

Service Managed Gateway™

How to Configure an E1/T1 Connection



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1 About this document

This document describes how to configure the Service Managed Gateway(SMG) settings for a E1/T1 connection.

1.1 Scope

This document explains how to:

- Configure an SMG for a E1/T1 connection using PPP
- Configure an SMG for a E1/T1 connection using Frame Relay

1.2 Readership

This document is for engineers who have previous experience configuring and managing networks.

1.3 More information

For more information about managing the SMG, read the Service Managed Gateway documentation. The current documentation is available online at <http://virtualaccess.com/smgdocs/>

1.4 Terminology

SLA	Service Level Agreement
SMG	Service Managed Gateway
VRID	Virtual Router Identifier
VRRP	Virtual Router Redundancy Protocol

2 Introduction

2.1 What is E1/T1 technology?

E1 and T1 technologies were originally designed to support high-speed transfer of digitised voice data over telephone networks. T1 is used in North America, while E1 is used in Europe and other countries. Both technologies are supported by the E1/T1 gateway.

While designed for digitised voice, T1 and E1 are also used for transfer of general digital data. T1 and E1 technologies provide an always-on connection. The maximum speed in T1 is 1.544 Mbps, while the maximum speed for E1 is 2.048 Mbps. Unlike ADSL, T1 and E1 are symmetrical, so the speed of the line is the same in both directions.

3 Point-to-Point Protocol (PPP) connections

3.1 What is PPP?

The Point-to-Point Protocol (PPP) is a defined industry standard that is used widely to allow two devices to communicate across a logical link. PPP is extensively deployed by service providers as a means of connecting customers to Internet Protocol (IP)-based services such as the Internet.

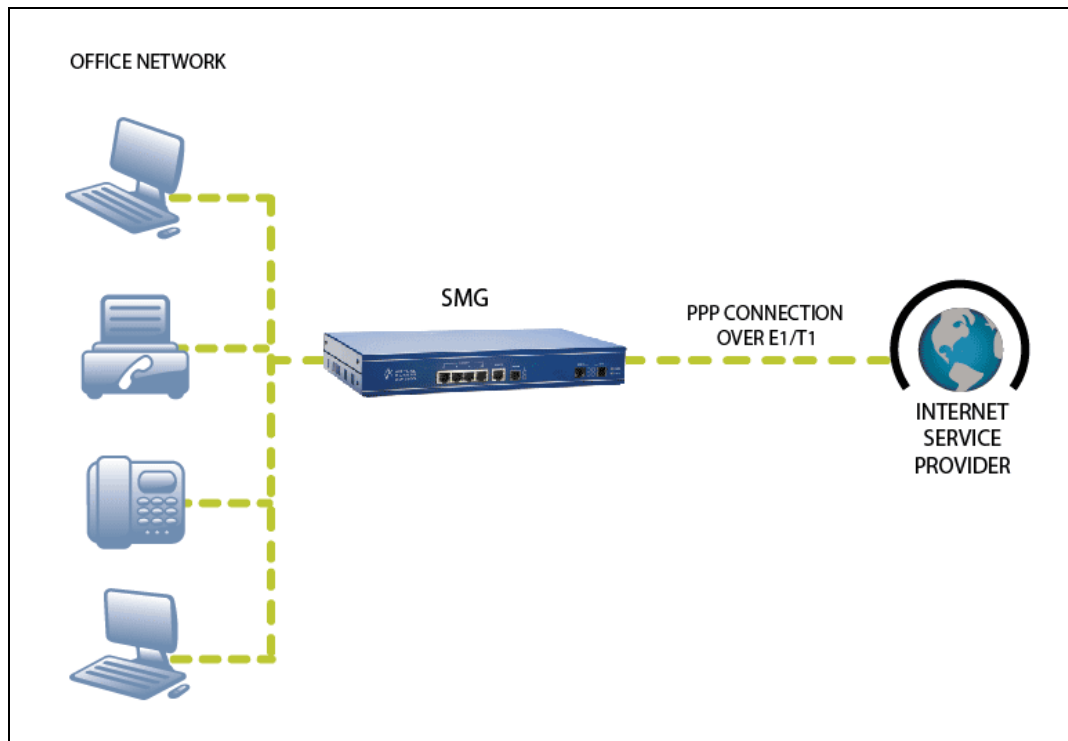


Figure 1: A PPP connection to the internet over an E1 or T1 leased line

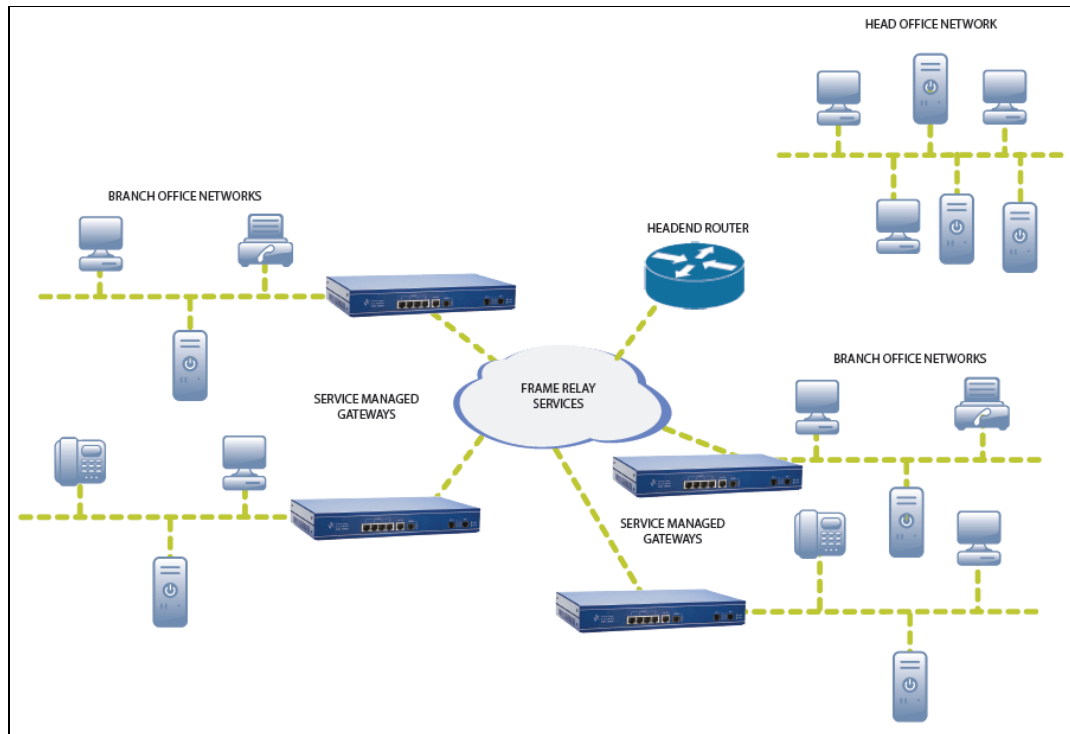


Figure 2: PPP connections to branch offices over T1 or E1 leased lines

3.2 Configuring a leased line connection over PPP

3.2.1 Configuring the SMG

The Service Managed Gateway (SMG) contains an internal web server that is used to configure the gateway. Before you can access the internal web server and start the SMG configuration, you must ensure that your PC has the correct networking set up.

When your SMG is correctly connected to your PC, type `fast.start` into the URL line of your browser to display the Start page.



Figure 3: The SMG start page

The SMG Start page appears. Click **Fast.Start** to open the Fast Start Wizard.

The Fast.Start Wizard guides you through a series of forms that you must complete to configure your SMG.

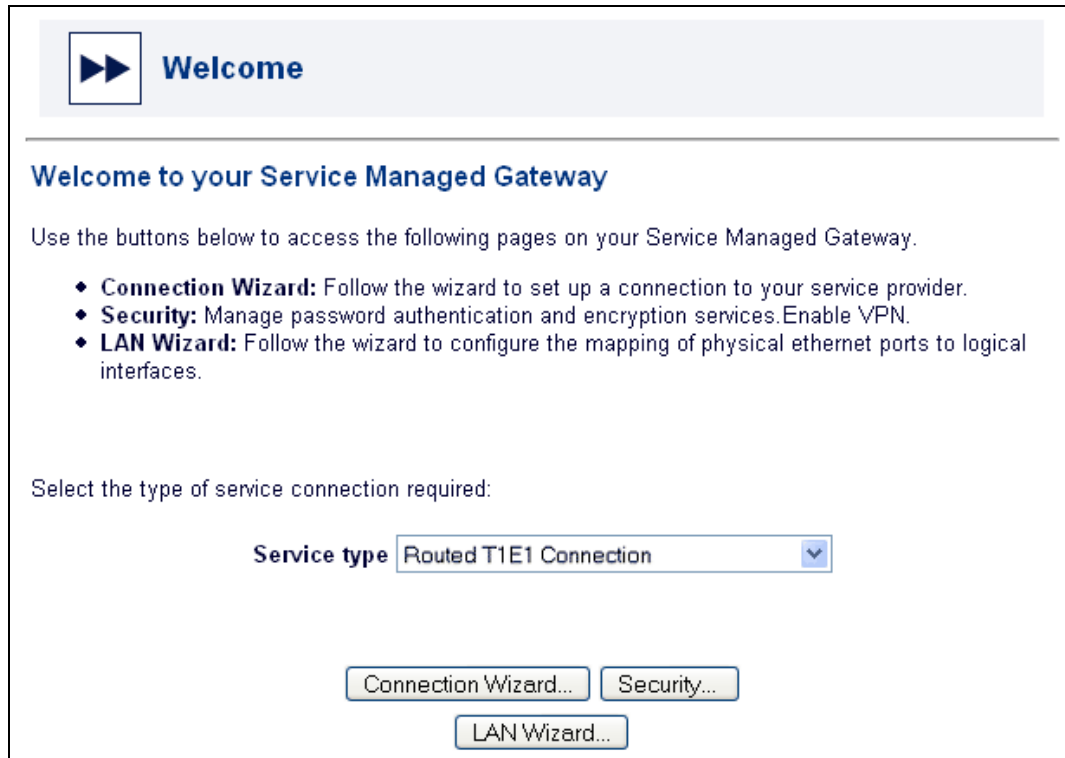


Figure 4: The welcome page

Click **Connection Wizard** to open the Connections page.

3.2.2 Generate an E1 or T1 connection that uses PPP

On the Connections page, click **Add a T1E1 PPP connection**. If it does not show 'Add a T1E1 connection', click **PPP Configuration**, which is the blue link in the first paragraph.

When the correct Connections page appears, click **Add a T1E1 PPP connection**, which is shown in Figure 5.

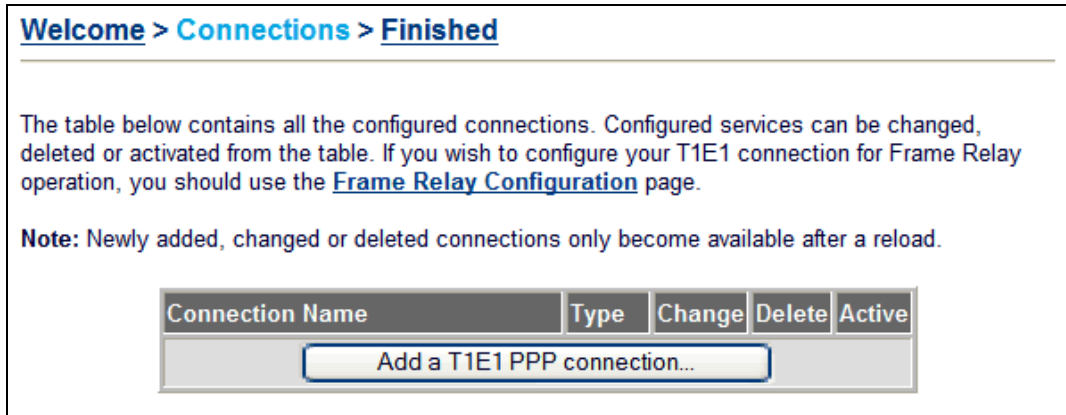


Figure 5: The connections page

The message 'Creating new T1E1 PPP connection' pops up for a moment. Then the Access the Internet via a T1E1 connection page appears.

3.2.3 Specify connection parameters

Access the Internet via a T1E1 connection

Please enter the details for your T1E1 PPP connection below. Your service provider can supply you with this information. Not all providers require a username and password for T1E1 service. In this case, you can simply leave the fields empty.

Connection name

Connection username

Connection password

Re-enter connection password

PCM Mode

Frame Format

Line Code Speed Kbps

Use **Advanced Network Options** if you need to configure any options not listed above.

Figure 6: Enter information about your internet connection on this page

Field Name	Explanation	CLI command
Connection name	Specify a descriptive name in this field. This name identifies the connection for maintenance functions such as connecting, disconnecting, and viewing connection statistics.	No command.
Connection username	Type the username your service provider gave you.	No command.
Connection password	Type the password your service provider gave you. For security, an asterisk (*) appears each time you type a character. To verify that you typed the password correctly, retype it in the Re-enter connection password field.	No command.
PCM Mode	From the drop-down list, select the type of line you use. Select E1 mode for an E1 line, and T1 mode for a T1 line.	Set T1e1 Interface PCM Mode
Frame Format	Frame format is the data framing format that is used on the line. Your E1/T1 service provider will tell you which frame format to select.	Set T1e1 Interface Frame Format

Line Code	From the drop-down list, select the line code that is used for encoding data. Your E1/T1 service provider will tell you which code to select.	Set T1e1 Interface Line Code
Speed	From the drop-down list, select the effective speed of your line. Your E1/T1 service provider will tell you which speed to select. You do not have to select a speed if the frame format is Transparent.	Set T1e1 Interface Speed

3.2.4 Configure advanced network options

You do not have to configure advanced options to activate your SMG. You can skip this section if you are not familiar with advanced network options or your service provider has not given you advanced option settings.

Click **Advanced Network Options**. The Advanced T1E1 Network Options window appears.

Figure 7: The advanced network options for a T1 or E1 connection

In the IP address obtained automatically window, select **yes** from the drop-down list to obtain the IP address automatically.

If you do not want to obtain the IP address automatically, select **no** from the drop-down list. Then click **Details** to open the IP Addressing window. The IP Addressing window appears.

Figure 8: The IP addressing window

Your service provider gives you the addresses to type in the three fields in the IP Addressing window.

If your service provider does not give you any addresses, use the addresses that are in the window when it opens.

Click **OK** to close the IP Addressing window.

3.2.4.1 Automatically obtain a DNS address

You do not have to configure DNS addressing. If you are not familiar with DNS addressing or if your service provider has not given you DNS addresses, you can skip this section.

The Domain Name System (DNS) associates host names with IP addresses. The DNS server is responsible for tracking these associations. Usually the DNS address is obtained automatically. If it is not obtained automatically, select **no** from the DNS address obtained automatically drop-down list in the Advanced T1E1 Network Options window, which is shown in Figure 9. Then click **Details** to display the **DNS Addressing** window.

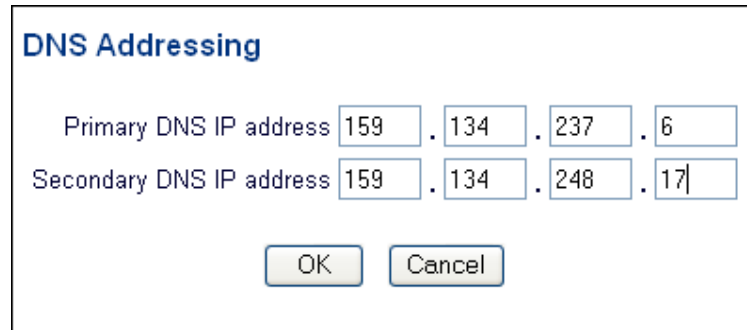


Figure 9: The DNS addressing window

Type the IP address of the primary DNS server in the **Primary DNS IP Address** field. If there is a secondary DNS server, type its address in the **Secondary DNS IP Address** field.

Click **OK** to close the DNS Addressing window.

3.2.5 Enable IP address translation

IP address translation (IPAT) can hide the devices on the local LAN. It substitutes the IP address of the originating device with the IP address of the gateway. If you need to disable IP address translation for the leased line connection, select **no** from the IP address translation enabled drop-down list in the Advanced T1E1 Network Options window, which is shown in Figure 7.

Click **OK** to close the Advanced T1E1 Network Options window.

3.2.6 Save your configuration

After you configure a T1 or E1 PPP connection, it is listed in the table displayed on the Connections page.

[Welcome](#) > [Connections](#) > [Finished](#)

The table below contains all the configured connections. Configured services can be changed, deleted or activated from the table. If you wish to configure your T1E1 connection for Frame Relay operation, you should use the [Frame Relay Configuration](#) page.

Note: Newly added, changed or deleted connections only become available after a reload.

Connection Name	Type	Change	Delete	Active
T1 test	T1E1	Change	Delete	<input type="radio"/>
T1 connection	T1E1	Change	Delete	<input checked="" type="radio"/>

[Add a T1E1 PPP connection...](#)

Figure 10: The connection table on the connections page

Your SMG needs to reload before the newly-configured connections become available. Read section [4.2.4 'Save your configuration'](#) for instructions on how to enable your new configuration.

4 Frame relay connections

4.1 What is frame relay transmission?

Frame relay is a telecommunications access interface. Each node, or end-point, connects to a Frame Relay network, avoiding the need for leased-line connections between individual devices. For this reason, Wide Area Networks (WANs) and Local Area Networks (LANs) often use frame relay transmission for sending data.

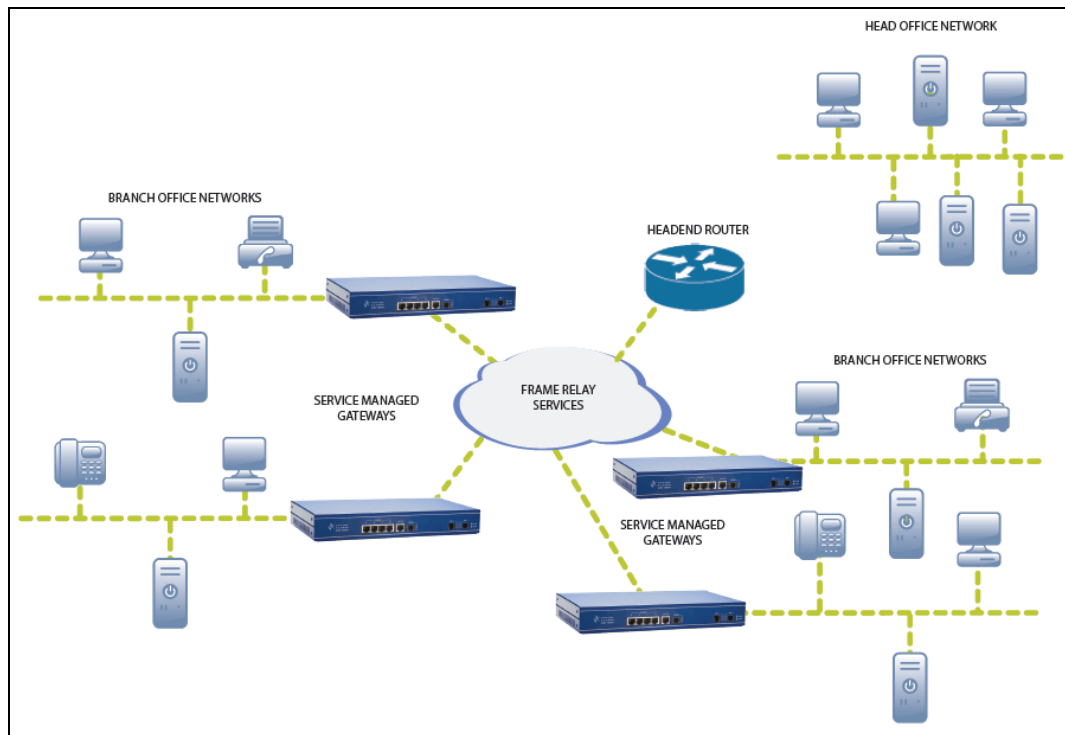


Figure 11: Frame relay connections to branch offices over T1 or E1 leased lines

Frame relay is a packet-switching protocol. It transmits data serially in individually addressed portions, which are called frames, and the pieces are recompiled at their destination. Frames can take different routes across the network depending on resource availability.

4.2 Configuring a T1 or E1 connection that uses frame relay

4.2.1 Open the fast start wizard

The Service Managed Gateway contains an internal web server that is used to configure the SMG. Before you can access the internal web server and start the SMG configuration, you must ensure that your PC has the correct networking set up.

To enable and configure connections on your SMG, the gateway must be correctly installed, and a valid service must be configured on it.

When your Service Managed Gateway is correctly connected to your PC, type `fast.start` into the URL line of your browser to display the Start page.



Figure 12: The SMG start page

The SMG Start page appears. Click **Fast.Start** to open the Fast.Start wizard.

The Wizard guides you through a series of forms that you must complete to configure your SMG.

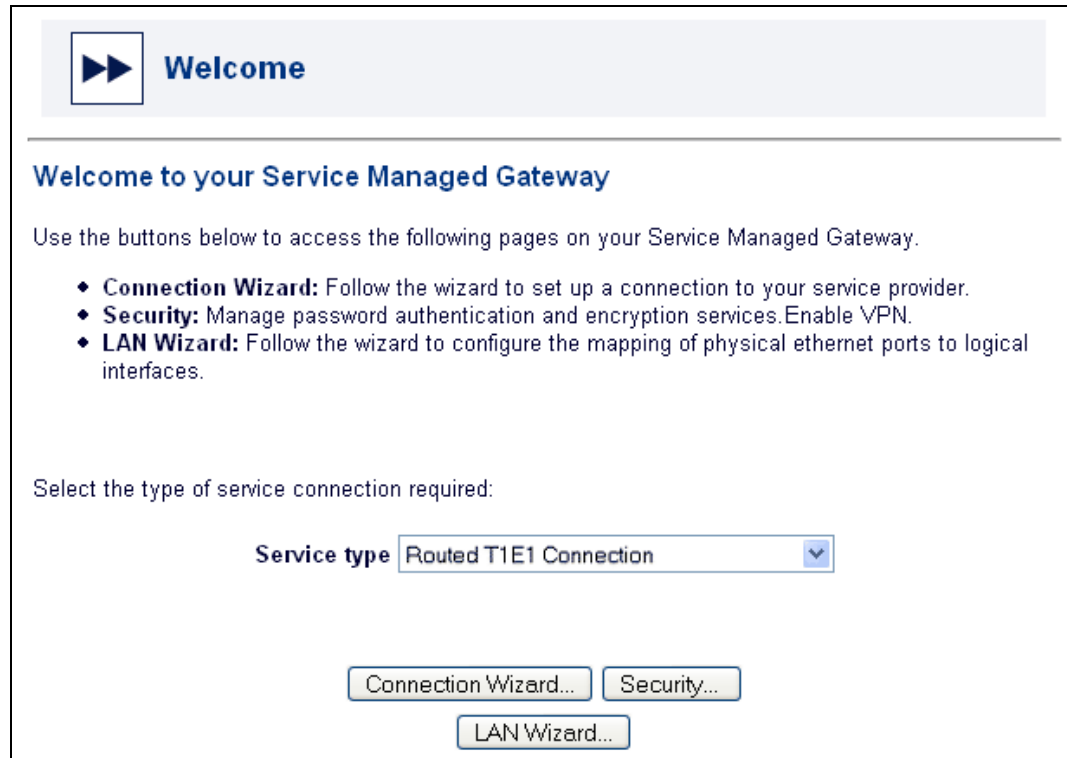


Figure 13: The Welcome page

Select **Routed T1E1 Connection** from the Service type drop-down list.

4.2.2 Generate a T1 or E1 connection that uses frame relay

The Connections page enables you to add a leased line connection that uses a frame relay connection to your gateway.

Make sure that the page displays the button **Add a T1E1 frame relay PVC**, which is shown in Figure 22. If it does not, click **Frame Relay Configuration**, which is shown in blue in the first paragraph on the page.

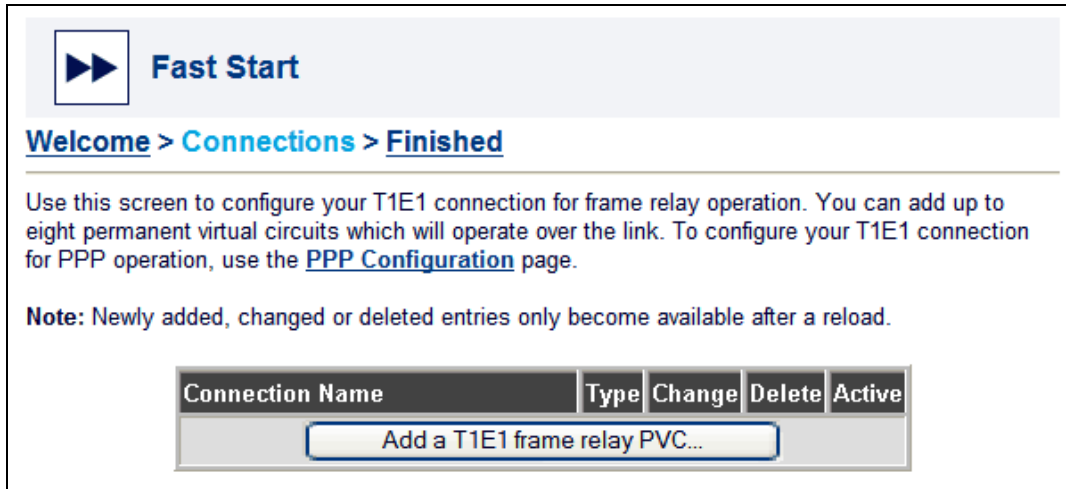


Figure 14: The Connections page

If the button is labelled **Add a T1E1 PPP connection**, the wrong connection page is displayed. You must click the text **Frame Relay Configuration**, which is shown in blue in the first paragraph on the page.

Click **Add a leased line Frame Relay PVC**.

The message 'Creating new leased line Frame Relay connection' appears. Then the Access a Remote Network using Frame Relay over Leased Line page appears.

4.2.3 Specify connection parameters

Access a remote network using frame relay over T1E1

Please enter the details for this permanent virtual circuit over your T1E1 frame relay connection. Your service provider can supply you with this information.

Connection name (e.g. My ISP)

Data Link Connection Identifier

Assign an IP address to this link?

PCM Mode

Frame Format

Line Code

Speed Kbps

Use **Advanced** if you need to configure any options not listed above.

Figure 15: Enter information about your frame relay connection on this page

Field name	Description
Connection name	Specify a descriptive name for your connection in this field. This name is used to identify the connection for maintenance functions such as connecting, disconnecting, and viewing connection statistics.
Data Link Connection Identifier	Enter the Data Link Connection Identifier (DLCI) number assigned to the virtual circuit in this field. Your service provider gives you this information.
Assign an IP address to this link	In some applications it may be necessary to assign a local and remote IP address to the connection. If IP addressing is required, select yes . Then click Details to display the Frame Relay IP Addressing window. Figure 16 shows the Frame Relay IP Addressing window.

PCM mode	From the drop-down list, select the type of line you use. Select E1 mode for an E1 line, and T1 mode for a T1 line.
Frame Format	Frame format is the data framing format that is used on the line. Your E1/T1 service provider will tell you which frame format to select.
Line Code	From the drop-down list, select the line code that is used for encoding data. Your E1/T1 service provider will tell you which code to select.
Speed	From the drop-down list, select the effective speed of your line. Your E1/T1 service provider will tell you which speed to select. You do not have to select a speed if the frame format is Transparent.

Frame Relay IP Addressing

Local IP address . . .

Remote IP address . . .

IP address mask . . .

IP address translation enabled ▼

Figure 16: The Frame Relay IP Addressing window

Field name	Description
Local IP address	Enter the IP address assigned to the SMG's end of the connection in this field
Remote IP address	Enter the IP address assigned to the remote end of the connection in this field.
IP address mask	Enter the IP subnetwork mask in this field.
IP address translation enabled	IP address translation can be used to hide the devices on the local LAN by substituting the IP address of the originating device with the IP address of the router. To enable IP address translation, select yes from the drop-down list. Select no if you do not want to enable IP address translation. Click OK to close the IP Addressing window.

Click **OK** to see the new or modified configuration listed on the Connections page.

However, if you need to configure additional network parameters, refer to section [4.2.3.1, Configure advanced network options](#).

4.2.3.1 Configure advanced network options

You do not have to configure advanced options to activate your SMG. You can skip this section if you are not familiar with advance network options or if your service provider has not given you advanced option settings.

The advanced options for frame relay let you configure a remote DNS server. If you need to configure a remote DNS server, click **Advanced** in the Access a remote network using frame relay over T1E1 page. The Advanced Options page appears.

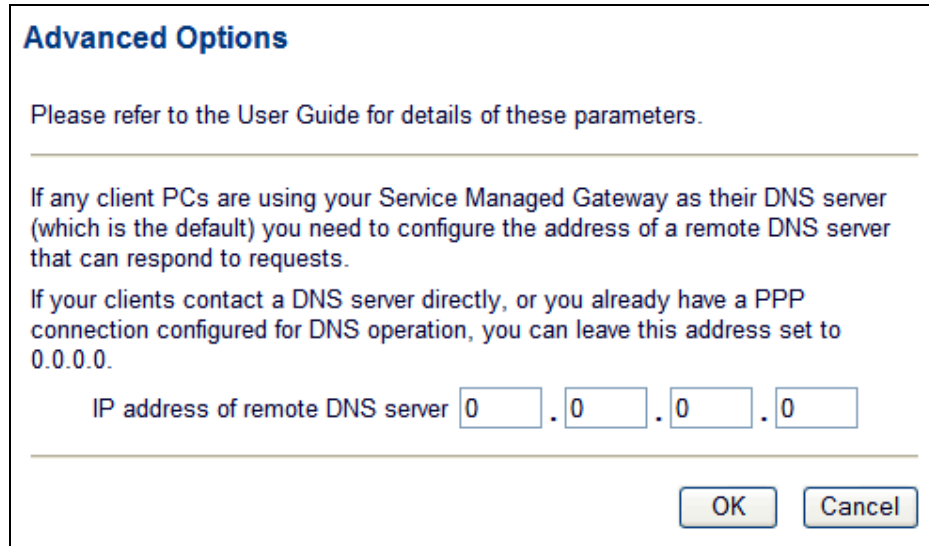


Figure 17: The Advanced Options window for a frame relay connection

Type the address of the remote DNS server in the IP address of remote DNS server field.

Click **OK** to close the Advanced Options window.

Click **OK** on the Access a remote network using frame relay over T1E1 page. The Connections page appears, and the new connection is included in the connections table.

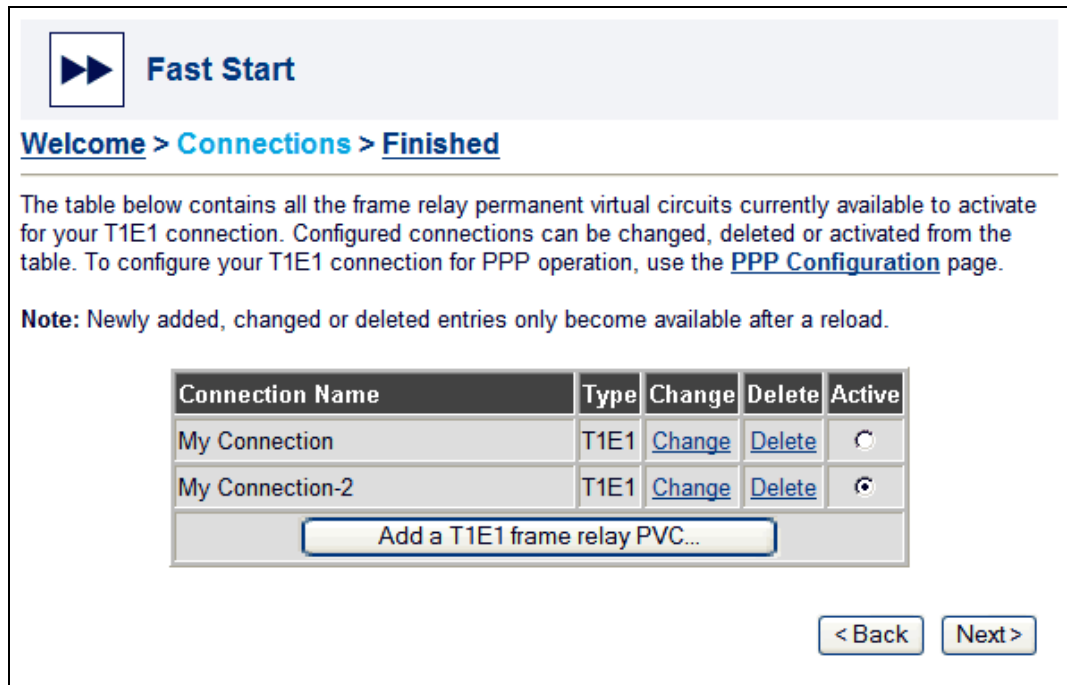


Figure 18: A new connection in the frame relay connections page

4.2.4 Save your configuration

You must reload your SMG before you can use the new connection. Click **Next**. The first Finished page appears.

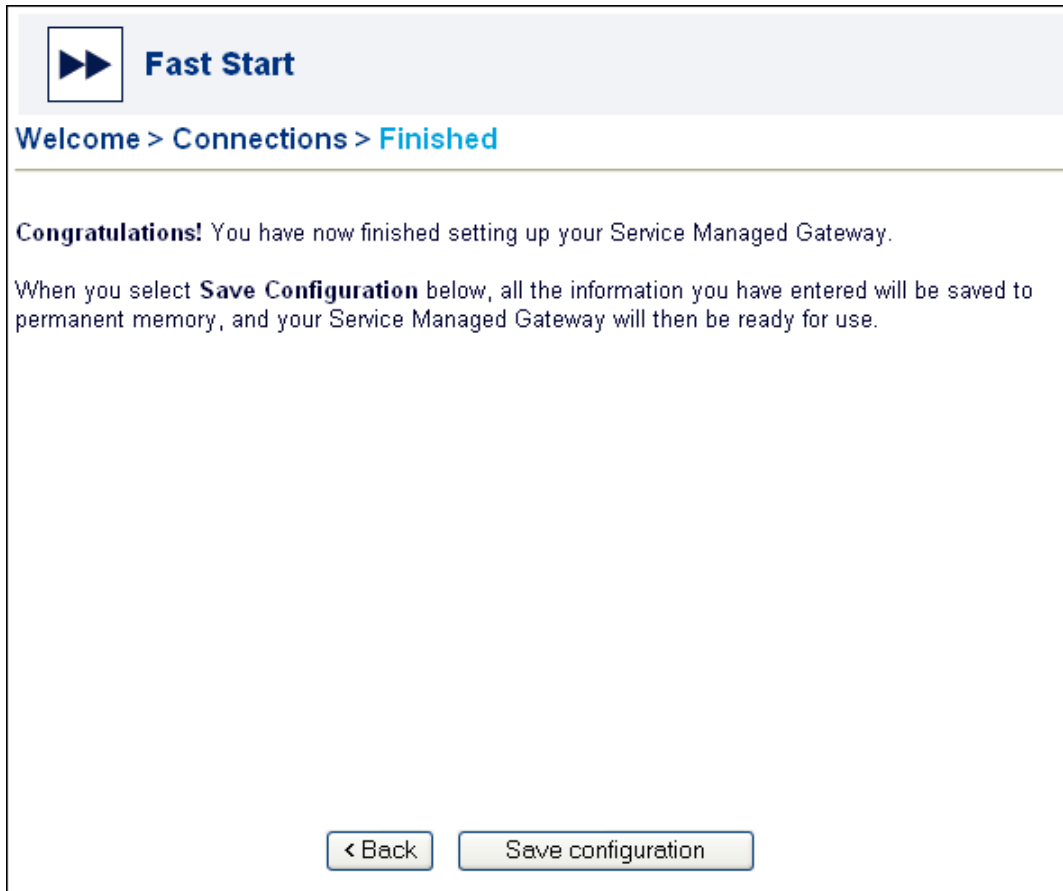


Figure 19: The first finished page for a frame relay connection

Click **Save Configuration** to keep the new configuration in your SMG's permanent memory. When the SMG reloads, it displays a page where you can test the connection and register your SMG.

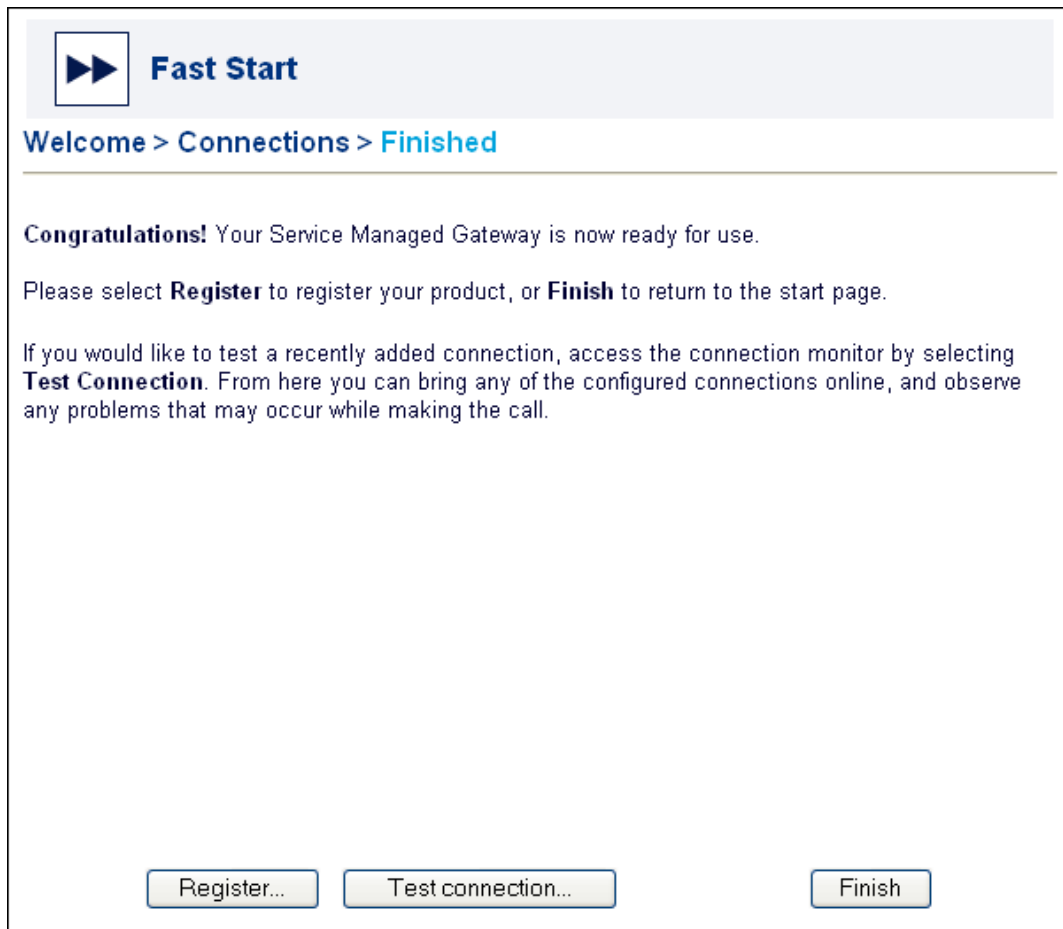


Figure 20: The second finished page for a frame relay connection

To register your product, click **Register**. A registration form appears. Fill in the form, print it, and fax it to the fax number on the form.

Before you click **Finish**, you can test your connection to ensure that it is configured correctly. Click **Test Connection** on the Finished page to open the Connection Monitor.

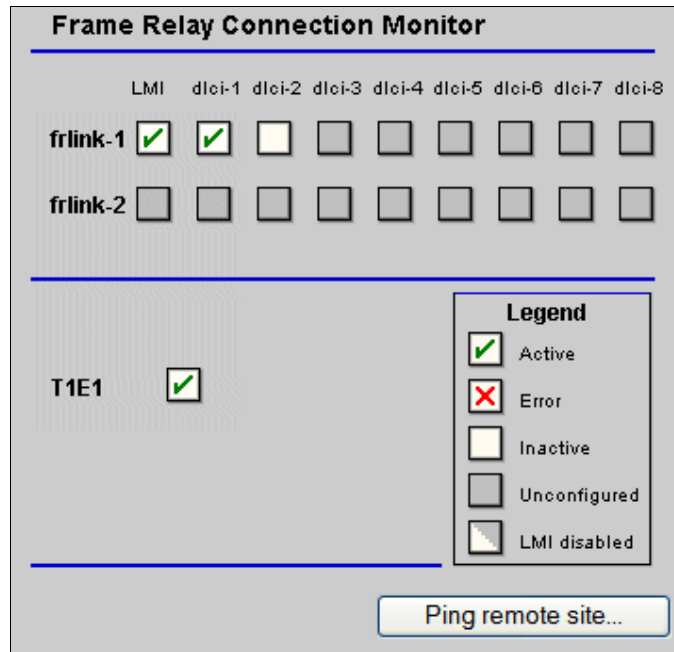


Figure 21: The frame relay connection monitor

For more information about the Connection Monitor, read the Service Managed Gateway documentation. The current documentation is available online at <http://virtualaccess.com/smgdocs/>

On the Finished page, click **Finish**. You return to the SMG start page. From the start page you can access the Advanced and Status menus to further configure, view, and monitor your SMG.

5 Diagnostics

The Service Managed Gateway supports extensive remote diagnostics, status and SLA monitoring capabilities.

The status and diagnostics tools are provided as a series of Java applets.

5.1 The trace analyzer

The Trace Analyzer provides a web interface to event tracing allowing you to quickly locate and analyze problems.

To view the Trace Analyzer, from the SMG start page, click **Advanced**.

In the **Advanced** menu, click **Diagnostics**.

On the Diagnostics page, click **Trace Analyzer**. The Trace Analyzer pop-up window appears.

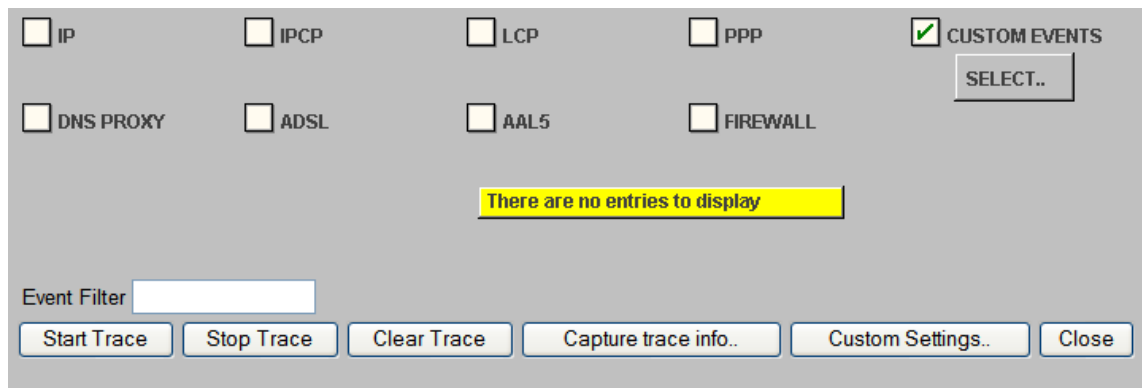


Figure 41: Trace analyzer dialog

To view the T1E1 traces check **Custom Events** and then click **Select**. The Select Events to Trace pop-up window appears.

In the Events Available window, scroll to the bottom of the list and select **T1E1**. T1E1 appears in the Selected Events window. Click **ADD**.

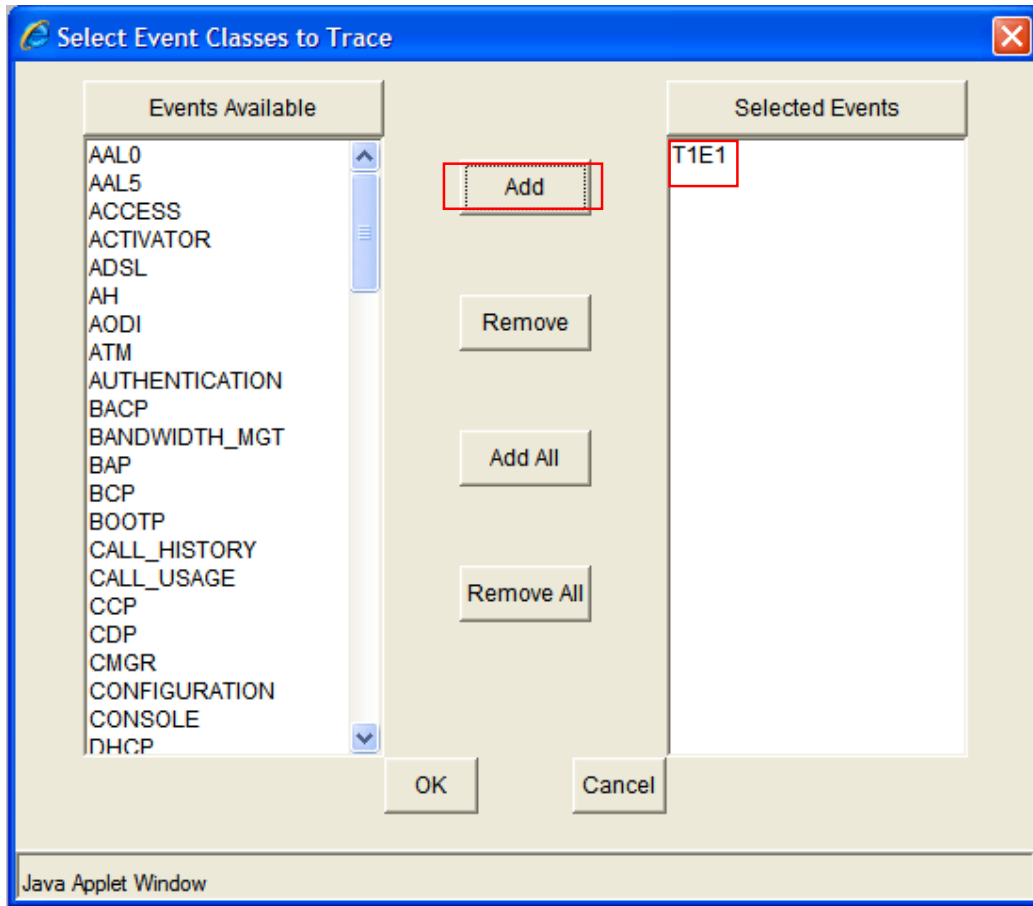


Figure 42: The select event classes to trace pop-up window

When you have added the events, click **OK**, the Trace Analyzer will capture T1E1 events. In the Trace Analyzer window, click **Start Trace**.

5.2 Tracing using the command line

For information on logging on to the command line interface, read the quick guide 'Using the CLI to Manage an SMG'

Tracing via the command line is more flexible than using the trace analyser as you can specify the event severity and use the all class event to trace all event classes.

Command line tracing also allows you to trace to a log file for examining events over a protracted period of time.

If you enter no event severity, all event severities are displayed.

If you chose an event severity, all events of the chosen severity and greater are displayed.

5.2.1 Command line syntax

To stop tracing, entering - (minus) followed by the event class will stop tracing for this event class. Entering - (minus) on its own will stop all tracing.

Syntax	Description
++t1e1	Starts tracing T1E1 events

-t1e1	Stops T1E1 tracing
--------------	--------------------