="checkbox"/> NA	false	ISC-P122	1003	isctmp11	isctmp12	ISC-P122-isctmp11:tunnel-te1003	700
4.	<input type="checkbox"/> NA	false	ISC-P123	1004	isctmp11	isctmp8	ISC-P122-isctmp11:tunnel-te1003	500
5.	<input type="checkbox"/> NA	false	ISC-P3	1	isctmp10	isctmp6	ISC-P2-isctmp11:tunnel-te1000	1000

Rows per page: 5 Go to page: 1 of 5 Go

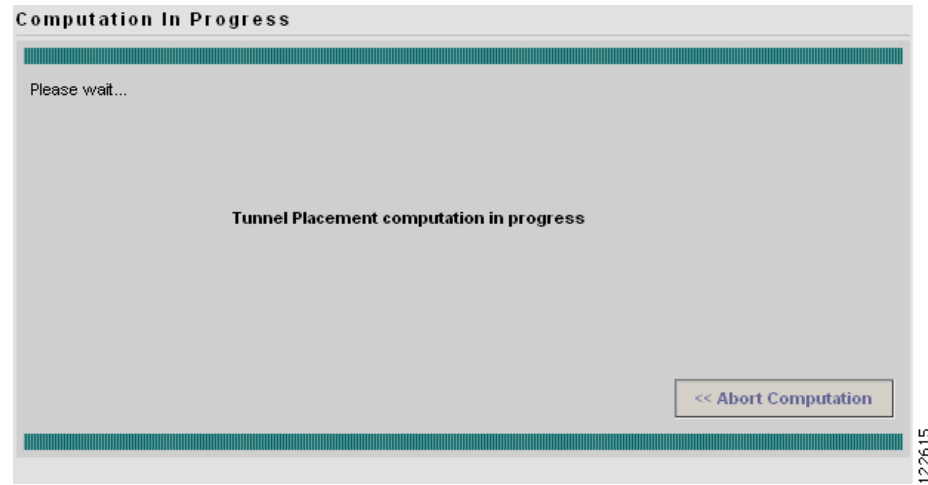
Set Movable Set Unmovable

<< Back Proceed >> Cancel

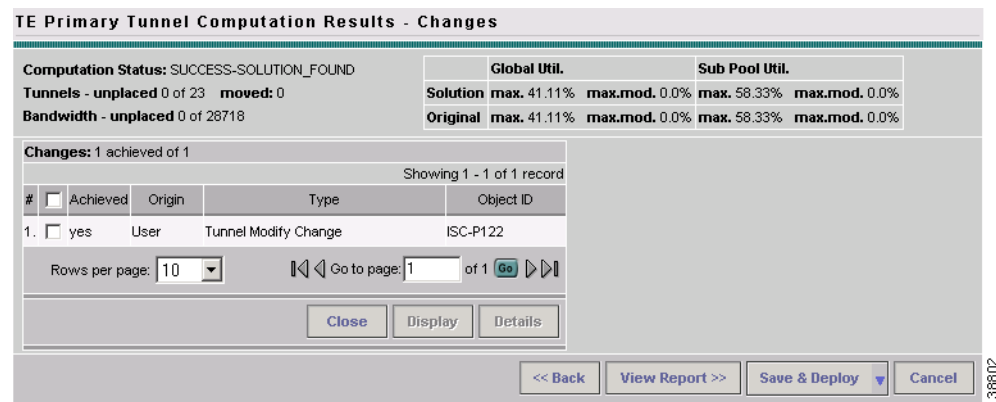
138801

For an explanation of the various window elements, see [Planning Tools](#), page A-52.

- Step 4** Set the movable and unmovable managed tunnels.
- You can specify whether, when admitting a new tunnel, existing tunnels can be moved (re-routed). This is configurable by the user. The default is that managed tunnels are not movable.
- Step 5** Click **Proceed >>**. The Computation In Progress window shown in [Figure 6-20](#) appears.

**Figure 6-20 Computation In Progress - Placement**

To abort the computation and return to the previous window, click << **Abort Computation**. The TE Primary Tunnel Computation Results - Changes window shown in [Figure 6-21](#) appears.

**Figure 6-21 TE Primary Tunnel Computation Results - Placement Changes**

For an explanation of the various window elements, see [Planning Tools, page A-52](#).

**Note**

Certain attributes, such as Description, that do not impact the computation carried out by the placement tools and updates to these are not displayed in the Computation Result Window.

**Step 6**

To obtain detailed information about the tunnel and whether the placement request was achieved, select the specific tunnel and click **Detail**. The detail section in the right side of the window appears as shown in [Figure 6-14](#).

Figure 6-22 TE Primary Tunnel Computation Results - Placement Changes (Details)

TE Primary Tunnel Computation Results - Changes

Computation Status: SUCCESS-SOLUTION\_FOUND

Tunnels - unplaced 0 of 23 moved: 0

Bandwidth - unplaced 0 of 28718

	Global Util.	Sub Pool Util.
Solution	max. 41.11%	max. 58.33%
Original	max. 41.11%	max. 58.33%

Changes: 1 achieved of 1

Showing 1 - 1 of 1 record

#	Achieved	Origin	Type	Object ID
1.	<input checked="" type="checkbox"/>	User	Tunnel Modify Change	ISC-P122

Rows per page: 10

Go to page: 1 of 1

Close

Display

Details

Change Type: Tunnel Modify Change

Achieved: yes

Description: Request to modify one or more attributes of an existing tunnel

Requested Tunnel

ID: isctmp11:tunnel-te1003

Head: isctmp11

Tail: isctmp12

Policy: ISC-P122-isctmp11:tunnel-te1003

Bandwidth: 700

Path: [isctmp11-isctmp12-1](#)

Changed Attributes	New Value	Achieved
BW	700	yes

<< Back

View Report >>

Save & Deploy

Cancel

For an explanation of the various window elements, see [Planning Tools](#), page A-52.

If the placement request succeeded (**Achieved: yes**), the Detail pane will contain a computed **Path** that is selectable as shown in [Figure 6-22](#).

To view the path information, click the blue link in the computed **Path** field. The TE Explicit Path window shown in [Figure 6-23](#) appears.

Figure 6-23 TE Explicit Path for Placement Request

Path Name \*:

Head Router \*:

Links:

Showing 1 - 1 of 1 record

#	Device	Outgoing Interface	Outgoing IP	Next Hop	Type	Incoming Interface	Incoming IP
1.	isctmp11	POS0/2/0/0	10.2.4.10	isctmp12	CISCO_ROUTER	POS0/3/0/0	10.2.4.9

Rows per page: 10

Go to page: 1 of 1

Provision Preference \*: ☒ Outgoing Interface ☐ Incoming Interface

Close

**Step 7** To view the placement report(s), click **View Report >>** in the Changes window ([Figure 6-22](#)). The TE Primary Tunnel Computation Results - Report window in [Figure 6-24](#) appears.

Figure 6-24 TE Primary Tunnel Computation Results - Placement Report Window

**TE Primary Tunnel Computation Results - Report**

<b>Computation Status:</b> SUCCESS-SOLUTION_FOUND		<b>Global Util.</b>		<b>Sub Pool Util.</b>	
<b>Tunnels - unplaced</b> 0 of 23 <b>moved:</b> 0		<b>Solution</b>	max. 41.11%	max.mod. 0.0%	max. 58.33%
<b>Bandwidth - unplaced</b> 0 of 28718		<b>Original</b>	max. 41.11%	max.mod. 0.0%	max. 58.33%

**Report:**

Showing 1 - 1 of 1 record

#	Report Type	Summary Info
1.	<input checked="" type="checkbox"/> qualityReport	

Rows per page: 10 Go to page: 1 of 1

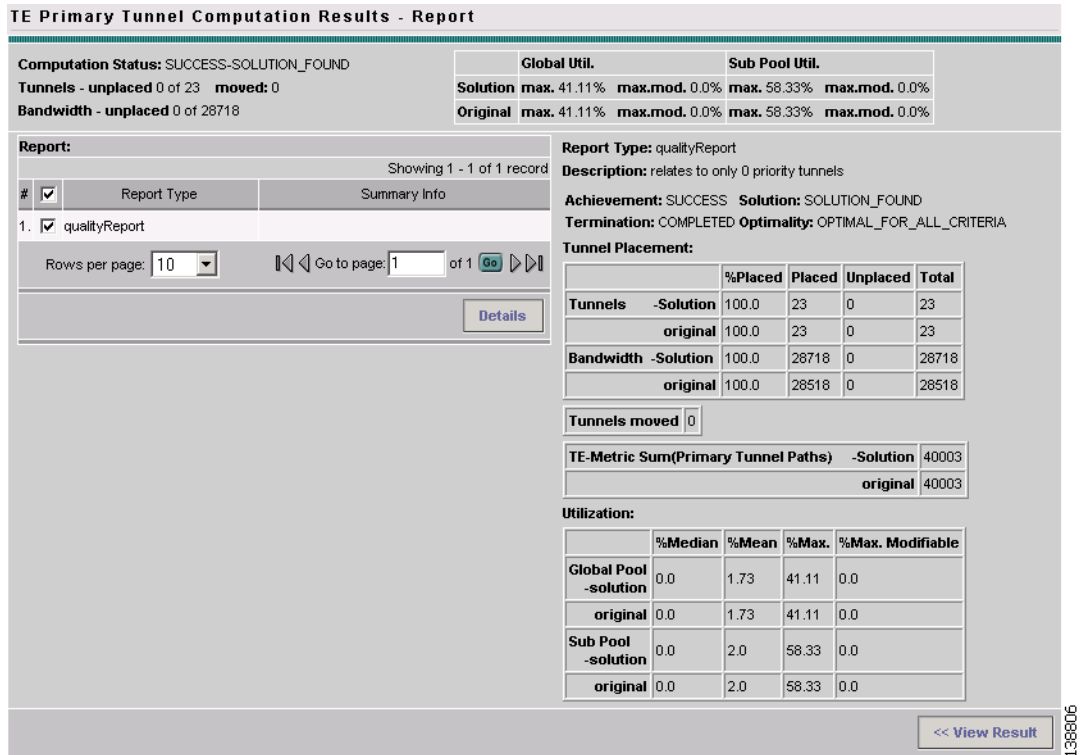
For an explanation of the various window elements, see [Planning Tools, page A-52](#).

A **qualityReport** is always generated. If the computation was successful, this will be the only report. If a warning or a violation was encountered, one or more warning or violation reports will be generated as well.

- Step 8** To view the contents of a placement report, select one of the reports and click the **Detail** button. In the case of a **qualityReport**, the TE Primary Tunnel Computation Results - Report (details) window in [Figure 6-25](#) appears in the report pane on the right.

For an example of a violation report, see [Figure 6-18](#).

Figure 6-25 TE Managed Primary Tunnels SR - Placement Report (Details)



For an explanation of the various window elements, see [Planning Tools, page A-52](#).

The qualityReport fields in the right window pane are described in [TE Primary Tunnel Computation Results - Report, page A-57](#).

- Step 9** Click << **View Result** to return to the Changes window and click **Save & Deploy** to save the change to the repository and implement the tunnel modifications on network.
- Step 10** The Service Requests window (**Service Inventory > Inventory and Connection Manager > Service Requests**) appears and displays the state of the deployed SR.

For more information on working with service requests, see [Appendix B, “Managing Service Requests.”](#)

## Tunnel Repair

As changes are made to the bandwidth requirements or delay parameters of existing tunnels, inconsistencies can arise with the Tunnel Placement. You can run a Tunnel Repair to address such inconsistencies. The objective of Tunnel Repair is to try to move as few existing tunnels as possible to accommodate the changes.

Tunnel Repair can also be invoked from the Resource Management window (see [Chapter 4, “TE Resource Management”](#)).

In the following, the case of an edited tunnel has been used:

- Step 1** Navigate **Service Inventory > Inventory and Connection Manager > Traffic Engineering Management > Create Managed TE Tunnel**.
- Step 2** Click **Create Managed TE Tunnel**. The TE Managed Primary Tunnels SR window appears as shown in [Figure 6-2](#).

Tunnel Repair can be used in two ways:

- When one or more tunnels have been created or their attributes altered (see [Create Primary Tunnel](#), page 6-2), Tunnel Repair can be activated by selecting **Proceed with Changes >> > Tunnel Repair**.
- When no changes have taken place, Tunnel Repair can be accessed by selecting **Placement Tools > Tunnel Repair**.

- Step 3** As an example, let us say that a new primary tunnel SR has been created. Run Tunnel Repair on the modified tunnels from the TE Managed Primary Tunnels SR window ([Figure 6-12](#)) by navigating **Proceed with Changes -> Tunnel Repair**

The Movable Tunnel Selection window shown in [Figure 6-26](#) appears.

**Figure 6-26 Movable Tunnel Selection - Repair**

#	<input type="checkbox"/> Movable	Allow Reroute	Tunnel ID	T#	Head	Dest	Policy	BW
1.	<input type="checkbox"/> NA	false	ISC-P1	2	isctmp11	isctmp10	ISC-P1-isctmp11:tunnel-te2	2
2.	<input type="checkbox"/> NA	false	ISC-P2	1000	isctmp11	isctmp1	ISC-P2-isctmp11:tunnel-te1000	200
3.	<input type="checkbox"/> NA	false	ISC-P122	1003	isctmp11	isctmp12	ISC-P122-isctmp11:tunnel-te1003	500000
4.	<input type="checkbox"/> NA	false	ISC-P123	1004	isctmp11	isctmp8	ISC-P122-isctmp11:tunnel-te1003	500
5.	<input type="checkbox"/> NA	false	ISC-P3	1	isctmp10	isctmp6	ISC-P2-isctmp11:tunnel-te1000	1000

For an explanation of the various window elements, see [Planning Tools](#), page A-52.

- Step 4** Set the tunnels that should be movable.

Tunnel Repair will only move existing tunnels if it has to. If you do not want certain tunnels to be moved during Tunnel Repair, these tunnels should be explicitly excluded from the selected list of movable tunnels.

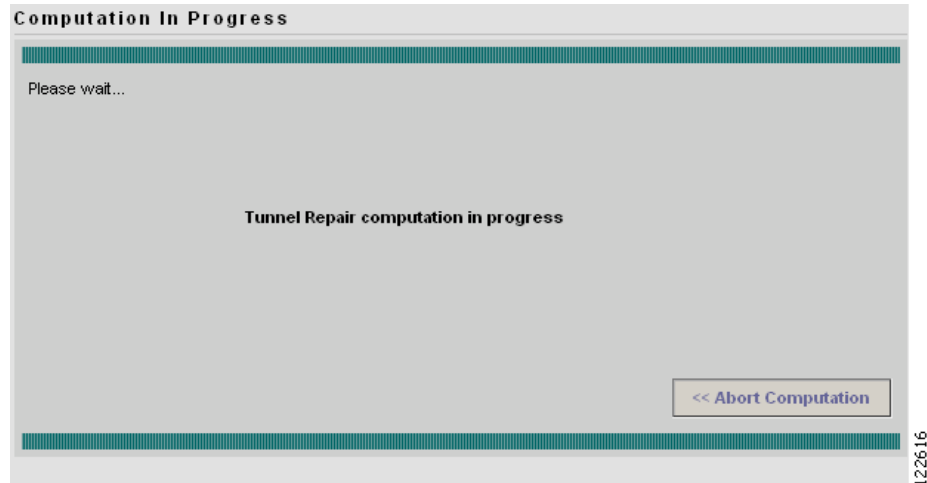
You can also specify a limit on the maximum number of tunnel moves that are acceptable using the **Maximum number of tunnel moves** field.



**Note** It is not necessary to set modified tunnels to be movable as these are movable by default.

**Step 5** Click **Proceed >>**. The Computation In Progress window shown in [Figure 6-27](#) appears.

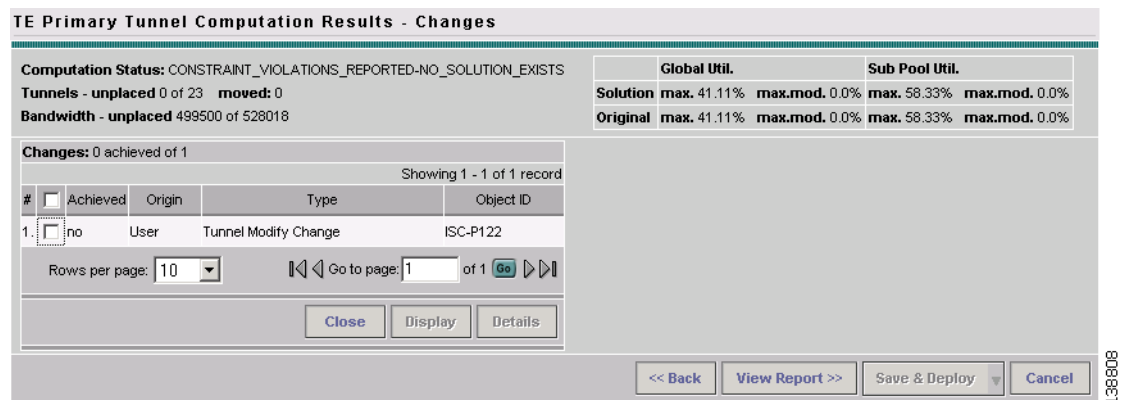
**Figure 6-27** Computation In Progress - Repair



To abort the computation and return to the previous window, click **<< Abort Computation**.

The TE Primary Tunnel Computation Results - Changes window shown in [Figure 6-28](#) appears.

**Figure 6-28** TE Primary Tunnel Computation Results - Repair Changes



For an explanation of the various window elements, see [Planning Tools](#), page A-52.



**Note** Certain attributes, such as Description, that do not impact the computation carried out by the placement tools and updates to these are not displayed in the Computation Result Window.

- Step 6** To obtain detailed information about the tunnel and whether the change request was achieved, select the specific tunnel and click **Detail**. The detail section in the right side of the window appears as shown in [Figure 6-29](#).

**Figure 6-29** TE Primary Tunnel Computation Results - Repair Changes (Details)

**TE Primary Tunnel Computation Results - Changes**

**Computation Status:** CONSTRAINT\_VIOLATIONS\_REPORTED-NO\_SOLUTION\_EXISTS  
**Tunnels -** unplaced 0 of 23 **moved:** 0  
**Bandwidth -** unplaced 499500 of 528018

**Global Util.**  
**Solution** max. 41.11% max.mod. 0.0% max. 58.33% max.mod. 0.0%  
**Original** max. 41.11% max.mod. 0.0% max. 58.33% max.mod. 0.0%

**Sub Pool Util.**  
**Solution** max. 41.11% max.mod. 0.0% max. 58.33% max.mod. 0.0%  
**Original** max. 41.11% max.mod. 0.0% max. 58.33% max.mod. 0.0%

**Changes:** 0 achieved of 1  
 Showing 1 - 1 of 1 record

#	Achieved	Origin	Type	Object ID
1.	<input checked="" type="checkbox"/> no	User	Tunnel Modify Change	ISC-P122

Rows per page: 10 Go to page: 1 of 1

**Change Type:** Tunnel Modify Change  
**Achieved:** no  
**Description:** Request to modify one or more attributes of an existing tunnel

**Requested Tunnel**  
**ID:** isctmp11:tunnel-te1003  
**Head:** isctmp11  
**Tail:** isctmp12  
**Policy:** ISC-P122-isctmp11:tunnel-te1003  
**Bandwidth:** 500000  
**Path:** isctmp11-isctmp12-1

Changed Attributes	New Value	Achieved
B/W	500000	no

<< Back View Report >> Save & Deploy Cancel

For an explanation of the various window elements, see [Planning Tools, page A-52](#).

- Step 7** To view a repair report, click **View Report >>**. The TE Primary Tunnel Computation Results - Report window in [Figure 6-30](#) appears.

**Figure 6-30** TE Primary Tunnel Computation Results - Repair Report

**TE Primary Tunnel Computation Results - Report**

**Computation Status:** CONSTRAINT\_VIOLATIONS\_REPORTED-NO\_SOLUTION\_EXISTS  
**Tunnels -** unplaced 0 of 23 **moved:** 0  
**Bandwidth -** unplaced 499500 of 528018

**Global Util.**  
**Solution** max. 41.11% max.mod. 0.0% max. 58.33% max.mod. 0.0%  
**Original** max. 41.11% max.mod. 0.0% max. 58.33% max.mod. 0.0%

**Sub Pool Util.**  
**Solution** max. 41.11% max.mod. 0.0% max. 58.33% max.mod. 0.0%  
**Original** max. 41.11% max.mod. 0.0% max. 58.33% max.mod. 0.0%

**Report:**  
 Showing 1 - 2 of 2 records

#	Report Type	Summary Info
1.	<input checked="" type="checkbox"/> qualityReport	
2.	<input type="checkbox"/> violationLinkPoolOversubscribed	isctmp11/POS0/2/0/0,GLOBAL_POOL

Rows per page: 10 Go to page: 1 of 1

**Details**

<< View Result

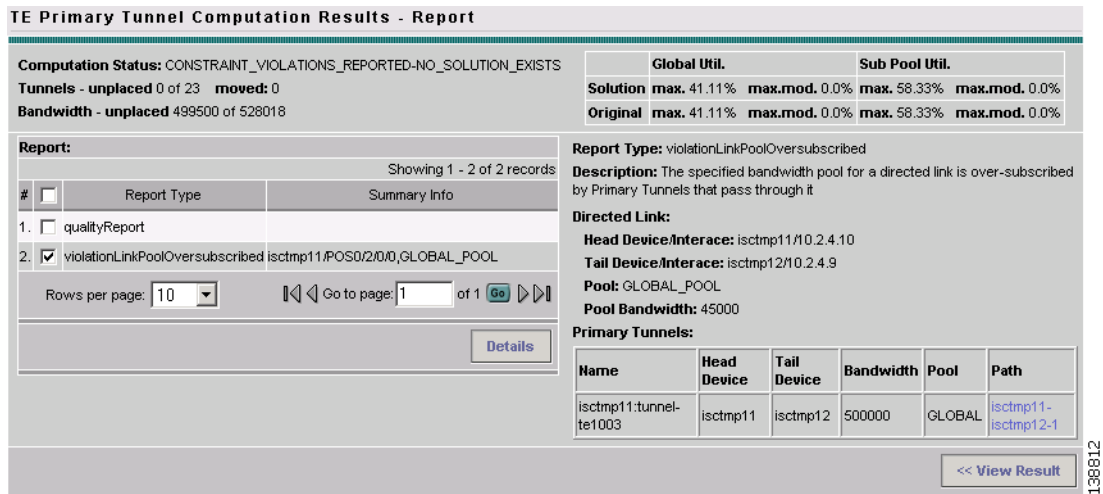
For an explanation of the various window elements, see [Planning Tools, page A-52](#).

A **qualityReport** is always generated. If the computation was successful, this will be the only report. If a warning or a violation was encountered, one or more warning or violation reports will also be generated.

- Step 8** To view the contents of the repair report, click the **Detail** button. In the case of a **qualityReport**, the TE Primary Tunnel Computation Results - Report (details) window in [Figure 6-31](#) appears.

For an example of a violation report, see [Figure 6-18](#).

**Figure 6-31** TE Managed Primary Tunnels SR - Repair Report (Details)



For an explanation of the various window elements, see [Planning Tools](#), page A-52.

The report fields in the right window pane are described for each report in [Appendix C, “Warnings and Violations.”](#)

- Step 9** Click << **View Result** to return to the Changes window and click **Save & Deploy** to save the change to the repository and implement the tunnel modifications on network.
- Step 10** The Service Requests window (**Service Inventory > Inventory and Connection Manager > Service Requests**) appears and displays the state of the deployed SR.

For more information on working with service requests, see [Appendix B, “Managing Service Requests.”](#)

## Grooming

The purpose of grooming is to analyze the tunnel pathing with respect to the network elements and optimize resource allocation.

Grooming is not available when change requests have been created. In that case, only the placement tools under **Proceed with Changes >>** will be available.

To perform grooming on the network, use the following steps:

- Step 1** Navigate **Service Inventory > Inventory and Connection Manager > Traffic Engineering Management > Create Managed TE Tunnel**.
- Step 2** Click **Create Managed TE Tunnel**. The TE Managed Primary Tunnels SR window appears as shown in [Figure 6-2](#).
- Step 3** Run Grooming by navigating

**Placement Tools -> Groom**

The Movable Tunnel Selection window shown in [Figure 6-32](#) appears.

Figure 6-32 Movable Tunnel Selection

**Movable Tunnel Selection**

Computation Type: Grooming

Maximum computation duration (Timeout in sec) \*: 100

Number of reroutable tunnels selected as movable: 0 of 0    Non-reroutable tunnels 23

Show Tunnels with: All matching \* Find

Showing 1 - 5 of 23 records

#	<input type="checkbox"/> Movable	Allow Reroute	Tunnel ID	T#	Head	Dest	Policy	BW
1.	<input type="checkbox"/> NA	false	ISC-P1	2	isctmp11	isctmp10	ISC-P1-isctmp11:tunnel-te2	2
2.	<input type="checkbox"/> NA	false	ISC-P2	1000	isctmp11	isctmp1	ISC-P2-isctmp11:tunnel-te1000	200
3.	<input type="checkbox"/> NA	false	ISC-P122	1003	isctmp11	isctmp12	ISC-P122-isctmp11:tunnel-te1003	500
4.	<input type="checkbox"/> NA	false	ISC-P123	1004	isctmp11	isctmp8	ISC-P122-isctmp11:tunnel-te1003	500
5.	<input type="checkbox"/> NA	false	ISC-P3	1	isctmp10	isctmp6	ISC-P2-isctmp11:tunnel-te1000	1000

Rows per page: 5    Go to page: 1 of 5 Go

Set Movable    Set Unmovable

<< Back    Proceed >>    Cancel

Note: \* - Required Field

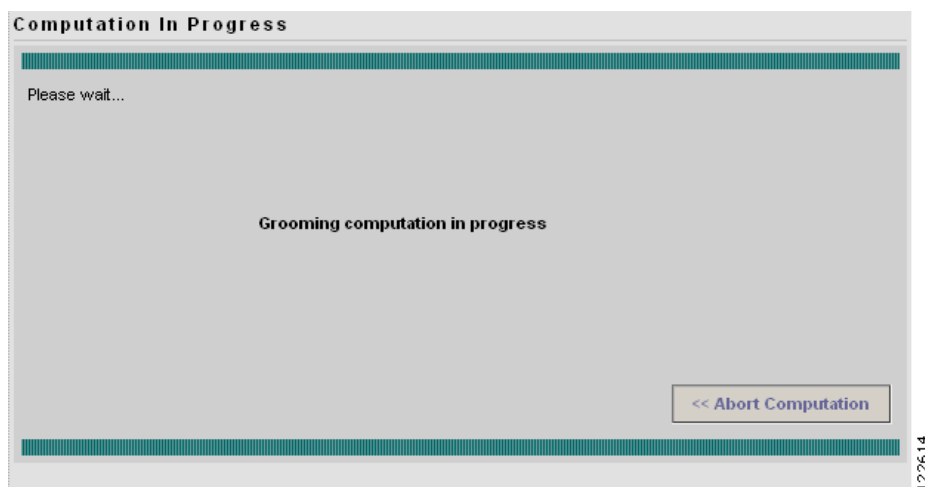
138813

For an explanation of the various window elements, see [Planning Tools, page A-52](#).

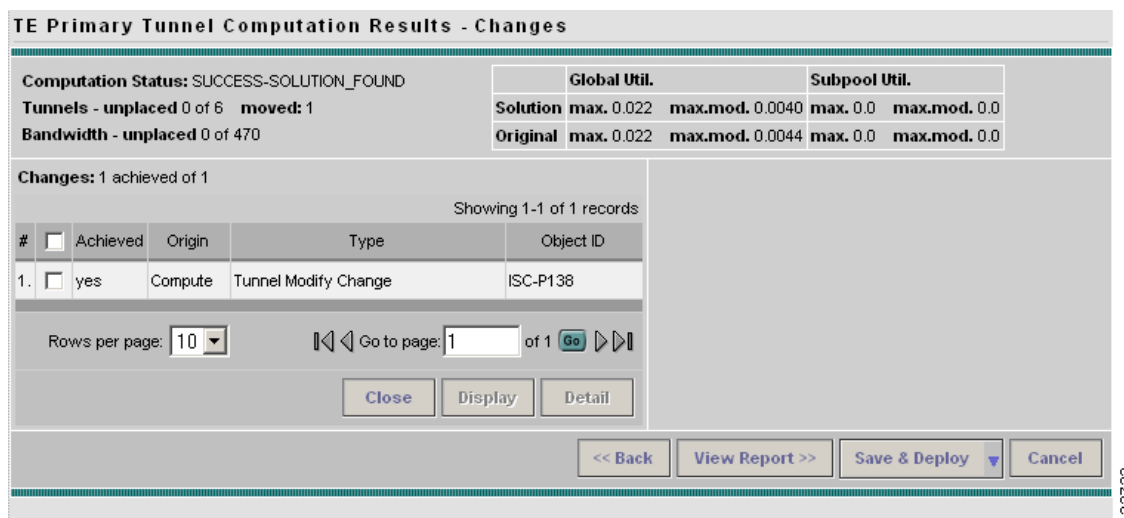
**Step 4** Set the tunnels that should be movable.

As with Tunnel Repair, Grooming will only move existing tunnels if it has to. If you do not want certain tunnels to be moved during the Grooming process, these tunnels should be explicitly excluded from the selected list of movable tunnels.

**Step 5** Click **Proceed >>**. The Computation In Progress window shown in [Figure 6-33](#) appears.

**Figure 6-33** Computation In Progress - Grooming

To abort the computation and return to the previous window, click << **Abort Computation**. The TE Primary Tunnel Computation Results - Changes window shown in [Figure 6-34](#) appears.

**Figure 6-34** TE Primary Tunnel Computation Results - Grooming Changes

For an explanation of the various window elements, see [Planning Tools](#), page A-52.

**Note**

Certain attributes, such as Description, that do not impact the computation carried out by the placement tools and updates to these are not displayed in the Computation Result Window.

- Step 6** To obtain detailed information about the Grooming and whether it succeeded, select the specific tunnel and click **Detail**. The detail section in the right side of the window appears as shown in [Figure 6-35](#).

Figure 6-35 TE Primary Tunnel Computation Results - Grooming Changes (Details)

**TE Primary Tunnel Computation Results - Changes**

Computation Status: SUCCESS-SOLUTION\_FOUND  
Tunnels - unplaced 0 of 6 moved: 1  
Bandwidth - unplaced 0 of 470

		Global Util.		Subpool Util.	
Solution	max. 0.022	max.mod. 0.0040	max. 0.0	max.mod. 0.0	
Original	max. 0.022	max.mod. 0.0044	max. 0.0	max.mod. 0.0	

Changes: 1 achieved of 1  
Showing 1-1 of 1 records

#	✓	Achieved	Origin	Type	Object ID
1.	✓	yes	Compute	Tunnel Modify Change	ISC-P138

Rows per page: 10 Go to page: 1 of 1

Change Type: Tunnel Modify Change  
Achieved: yes  
Description: Request to modify one or more attributes of an existing tunnel

Requested Tunnel  
ID: isctmp6:Tunnel2  
Head: isctmp6  
Tail: isctmp7  
Policy: ISC-P2-isctmp2:Tunnel44  
Bandwidth: 100  
Path: Computed Path

Changed Attributes	New Value	Achieved
TE_EXPLICIT_PATH_ID	Computed Path	yes

Close Display Detail

<< Back View Report >> Save & Deploy Cancel

For an explanation of the various window elements, see [Planning Tools, page A-52](#).

- Step 7** To view a Grooming report, click **View Report >>**. The TE Primary Tunnel Computation Results - Report window in [Figure 6-30](#) appears.

Figure 6-36 TE Primary Tunnel Computation Results - Grooming Report

**TE Primary Tunnel Computation Results - Report**

Computation Status: SUCCESS-SOLUTION\_FOUND  
Tunnels - unplaced 0 of 6 moved: 1  
Bandwidth - unplaced 0 of 470

		Global Util.		Subpool Util.	
Solution	max. 0.022	max.mod. 0.0040	max. 0.0	max.mod. 0.0	
Original	max. 0.022	max.mod. 0.0044	max. 0.0	max.mod. 0.0	

Report:  
Showing 1-1 of 1 records

#	Report Type	Summary Info
1.	qualityReport	

Rows per page: 10 Go to page: 1 of 1

Detail

<< View Result

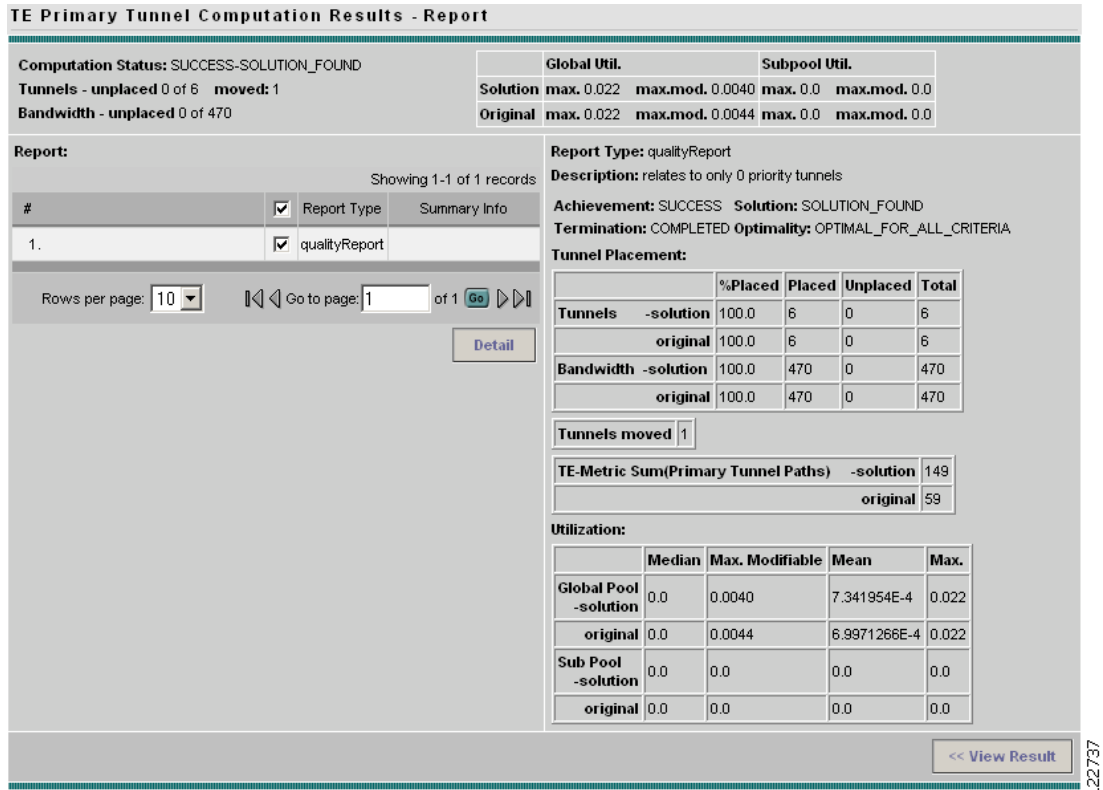
For an explanation of the various window elements, see [Planning Tools, page A-52](#).

A **qualityReport** is always generated. If the computation was successful, this will be the only report. If a warning or a violation was encountered, one or more warning or violation reports will also be generated.

- Step 8** To view the contents of the Grooming report, click the **Detail** button. In the case of a **qualityReport**, the TE Primary Tunnel Computation Results - Report (details) window in [Figure 6-37](#) appears.

For an example of a violation report, see [Figure 6-18](#).

Figure 6-37 TE Managed Primary Tunnels SR - Grooming Report (Details)



For an explanation of the various window elements, see [Planning Tools](#), page A-52.

The report fields in the right window pane are described for each report in [Appendix C, “Warnings and Violations.”](#)

**Step 9** Click << **View Result** to return to the Changes window and click **Save & Deploy** to save the change to the repository and implement the tunnel modifications on the network.

**Step 10** The Service Requests window (**Service Inventory > Inventory and Connection Manager > Service Requests**) appears and displays the state of the deployed SR.

For more information on working with service requests, see [Appendix B, “Managing Service Requests.”](#)