

SIEMENS Business Class

5881 Broadband Internet Router User's Guide

The Siemens logo, consisting of the word "SIEMENS" in a bold, teal-colored, sans-serif font.

Part No. 107-5883-001

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Front Panel

The following table explains the LEDs that appear on the Front Panel of the Siemens 5881 router.

Light	Color	Indications
PWR	Green (steady) Off Yellow (steady) Yellow (blinking) Green: (2 sec. blink)	Power is ON Power is OFF Running Power On Self Test Self Test failure Normal operation (heartbeat)
TEST	Yellow (steady) Yellow (blinking) Green: (2 sec. blink) Off	Running Power On Self Test Self Test failure Normal operation (heartbeat) Router is shut down
U-TX	Green Green (blinking) Yellow (blinking) Off	Ethernet link detected Traffic on Untrusted interface Traffic on DMZ port No current transmit traffic on Untrusted interface
U-RX	Green Green (blinking) Yellow (blinking) Off	Ethernet link detected Receiving data on Untrusted interface Receiving data on DMZ port No current receive traffic on Untrusted interface
T-TX	Green Green (blinking) Off	Ethernet link detected Transmitting data on Trusted interface No current transmit traffic on Trusted interface
T-RX	Green Green (blinking) Off	Ethernet link detected Receiving data on Trusted interface No current receive traffic on Trusted interface



Back Panel

The following table describes the various connections on the back panel of the Siemens 5881 router.

Connection	Function
Power Switch	Enables and disables power to the system.
Power Connector	Power cord connection for internal power supply.
Trusted	Four port, full-duplex, 10/100-BaseT Ethernet Switch (RJ-45).
Untrusted	Single full-duplex 10/100-BaseT, switched Ethernet port (RJ-45).
MGMT	This 8-pin, RJ-45 port provides RS232 connectivity for console connections or a dial backup analog modem connection.



Hardware Specifications

Physical Specifications

- Unit Dimensions:
 - 8.4W x 7D x 1.7H inches
 - 21.3W x 17.8D x 4.3H cm
- Weight:
 - 1.5 lbs.
 - .68 Kg.

Power Requirements

- AC Voltage: 100 to 120V AC or 220 to 240V AC
- Frequency: 50/60 Hz
- Consumption: 10W maximum
- Built-in power supply with on/off switch

Ethernet Interfaces

- Trusted Ethernet Interface - Four port, full-duplex 10/100-BaseT Ethernet switch (8-pin, RJ-45)
- Untrusted (WAN) Ethernet Interface - Single full-duplex 10/100-BaseT, switched Ethernet port (8-pin, RJ-45)
- Green/Amber LEDs

Operational Environment

- Temperature:
 - 40°F to 105°F
 - 5°C to 40°C
- Humidity: 20% to 80% non-condensing

Processor

- Motorola® 64 MHz MPC875
- 8 MB DRAM, 4 MB Flash Memory
- 3DES, DES, MD5, SHA hardware assist
- AES hardware encryption assist

Serial Interface

- One RS-232 asynchronous console or modem port (RJ-45)

Software Specifications

Bridging

- Transparent bridging including Spanning Tree protocol (IEEE 802.1D)
- Bridge filters

Configuration Management

- Easy Setup Web Management Interface
- Microsoft® Windows configuration management via SNMP
- TFTP download/upload of new software and configuration files
- Performance monitor
- Dynamic event and history logging
- Administration through HTTP, SNMP, Telnet or VT100 terminal
- Network boot uses the BootP server (RFC 2131, RFC 2132)

Dial Backup

- Failover to modem on console port
- Web Management Interface
- User selectable fail/restore criteria
- Supports L2TP and IPSec tunnel failover
- Optional modem connector (DB9 or DB25)

IP Address Translation

- Network renumbering (RFC 1631)
- Network Address Translation (NAT/PAT)
- LAN servers supported with NAT
- Support for NAT inside an IPSec tunnel

Routing

- TCP/IP with RIP1 (RFC 1058), RIP1 compatible and RIP2 (RFC 1389) or static routing on the LAN or WAN
- Novell® IPX with RIP/SAP (RFC 1552)
- DHCP client (RFC 2132)
- DHCP server - Automatic assignment of IP address, mask, default gateway and DNS server addresses to workstations (RFC 2131, 2132)
- DHCP relay agent (RFC 1542)
- DNS relay
- Multiple subnets on LAN
- Virtual routing
- Virtual Router Redundancy Protocol (RFC 2338)

Differentiated Services - Quality of Service provisioning

- Weighted Fair Queuing (WFQ)
- Differentiated Services (DiffServ)

PPP (RFC 1661)

- PPP over Ethernet (RFC 2516)

Security

- Role-based management
- User authentication (PAP/CHAP) with PPP (RFC 1334, RFC 1994)
- Password control for Configuration Manager
- SNMP password and community name reassignment
- HTTP/Syslog/SNMP/Telnet port reassignment, access control list
- VPN support (L2TP, IPSec, IKE, DES, 3DES, AES)
- Firewall (IP filtering)
- Stateful Firewall (ICSA Compliant)
- Secure Management Communications – IPsec and SSH
- Radius Server support
- TACACS+ Server support
- VPN Hardware Acceleration support
- SNMP V3

This chapter describes the steps you must take to install and configure the various components in your network to utilize the Siemens Ethernet Security Router. This includes [setting up the hardware connections](#) to the Internet router, [configuring the PC](#) to use the Internet router for Internet access, and setting up the Internet router configuration. Before beginning installation, make sure you meet all [installation requirements](#).

Installation Requirements

Before beginning the installation and configuration of the various components on the network, make sure you received all the [package contents](#), meet the basic [PC requirements](#), and have the necessary information from your [network Service Provider](#).

Package Contents

Your package should contain the items listed below. If you determine anything to be damaged or missing, please contact the dealer from whom the equipment was purchased.

- One Siemens 5881 Ethernet/Wireless LAN Router
- One Siemens Documentation CD-ROM
- One AC power supply module w/ cord
- Two RJ-45 Ethernet cables
- One RJ-45 to DB-9 serial port adapter (console)

PC Requirements

At a minimum, your computer must be equipped with the following to successfully install the broadband Internet router.

- CD-ROM Drive
- Ethernet network interface card
- TCP/IP network protocol installed on your PC
- Web browser
- Terminal emulation software, if you want to configure your router via your computer's serial port before placing it into service on a network.

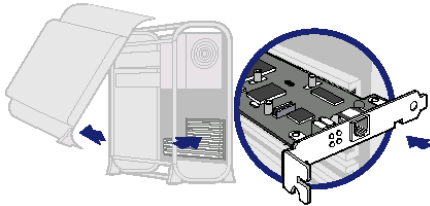
Network Service Provider Requirements

Your Network Service Provider will provide you with information to configure your router's WAN connection. Depending upon the type of service that you ordered, you will need some of the items from the following list. Contact your Network Service Provider for specific details on the items you should receive.

- DNS address
- One or more IP addresses and a subnet mask
- PPP Username and Password if required

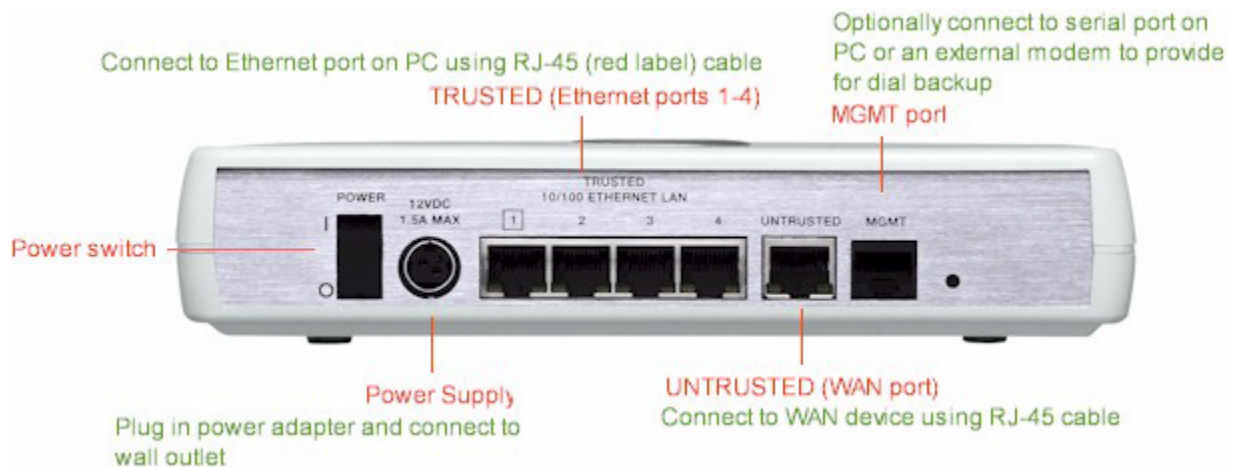
Hardware Installation

You may position the Siemens broadband router at any convenient location where it will be well ventilated. Do not stack it with other devices or place it on the carpet. You can connect the router to an existing Ethernet port on your computer.



To connect the SpeedStream device via the Ethernet interface, your computer must have an Ethernet adapter (also called a network interface card, or NIC) installed. If your computer does not have this adapter, install it before proceeding further. Refer to your Ethernet adapter documentation for complete installation instructions. Once you verify installation of an Ethernet adapter, perform the following procedure to connect the router to your computer.

To set up the hardware connections:



1. With the PC powered off, connect your PC directly to any of the router's Ethernet ports on the back-panel labeled **TRUSTED**, using one of the RJ-45 cables provided. You may also connect additional Ethernet devices to the router's Ethernet ports using additional RJ-45 cables (not provided).
2. Connect the other end of the Ethernet cable to the Ethernet port on the PC.
3. Connect your Ethernet Interface WAN device (broadband modem or similar) to the Ethernet port labeled **UNTRUSTED**, using another RJ-45 cable.
4. Optionally connect the MGMT port to one of the following:
 - Your PC serial port using another RJ-45 cable and the supplied adapter for router access via the command line interface.
 - An external using an RJ-11 cable to provide for dial backup.
5. Connect the power adapter to the rear of the router.
6. Plug the power adapter into the electrical wall outlet.
7. Flip the power switch on the router.
8. Power on all connected computers.

You can now configure the TCP/IP settings as detailed in the [PC Configuration](#) section.

PC Configuration

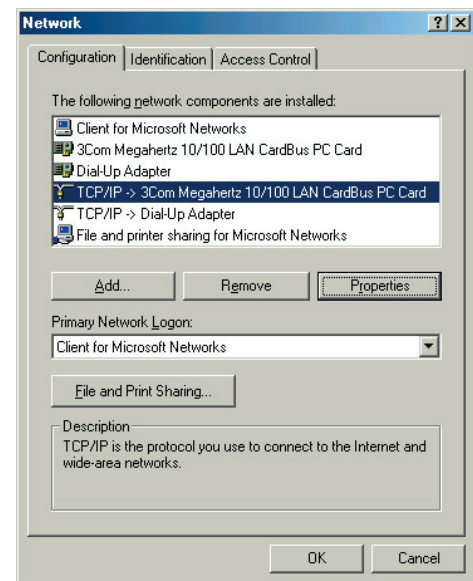
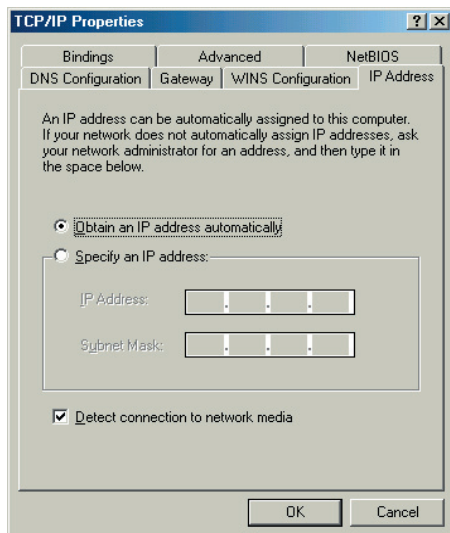
Your PC must be configured to use the TCP/IP protocol suite over the Internet, and to accept Dynamic Host Configuration Protocol address assignments from the router. Although this is the default settings for the PC, it is a good idea to verify that they have not been changed.

Each supported PC Operating System varies slightly in how the configuration windows are presented. Select the Operating System installed on the PC connected to the router from the list below and follow the associated procedure.

- [Windows 98/ME](#)
- [Windows NT 4](#)
- [Windows 2000](#)
- [Windows XP](#)
- [Mac OS 9.x](#)
- [Mac OS X](#)
- [Linux OS](#)

Windows 98/ME

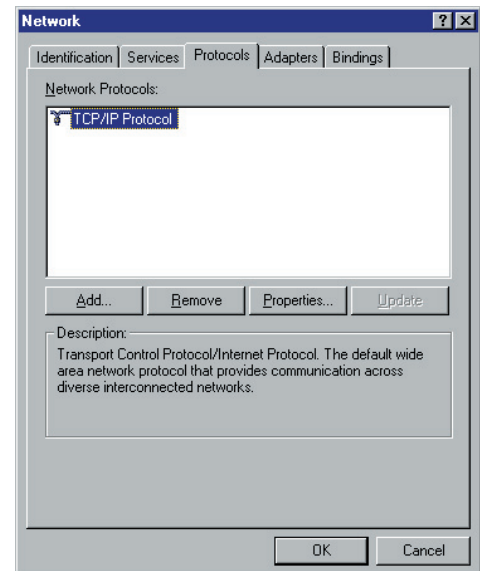
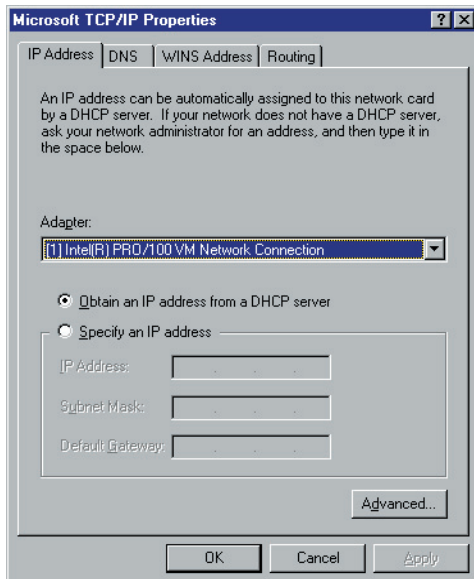
1. Click **Start >Control Panel > Network**. This displays the **Configuration** tab on the Network window.
2. Select **TCP/IP** protocol for your network card.
3. Click **Properties**. This displays the TCP/IP Properties window.



4. Click the **IP Address** tab.
5. Ensure that the **Obtain an IP address automatically** option is selected. This is the default Windows setting.
6. Click **OK** to close each dialog.
7. Restart the PC to ensure it obtains an IP address from the router.
8. [Configure the router](#).

Windows NT 4

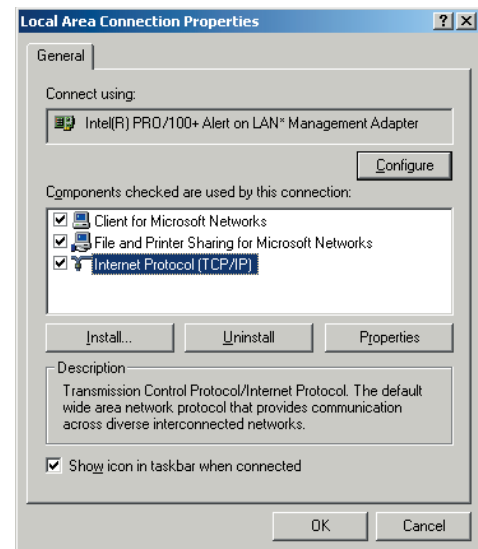
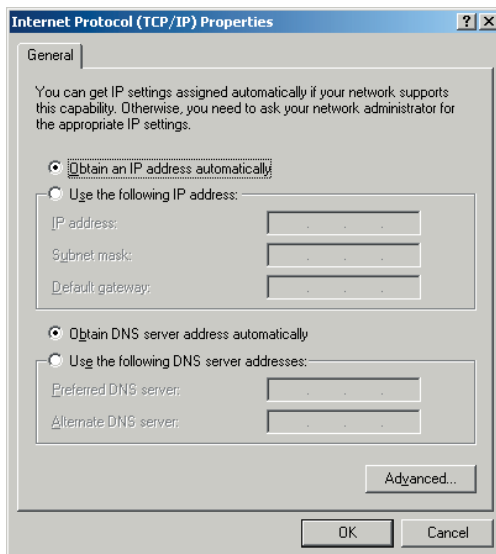
1. On your desktop, right click on the **Network Neighborhood** icon. This displays the Network window.
2. Click the **Protocols** tab.
3. Select **TCP/IP Protocol** from the **Network Protocols** list.
4. Click **Properties**. This displays the Microsoft TCP/IP Properties window.



5. Click the **IP Address** tab.
6. On the **IP Address** tab, select **Obtain an IP address from a DHCP server**.
7. Click **OK** to close each dialog.
8. Restart the PC to ensure it obtains an IP address from the router.
9. [Configure the router.](#)

Windows 2000

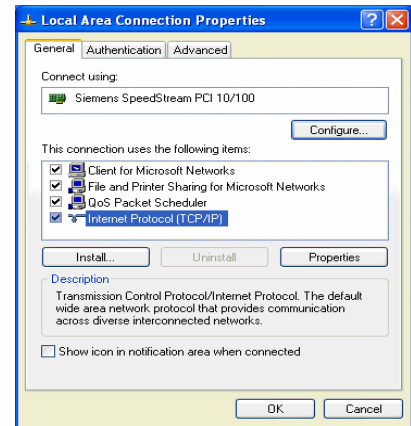
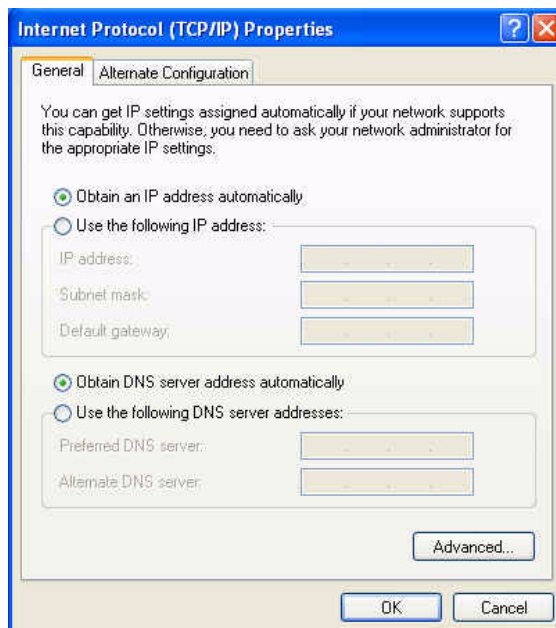
1. Select **Start >Settings >Control Panel**. This displays the Control Panel window.
2. Double-click the **Network and Dial-up Connection** icon. This displays the Network and Dialup Connection window.
3. Right-click **Local Area Connections** and select **Properties**. This displays the Local Area Connections Properties window.
4. Select **Internet Protocol (TCP/IP)** from the list of components.
5. Click **Properties**. This displays the Internet Protocol (TCP/IP) Properties window.



6. Ensure that the **Obtain an IP address automatically** and **Obtain DNS server address automatically** options are selected.
7. Click **OK** to close each dialog.
8. Restart the PC to ensure it obtains an IP address from the router.
9. [Configure the router.](#)

Windows XP

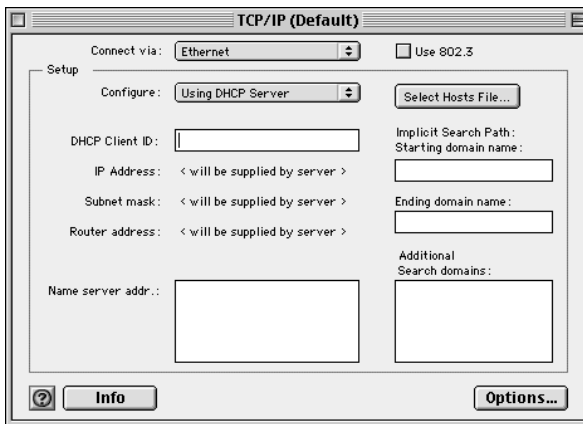
1. Click **Start >Control Panel**. This displays the Control Panel window.
2. Double-click the Network Connections icon. This displays the Network Connection window.
3. Right-click **Local Area Connection**, then click **Properties**. This displays the Local Area Connection Properties window.
4. Select **Internet Protocol TCP/IP**.
5. Click **Properties**. This displays the Internet Protocol (TCP/IP) Properties window.



6. Ensure the **Obtain an IP address automatically** and **Obtain DNS server address automatically** options are selected.
7. Restart the PC to ensure it obtains an IP address from the router.
8. [Configure the router.](#)

Mac OS 9.x

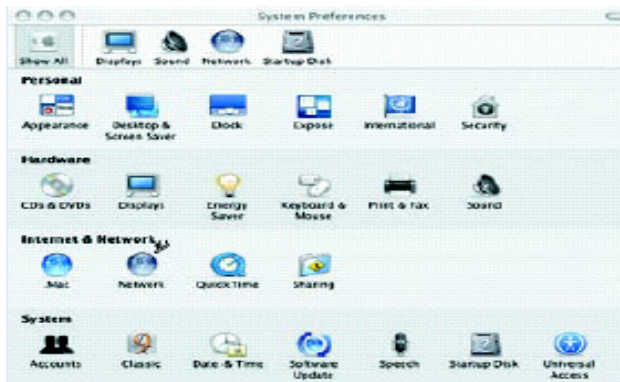
1. Click **Apple -> Control Panels -> TCP/IP**. This displays the TCP/IP Control Panel window.



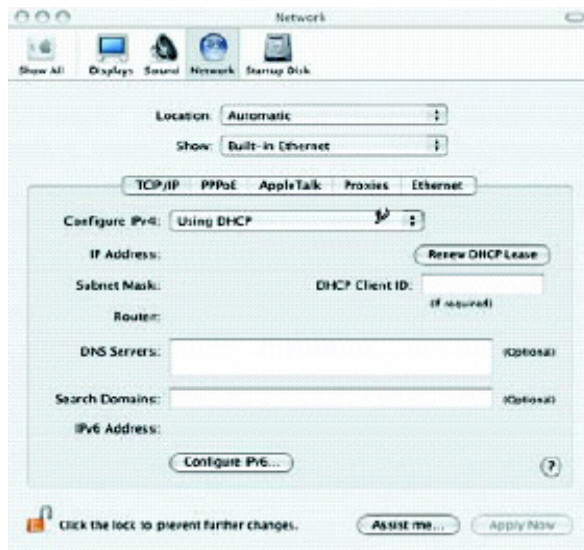
2. Select **Ethernet** from the **Connect via** drop-down menu.
3. Select **Using DHCP Server** from the **Configure** drop-down menu.
4. Complete the fields shown with any information supplied by your service provider.
5. Close window and save changes.
6. [Configure the router.](#)

Mac OSX

1. Click **Apple -> System Preferences**. This displays the System Preferences window.



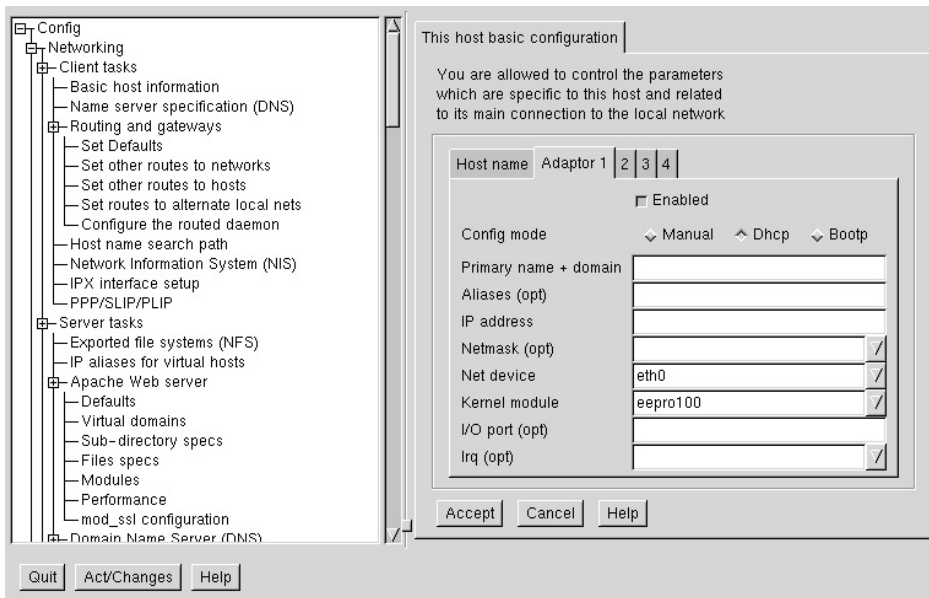
2. Double-click the **Network** icon under the **Internet & Network** section. This displays the Network window.



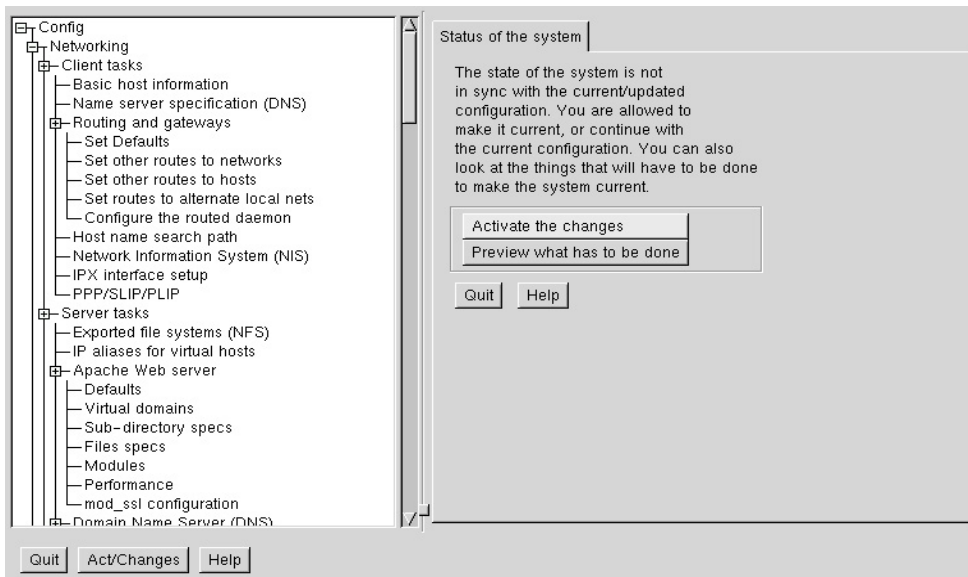
3. Select **Ethernet** from the **Connect via** drop-down menu.
4. Select **Using DHCP Server** from the **Configure** drop-down menu.
5. Enter any information supplied by your service provider.
6. Click **Apply Now** to save and exit the Network window.
7. [Configure the router.](#)

Linux

1. From a terminal window, run **linuxconfig**. This displays the Config window.



2. Click the **Adaptor** tab.
3. Enter any information specified by your service provider in the fields under the appropriate Adapter tab.
4. When settings are completed, click **Accept**. This displays the **Status of the system** tab.



5. To update the system status, ensure that the **Activate the changes** button is highlighted, then click **Act/Changes**.
6. [Configure the router.](#)

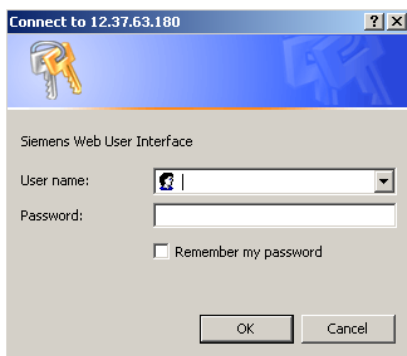
Configuring the Router

The Siemens Business Class Router family of products provides two user interfaces: a Web Management Interface and a console-based Command Line Interface (CLI). The Web Management Interface uses an HTTP server housed in the router. Using this server, you can connect to and manage the router using your Web browser. The Web Management Interface is accessible through most HTML browsers, though Internet Explorer 4.0 or Netscape 4.0 and higher are recommended. Refer to the Technical Reference Guide for details on managing the router through the CLI.

Establish Connection

To establish a connection from your computer to the router through your Web browser:

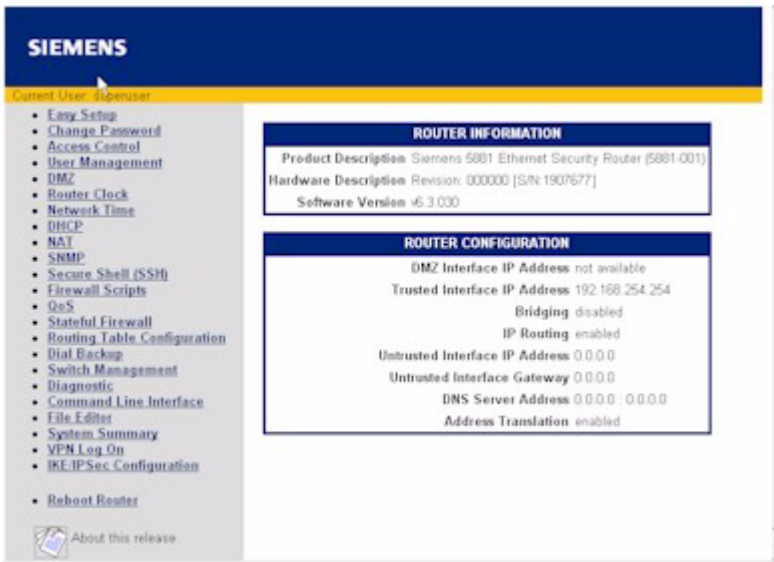
1. Open your Internet Explorer or Netscape Navigator Web browser.
2. In the **Address** bar, enter the default router IP address: **192.168.254.254**. This displays the Login Dialog page.



3. Enter the administrative **User name** and **Password**. The default settings are User name: **superuser** and Password: **admin**. This displays the Router Information page.

Router Information Page

The Router Information Page is the first page you encounter after logging into the router.



The Router Information page displays basic router information and configuration settings. On the Router Information page, the following information is presented:

- **Router Information:** Including the model number, software version number, and additional features that may be configured.
- **Router Configuration:** Displays router configuration details such as LAN IP address, trusted and untrusted interface information, protocol, and other network settings.
- **Wireless Status:** Displays the status of the wireless LAN

In the left navigation pane of this page, there are configuration, diagnostic, and status and statistic options for the router. In this document, these features are grouped according to User Access Control, Advanced Router Functions, Security, and Monitoring Health and Status.

Use the table below to locate detailed instructions for the desired function.

To do this:

- Perform Easy Setup
- Configure users on the router.
- Configure advanced features.
- Configure security features.
- Configure wireless settings.
- Monitor the health of the router.
- Manage router using Command Line Interface

Refer to:

- [Chapter titled "Easy Setup"](#)
- [Chapter titled "User Setup"](#)
- [Chapter titled "Advanced Setup"](#)
- [Chapter titled "Security Setup"](#)
- [Chapter titled "Wireless Setup"](#)
- [Chapter titled "Monitoring Router"](#)
- Command Line Interface Guide

This chapter describes how to define router configuration settings using the Easy Setup Wizard. These settings control access to the Wide Area Network (WAN) and Local Area Network (LAN). During the Easy Setup procedure, you will be prompted to specify configuration parameters that may require information from your service provider.

Access Easy Setup Wizard

To access the Easy Setup Wizard, click **Easy Setup** in the left navigation pane of the Router Information window. This wizard will walk you through the configuration screens necessary to setup the router. You can exit the Easy Setup Wizard at anytime by clicking **Cancel** on the bottom of the configuration page. If the wizard is cancelled, no changes will be made and you will need to begin again.

Select Protocol

When you click **Easy Setup** in the left navigation pane of the Router Information page, the Untrusted Interface Configuration page is displayed. This page is used to enter information for the Untrusted (WAN-side) Ethernet Interface that will communicate with the Internet access device (broadband modem or similar).

To configure the Untrusted interface:

1. Select one of the following connection methods:
 - [Using PPPoE](#) if you will use the Point-to-Point Protocol (PPP) to establish the connection.
 - [Not Using PPPoE](#) if you will establish the connection based on IP addressing.

SIEMENS

Current User: superuser

Untrusted Interface Configuration

Using PPPoE allows user to select using PPPoE or not.

PPPoE requires a username and password.

PPPoE Service Name requires a name. Default is * for any.

PPPoE Timer requires a specific duration (in seconds) or the default permanent setting.

The IP address and Subnet Mask define the IP address and network of the interface. This information is required in order to use NAT.

The Default Gateway is the IP address of the next-hop router.

Network Address Translation (NAT) makes all connections appear to originate from the IP address of this interface.

[Home](#)

Untrusted Interface Configuration

☐ Using PPPoE

Username:

Password:

Service Name:

PPPoE Timer:

☐ NAT enabled

☒ Not Using PPPoE

☒ Obtain configuration automatically from WAN using DHCP

☐ Configure IP Routing manually

IP Address:

Subnet Mask:

Default Gateway:

☒ NAT enabled

Using PPPoE

If you will use the Point-to-Point Protocol (PPP) to establish the connection., you selected **Using PPPoE**. Perform the following steps to complete setting up the router.

1. Enter the **User Name** and **Password**, which are used for authentication when the PPP connection is being established.
2. In **Service Name**, enter the domain name of your network service provider. Use * as a default (for all services).
3. In **PPPoE Timer**, enter the number of seconds of inactivity that must elapse before the PPP connection closes. This helps to limit connection charges from your service provider during times of inactivity. The default entry of "permanent" will keep the PPP connection open constantly, with no time out interval.
4. Optionally select **NAT Enabled** to enable Network Address Translation (NAT). NAT allows multiple workstations on your LAN to share a single, public IP address. All outgoing traffic appears to originate from the router's IP address.
5. Click **Next**. This displays the [Dynamic Host Configuration Protocol](#) page.

Not Using PPPoE

If you will establish the connection based on IP addressing, you selected **Not Using PPPoE**. Perform the following steps to complete setting up the router.

1. IP Routing routes all IP packets for remote hosts to the WAN. Specify how to obtain an IP address and subnet mask by selecting one of the following:
 - **Obtain configuration automatically from Wan using DHCP** to have an IP address assigned automatically using DHCP.
 - **Configure IP Routing manually** to assign IP addresses manually. If you select this option, you must specify an **IP Address**, **Subnet Mask**, and **Default Gateway** in the appropriate fields. **Default Gateway** assigns the IP address of the next-hop device.
2. Optionally select **NAT Enabled** to enable Network Address Translation (NAT). NAT allows multiple workstations on your LAN to share a single, public IP address. All outgoing traffic appears to originate from the router's IP address.
3. Click **Next**. This displays the [Dynamic Host Configuration Protocol](#) page.

Dynamic Host Configuration Protocol

Dynamic Host Configuration Protocol (DHCP) provides a dynamic, “upon request,” IP address to computers and other networked devices. The router can act as a DHCP server for devices on your local network.

The router provides the flexibility to use different ranges of IP addresses to be assigned by the DHCP server housed in the router. DHCP configuration is done from the Dynamic Host Configuration Protocol page.

Current User: superuser

Dynamic Host Configuration Protocol (DHCP)

DHCP assigns IP configuration information to hosts on the trusted interface thus avoiding the need for manual setup.

Domain Name Service (DNS) maps names to addresses.

The **Domain Name** identifies the default network name.

Domain Name Servers map host names to IP addresses.

Windows Internet Naming Service (WINS) maps NetBIOS names to IP addresses.

[Home](#)

Dynamic Host Configuration Protocol (DHCP)

☒ DHCP server enabled on trusted interface

☒ Obtain DNS information automatically
☐ Configure DNS manually

Domain Name	
Primary DNS Server	
Secondary DNS Server	
Primary WINS Server	
Secondary WINS Server	

To configure DHCP:

1. Optionally select **DHCP server enabled on the LAN**. If selected, the DHCP server dynamically assigns IP addresses to all LAN-side devices.
2. Select one of the following to configure the Domain Name Service:
 - **Obtain DNS information automatically:**
The DNS server address will be learned when DHCP client requests are placed over the WAN link.
 - **Configure DNS manually:**
Define DNS server address manually from information you get from your service provider. If you select this option, provide the following information.
 - **Domain Name**
The router's DNS domain name as assigned by your service provider.
 - **Primary DNS Server**
IP address where DNS requests will be sent.
 - **Secondary DNS Server**
Optional. IP address where DNS requests will be sent if the primary DNS server is unavailable.
 - **Primary WINS Server**
IP address of the Windows Internet Naming Service where WINS requests will be sent. This maps NetBIOS names to IP addresses similar to DNS.
 - **Secondary WINS Server**
Optional. IP address where WINS requests will be sent if the primary WINS server is unavailable.

3. Click **Next**. This displays the Trusted Interface Configuration page.

SIEMENS

Current User: superuser

Trusted Interface Configuration

The **IP Address** is the network address of the router. This address must be globally unique unless NAT is enabled.

Subnet Mask is used along with the IP address to determine whether or not the local IP traffic should be forwarded.

[Home](#)

Trusted Interface Configuration

IP Address: 192.168.254.254

Subnet Mask: 255.255.255.0

Previous Save and Reboot Cancel

4. Enter the **IP Address** and **Subnet Mask** of the router. The IP address must be unique unless Network Address Translation (NAT) is enabled.
5. Click **Save and Reboot**. You are prompted to confirm the reboot.

This chapter describes how to set up users on the router and control their access to router functions and to the Internet. The features that control users and their access are listed below. To access one of these options, click the link on the left navigation pane of the Router Information page.

User Management	Manage user accounts.
Change Password	Change user password.
Access Control	Configure remote access to the router configuration settings.

User Management

When you select **User Management** from the left navigation pane of the Router Information page, the User Management page is displayed.

Use this page to add, delete, edit, and view user accounts. You can also use this page to configure secure mode, configure the Radius Server, and configure the Tacplus Server. Click **Home** at anytime to return to the Router Information page. To access one of these options, click its link on the User Management page.

Use the table below to locate detailed instructions for the desired function.

To do this:

- Add or modify a user account
- Delete a user account
- Specify database for identifying users when logging into the router.
- Configure Secure Mode
- Configure the Radius Server
- Configure the Tacplus Server

Refer to:

- [Add or Modify A User Account](#)
- [Delete a User Account](#)
- [User Lookup](#)
- [Secure Mode Configuration](#)
- [Configure the Radius Server](#)
- [Configure the Tacplus Server](#)

Adding/Modifying A User Account

User accounts are used to control access to the router and the Internet. To add a user account:

1. Click **New User** on the User Management page. This displays the Add/Modify User page.

(To modify a user, select the desired name in the **Select User** list and click **Edit User** to display the Add/Modify User page. Note that changing the password or privileges of an existing user account may terminate a user's current activity or connection.)

2. Enter **User Name**, **Password**, and **Confirm Password** in the appropriate boxes. (The User Name cannot be modified for an existing account. When editing an existing account, the Password and Confirm Password values are not displayed. If you leave them blank, the password is not changed.)
3. Do one of the following to assign privileges to this user account:
 - Select one of the buttons at the top of this page to automatically assign pre-set privileges to the user based on common user roles. (Refer to [Management Classes](#) for details on the privileges automatically assigned to each role.)
 - Manually select the management activity you want to assign to this user account. For each management activity class, click to select **Read**, **Read-Write** privileges for the user, or select **None** for no privilege.
4. In **Allow Access From**, specify one or more of the following:
 - **Ethernet 0**: Can access from the LAN side.
 - **Ethernet 1**: Can access from the WAN side.
 - **Console**: Can access from a console.

User access verification is performed if the user account is verified during user authentication. User access verifies that the user account can access the router through the connectivity method being used, such as over the LAN or through a console.

5. Click **Enabled** for **Account Access** to enable this account. By default, accounts are disabled when added. This must be manually selected before the account is accessible to the user.
6. Click **Apply** to add/modify the user account.

Deleting A User Account

To delete a user account:

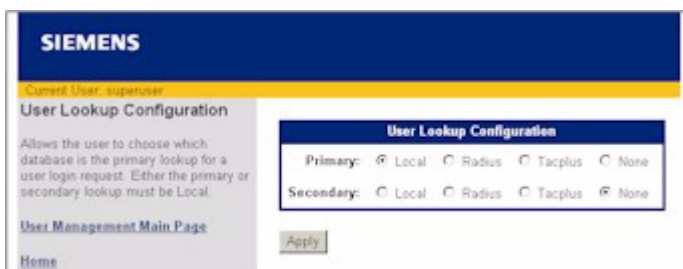
1. Select the name of the account you want to delete in the **Select User** list on the User Management page, then click **Delete User**.
2. When prompted, click **OK** to confirm the account deletion.

User Lookup

User authentication verification is performed when an access request is made to the system. The router checks the user database to verify the user account by username and password, supplied by the user when making the access request. You can specify where user authentication/identification is performed from the User Lookup Configuration page.

You can specify both a primary and secondary database to use to identify users if you desire. If you specify both a primary and secondary database and the user is not found in the primary database, the secondary database is searched. To configure where user's are authenticated/identified:

1. Click **User Lookup Config** on the left navigation pane of the User Management page. This displays the User Lookup Configuration page.

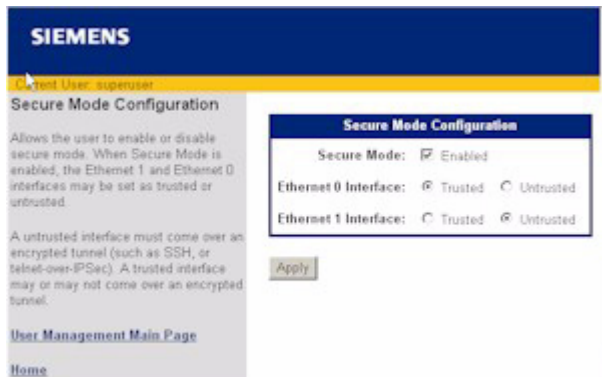


2. Specify one of the following databases for **Primary** and for **Secondary**. If the user is not found in the Primary database, the Secondary database is searched.
 - **Local**
Searches the local database for user login identification. Either the primary or secondary lookup must be Local.
 - **Radius**
Searches the Radius database for user login identification.
 - **Tacplus**
Searches the Tacplus database for user login identification.
 - **None**
Searches no database.

Secure Mode Configuration

You can enable secure mode to control whether an interface is trusted or untrusted. To configure Secure Mode:

1. Click **Secure Mode Configuration** on the left navigation pane of the User Management page. This displays the Secure Mode Configuration page.



2. Do one of the following for **Secure Mode**:
 - Click the box next to **Enabled** so a check mark appears. This enables secure mode.
 - Click the box next to **Enabled** so there is no check mark. This disables secure mode.
3. If you enabled secure mode, select one of the following for **Ethernet 0 Interface** and **Ethernet 1 Interface**:
 - **Trusted**:
A trusted interface does not have to come over an encrypted tunnel.
 - **Untrusted**:
An untrusted interface must come over an encrypted tunnel, such as SSH or telnet-over-IPSec.

Configure the Radius Server

Remote Authentication Dial In User Service (RADIUS) is client-server based access control and authentication feature. The RADIUS client resides locally on the router and works in conjunction with a variety of RADIUS Server applications.

- The client is responsible for passing user information to designated RADIUS servers, then acting on the returned response.
- RADIUS servers are responsible for receiving user connection requests, authenticating the user, then returning all configuration information necessary for the client to deliver service to the user.

Transactions between the client and server are authenticated through the use of a shared secret, which is never sent over the network. In addition, any user passwords are sent encrypted between the client and RADIUS server to further secure account passwords.

When the router is configured to use RADIUS, a user attempting to login presents authentication information (Username and Password) to the router. Upon receipt, the router's RADIUS Client creates an "access-request" containing username, the user's password, and method being used to access the system. The password is hidden using a method based on the RSA Message Digest Algorithm MD5 [3].

The access request is submitted to the RADIUS server via the network. If no response is returned within a length of time, the request is re-sent a specified number of times. The router's RADIUS client can also forward requests to a secondary server in the event that the primary server is down or unreachable.

Once the RADIUS server receives the request, it validates the RADIUS client that sent the request. A request from a client for which the RADIUS server does not have a shared secret is discarded. If the client is valid, the RADIUS server consults a database of users to find the user whose name matches the request. The user entry in the database contains the required elements for authentication including the username, password, access and management privileges.

To configure the RADIUS Server:

1. Click **Configure Radius Server** on the left navigation pane of the User Management page. This displays the Radius Server Configuration page.

2. In **Timeout**, enter the number of seconds to between retry attempts when the Radius Server cannot be reached.
3. In **Retry**, enter the number of times the Radius Server should be contacted before attempting to connect to the secondary server.
4. For **Primary** and optionally **Secondary** servers, provide the **IP Address**, **Port**, and **Secret** for accessing the Radius Server. The **Secret** is used to authenticate requests between servers.

Configure the TacPlus Server

Tacplus allows access control and user authentication to be managed from a remote server. To configure the Tacplus Server:

1. Click **Configure Tacplus Server** on the left navigation pane of the User Management page. This displays the Tacplus Server Configuration page.

SIEMENS

Current User: superuser

Tacplus Server Configuration

When a Tacplus server cannot be reached, a response **Timeout** is set between retry attempts to the Tacplus server.

If the primary server cannot be reached on the first attempt, the client will attempt to contact primary server based on the **Retry** times before try to contact the secondary server.

To configure a Tacplus server, users need to provide **IP address**, **Port**(by default 49), and **Secret**.

[User Management Main Page](#)

[Home](#)

Tacplus Server Configuration

Timeout (1 to 300 seconds, default 10)

Retry (0 to 5 times per server, default 2)

CACHE Timeout (0 to 60 minutes, default 4)

[Server]	[IP Address]	[Port]	[Secret]	[Action]
Primary	0.0.0.0	0		Delete
Secondary	0.0.0.0	0		Delete

2. In **Timeout**, enter the number of seconds to between retry attempts when the Tacplus Server cannot be reached.
3. In **Retry**, enter the number of times the Tacplus Server should be contacted before attempting to connect to the secondary server.
4. In **CACHE Timeout**, enter the number of seconds that must pass before the user must be authenticated again.
5. For **Primary** and optionally **Secondary** servers, provide the **IP Address**, **Port**, and **Secret** for accessing the Radius Server. The **Secret** is used to authentication requests between servers.

Management Classes

All system operations, are partitioned into functional groups called management classes. Management classes group functions into the following categories.

Class	Functional Areas
Voice	Voice operations and shared network functions (if applicable).
Network	File system, System Interfaces, SNMP, DHCP, NAT, remote commands.
System	Various system administrative tasks.
Security	SSH, L2TP, IPSec, Firewall.
Admin	User Management functions.
VPN User	Access virtual private networks.
Debug	Debug functions.

When creating a user account, you can manually configure the management classes and access methods for the account by issuing multiple commands, or you can use one of the pre-defined templates that group multiple management classes for a logically defined user type. When using the template method, Access privileges for WAN, LAN, and Console are granted by default. The following table lists the privileges given to each logically defined user type.

Super User

Mgmt Class (read):	Network, System, Admin, Voice, Security, Debug
Mgmt Class (write):	Network, System, Admin, Voice, Security, Debug
Access:	WAN, LAN, Console
Status:	Enabled

Network Manager

Mgmt Class (read):	Network, System
Mgmt Class (write):	Network, System
Access:	WAN, LAN, Console
Status:	Enabled

Security Manager

Mgmt Class (read):	System, Security
Mgmt Class (write):	System, Security
Access:	WAN, LAN, Console
Status:	Enabled

VPN User

Mgmt Class (read):	
Mgmt Class (write):	
Access:	
Status:	

Viewer

Mgmt Class (read):	Network, System, Voice, Security
Mgmt Class (write):	None
Access:	WAN, LAN, Console
Status:	Enabled

Change Password

User passwords are changed from the Change Password page.

To change a user password:

1. Click **Change Password** from the left navigation pane on the Router Information page. This displays the Change Password page.

The screenshot shows the 'Change Password' page. At the top, a yellow banner displays 'Current User: superuser'. Below this, the page title 'Change Password' is shown. The main content area contains the instruction 'Change the password for the currently logged in user.' and a 'Home' link. On the right side, there is a form titled 'Change Password' with two input fields: 'Enter New Password:' and 'New Password (again):'. Below these fields is an 'Apply' button.

2. Enter the new password for the Current User in **Enter New Password** and **New Password (again)** boxes.
3. Click **Apply** to save the new password.

Access Control

Restrict administrative control of the router to a specific set of IP addresses. Each remote access method (Telnet, Web, and SNMP) can be configured separately.

To set Access Control parameters:

1. Click **Access Control** from the left navigation pane of the Router Information page. This displays the Access Control page.

The screenshot shows the 'Access Control' configuration page. At the top, a yellow bar indicates 'Current User: superuser'. The left sidebar has 'Access Control' selected. The main content area is titled 'Access Control' and contains the following options:

- ☒ Enable Telnet Management
 - ☒ No access restrictions
 - ☐ Allowed from LAN
- ☒ Enable Web Management
 - ☒ No access restrictions
 - ☐ Allowed from LAN
- ☒ Enable SNMP Management
 - ☒ No access restrictions
 - ☐ Allowed from LAN
- ☒ Allow System Logging to Syslog Servers
 - ☒ No access restrictions
 - ☐ Restricted to servers on LAN

At the bottom of the main content area is a 'Save and Reboot' button.

2. Optionally, select one or more of the following remote access methods to enable that method of remote access. A check in the box next to the method specifies enabled. If disabled, any access restriction specification is disregarded.
 - **Telnet**
 - **Web**
 - **SNMP**
3. For each remote access method selected, specify any access restrictions. This can be one of the following:
 - **No access restrictions:**
Remote access method is enabled and not restricted. This setting allows access from all hosts.
 - **Allowed from LAN:**
Limits access to the host from the LAN.
4. Optionally select **Allow System Logging to Syslog Servers**. If selected, specify any access restrictions. This can be one of the following:
 - **No access restrictions:**
System Logging is not restricted. This setting allows access from all servers.
 - **Allowed from LAN:**
Limits access for System Logging to servers on the LAN.
5. Click **Save and Reboot**.

This chapter describes how to configure advanced features on the router. Advanced features are listed below. To configure one of these features, click the link on the left navigation pane of the Router Information page..

DMZ	Configure unrestricted two-way communication with servers or individual users on the internet.
Router Clock	Set the date and time on your router.
DHCP	View and configure the current DHCP settings.
Quality of Service (QoS)	Configure QoS, which actively manages network resources to sustain service levels for priority applications.
Routing Table Configuration	Configure multiple routing tables for a single host.
Dial Backup	Enable a backup connection to the Internet through an internal V.90 (model 5835 only) or an external asynchronous modem connected to the Console port.
Switch Management	Manage the Ethernet 10/100 switching ports located on the rear panel of the router.
Command Line Interface	Enter any CLI command over the web interface. For complete command line syntax, refer to the Command Line Interface Guide.
File Editor	Create and edit files stored on the router. These files contain configuration and other data used by the router.

DMZ

One computer on your local network can be configured to allow unrestricted two-way communication with servers or individual users on the Internet. This provides the ability to run programs that are incompatible with firewalls. This feature is primarily used for gaming. This function is recommended for use only when you require this special level of unrestricted access as it leaves your router and network exposed to the Internet with no firewall protection.

To configure DMZ:

1. Click **DMZ** on the left navigation pane of the Router Information page. This displays the DMZ Configuration page.

SIEMENS

Current User: superuser

DMZ Configuration

User can enable or disable DMZ port. An IP address and subnet mask is needed for DMZ port.

[DMZ DHCP Configuration](#)

[Home](#)

DMZ Configuration

DMZ Port ☒ enable

IP Address:

Subnet Mask:

☐ disable

Apply

2. Select **enable** or **disable** to enable or disable DMZ Port.
3. If you selected enable, enter the **IP Address** and **Subnet Mask** of the DMZ port.
4. **Apply**.
5. Configure the DMZ DHCP server. To do this, click **DMZ DHCP Configuration** on the left navigation pane to configure the DMZ DHCP server. This displays the DMZ DHCP Configuration page.

SIEMENS

Current User: superuser

DMZ DHCP Configuration

DMZ DHCP Server Status
Shows the current DMZ DHCP setting and allows the administrator to enable/disable it.

IP Addresses Pool Setting
Shows the current first IP address and the last IP address in the range of the IP address pool, and enables the administrator to specify a new range of IP addresses. Remember: The last IP address must be greater or equal to the first IP address. Both the first IP address and the last IP address cannot be a subnet address or a broadcast address.

Current DHCP Leases List
Shows the current leased IP addresses including information such as the client IP address, state, host name and expiration time.

[DMZ Configuration Main Page](#)

[Home](#)

Warning: there is no DMZ port enabled. Click [here](#) to back to main page to enable it.

DMZ DHCP Server Status

Current Setting	New Setting	
enabled	enable	Apply

IP Addresses Pool Setting

	Current Setting	New Setting	
First IP Address	0.0.0.0		Apply
Last IP Address	0.0.0.0		

Current DHCP Leases List

Client IP	State	Host Name	Expires (mm/dd/yy)
-----------	-------	-----------	--------------------

- To change the server status, select **Enable** or **Disable** from **LAN DHCP Server Status**. Disabled, the router will not act as a DHCP server.
- To change the start and ending address range of the IP address pool, enter the starting address in **First IP Address** and the ending address in **Last IP Address**.
- Click **Apply**.

Note that a list of network clients that are currently leasing their IP addresses from the pool are shown in **Current DHCP Leases List**: From left to right, the following information is presented for each client:

- Client IP**: The leased IP address assigned to the specific client.
- State**: Whether the IP address is enabled or disabled.
- Host Name**: Name of the host leasing the specific IP address.
- Expires (mm/dd/yy)**: Date when the IP address lease will expire. At that time (if not before), the leased IP address will be freed for re-assignment, and the network client will need to request a new IP address from the router.

Router Clock

Use the Router Clock option to set the date and time on the router. To set the current date and time on the router:

1. Click **Router Clock** on the left navigation pane of the Router Information page. This displays the Current Date and Time page.

Current User: superuser

Current Date and Time

This is the current date and time as provided by the workstation.

Synchronize Router Clock will set the router clock to this date and time.

[Home](#)

Current Date and Time

PC Clock Time: 01/07/2002 17:01:19

Synchronize Router Clock

2. The current date and time from your PC are displayed in the field labeled **Current Date and Time**. To synchronize the date and time on your router with the current date and time displayed, click **Synchronize Router Clock**.

DHCP

Dynamic Host Configuration Protocol (DHCP) is a communication protocol that allocates IP address automatically to any DHCP client requesting an IP address. A DHCP client can be any device attached to your network, for example, a PC. (Note that DHCP is effective only if the TCP/IP is installed on the DHCP client.)

The router can act as a DHCP server, automatically providing a suitable IP address and related information to each computer when the computer boots up. Without DHCP, IP addresses must be entered manually at each device.

When configured as a DHCP server, the router acts:

As a DHCP server by assigning IP addresses to workstations attached to the LAN that issue DHCP address requests. Before responding to a DHCP client request, the router's DHCP server attempts to locate other active DHCP servers on the network, such as Windows NT servers. If one is detected or if a DHCP server on the WAN has been explicitly specified, the router's DHCP server disables itself.

As a DHCP client by requesting that an IP address be assigned to the WAN side port of the router.

As a relay by passing through client requests from the LAN side onto the WAN asking for IP address assignment and relaying responses back to the appropriate client.

DHCP (Dynamic Host Configuration Protocol), is a TCP/IP service protocol that provides dynamic leasing of IP addresses and other configuration information to client hosts on the network. The router can act as a DHCP server, automatically providing a suitable IP address and related information to each computer when the computer boots up.

To configure DHCP:

1. Click **DHCP** in the left navigation pane of the Router Information window. This displays the DHCP Configuration page. This page shows the current settings as well as provides a means to change the current settings.

Current DHCP Leases List			
Client IP	State	Host Name	Expires (mm/dd/yy)
192.168.254.2	enabled	USSM5RCC	May 4 2006 0:54:27
192.168.254.4	enabled	SSNTEST	May 3 2006 5:39:30

2. To change the server status, select **Enable** or **Disable** from **LAN DHCP Server Status**. Disabled, the router will not act as a DHCP server.
3. Click **Apply**.
4. When a PC boots and asks for an IP address, the DHCP server assigns it an address from a pool of addresses assigned to the subnetwork where the client request originated. To specify the start and ending

address range of the IP address pool, enter the starting address in **First IP Address** and the ending address in **Last IP Address**.

5. Click **Apply**.

Note that a list of network clients that are currently leasing their IP addresses from the pool are shown in **Current DHCP Leases List**: From left to right, the following information is presented for each client:

- **Client IP**: The leased IP address assigned to the specific client.
- **State**: Whether the IP address is enabled or disabled.
- **Host Name**: Name of the host leasing the specific IP address.
- **Expires (mm/dd/yy)**: Date when the IP address lease will expire. At that time (if not before), the leased IP address will be freed for re-assignment, and the network client will need to request a new IP address from the router.

QoS

Quality of Service actively manages network resources to sustain service levels for priority applications. Mission-critical and real-time Internet applications demand a network that provides high bandwidth and low latency. Such applications cannot tolerate unpredictable degradations of network services. Therefore, network services must contain features that provide adequate assurance of sustained service levels. Some of the benefits associated with Quality of Service include:

Guaranteed available bandwidth and minimum delays to real-time Voice over IP traffic

Dynamic allocations of bandwidth to non-critical applications

User control over network traffic levels, and potential cost-efficiencies

Advanced differentiation of network services

Measurement and reporting of network service levels

Applications, such as video conference or IP telephony, must be able to communicate their service level requirements to an infrastructure that can consistently meet those requirements. To do this, QoS control mechanisms must be present in each network element. This router provides such QoS control mechanisms and can interpret the service requirements indicated by network applications, fully participating in any differentiated services architecture.

This router provides Quality of Service using two methods: [Differentiated Services Framework](#) (DiffServ) and [Weighted Fair Queuing](#) (WFQ).

Differentiated Services Framework

(DiffServ) is a facility to prioritize the requirements of each Class of Service (for example e-mail, streaming video, voice) according to defined policies. DiffServ is suited to Metropolitan Area Networks or private networks where control over the infrastructure is guaranteed, and differentiated services can be deployed end-to-end.

To employ DiffServ, each packet of data is tagged with a six-bit pattern known as the DiffServ CodePoint (DSCP), replacing the three IP precedence bits in the ToS byte of the IPv4 header. This tag determines the processing of each packet as a Pre-Hop Behavior (PHB) at each DiffServ node. Each DSCP is read and network resources are allocated to a packet according to the Class of Service defined in its associated policy.

When DiffServ is activated on your router, data packets are read and marked according to their DiffServ priority. The packets are then queued and processed according to the defined QoS policy.

Weighted Fair Queuing

(WFQ) is a flow-based queuing algorithm that performs two functions simultaneously:

- It schedules priority traffic to the front of the queue to reduce response time.
- It fairly distributes remaining bandwidth between remaining queues.

Consequently, WFQ ensures that queues are not starved for bandwidth and that traffic service levels are made more predictable.

Weighted Fair Queuing adapts automatically to changing network conditions and requires minimal configuration. WFQ is implemented on the router and applies to network traffic passing through it. Unlike DiffServ, external nodes have no affect on QoS through Weighted Fair Queuing.

Weighted Fair Queuing provides a means of ensuring that high priority or mission-critical applications receive adequate levels of bandwidth. This is accomplished by controlling two key factors in QoS policies. Manipulation of these two factors determines the quality of service to each application.

- **Priority.** Priority determines the order in which packets will be processed by the router.
- **Weight.** Weight determines the amount of bandwidth to be allocated to a given application.

The router supports four priority levels; High, Medium, Normal and Low. A weight value can be assigned to each of these priority levels from a minimum of 1 to a maximum of 255.

To configure QoS:

1. Click **QoS** in the left navigation pane of the Router Information page. This displays the QoS Configuration page. This page shows the current settings as well as provides a means to change the current settings.

Current User: superuser

QoS Configuration

QoS Status
User can turn QoS on or off. In On mode, QoS will forward packets, set diffserv marking based on user defined mapping rules and QoS policies. In Off mode, QoS will forward packets based on pre-defined mapping rules and QoS settings.

DiffServ Status
User can turn diffserv on or off. In Off mode, QoS will not touch the IP header's DiffServ Marking. This is DiffServ pass through. In On mode, QoS will mark the DiffServ field according to the QoS Policies and pre-defined behavior.

QoS Priority/Weight Setting
User can setup values for 4 different priorities. The range of value is from 1 to 255. [Note: for Netscape users, you may need to click somewhere outside the field you just entering to make the percentage update working]

[QoS Policy Page](#)

[Home](#)

QoS Status	
☐ On	
☒ Off	Current Setting

DiffServ Status	
☐ On	
☒ Off	Current Setting

Apply

QoS Priority/Weight Setting			
Priority	Current Weight	New Weight	%
High	10	10	25
Medium	10	10	25
Normal	10	10	25
Low	10	10	25

2. Select one of the following from **QoS Status** to enable or disable QoS:
 - **On:** QoS will forward packets and set diffserv marking based on user defined mapping rules and enabled QoS policies.
 - **Off:** QoS will forward packets based on pre-defined mapping rules and enabled QoS policies.
3. To enable or disable marking of the Differentiated Services field of the IP header, select one of the following from **DiffServ Status**:
 - **On:** QoS will mark the DiffServ field according to the QoS Policies and pre-defined behavior.
 - **Off:** DiffServ is not marked; this is DiffServ pass through.
4. Assign weight values to four different priorities. This can be a number between 1 and 255.
5. Click **Apply**.
6. [Configure QoS policies](#).

Configure QoS Policy

QoS policies control how QoS manages network resources. To configure a QoS policy:

1. Click **QoS Policy Page** from the left navigation pane of the QoS Configuration page. This displays the QoS Policy Setting page.

The screenshot shows the 'QoS Policy Setting' page. At the top, there are buttons: 'Create', 'Modify/View', 'Move', 'Delete', and 'Refresh'. Below these is a dropdown menu labeled 'IP Policy List' with 'mypolicy' selected. The main section is titled 'Move' and contains a text field labeled 'Policy' with 'mypolicy' entered. Below this are two radio button options: 'to the end' and 'before policy', followed by an empty text field. At the bottom are 'Apply' and 'Cancel' buttons.

2. Click **Create**. This expands the QoS Policy Setting page. (To modify or delete an existing policy, select the policy in the **IP Policy List** drop-down menu and click **Modify** or **Delete**.)

The screenshot shows the 'QoS Policy Setting' page with the 'Create' section expanded. It includes the same top buttons and 'IP Policy List' dropdown. The 'Create' section contains the following fields and options:

- Policy Name:** An empty text field.
- Status:** Radio buttons for 'Enable' and 'Disable' (selected).
- Source IP:** Radio buttons for 'From' (with empty 'From' and 'To' fields) and 'Do not care' (selected).
- Dest IP:** Radio buttons for 'From' (with empty 'From' and 'To' fields) and 'Do not care' (selected).
- Protocol:** Radio buttons for 'By number' (with an empty field), 'TCP' (selected), and 'Do not care'.
- Source Port:** Radio buttons for 'From' (with empty 'From' and 'To' fields), 'FTP' (selected), and 'Do not care'.
- Dest Port:** Radio buttons for 'From' (with empty 'From' and 'To' fields), 'FTP' (selected), and 'Do not care'.
- Priority:** A dropdown menu with 'LOW' selected.

3. In **Policy Name**, enter a unique name to identify the policy.
4. In **Status**, select **Enable** or **Disable** to enable or disable the QoS policy. Disabled, the policy will not be used.

5. In **Source IP**, select one of the following:
 - **From/To**: Enables source address checking. Specify the source IP address or range of IP addresses that must match for this policy to be used.
 - **Do not care**: Disables source address checking.
6. In **Dest IP**, select one of the following:
 - **From/To**: Enables destination address checking. Specify the destination IP address or range of IP addresses that must match for this policy to be used.
 - **Do not care**: Disables destination address checking.
7. In **Protocol**, select one of the following:
 - **By number**: Enter the protocol number to match in the protocol check.
 - From the drop-down menu:, select the protocol to match in the protocol check (**TCP** or **UDP**).
 - **Do not care**: Disables protocol checking.
8. In **Source Port**, select one of the following:
 - **From/To**: Enter the source port or range of source ports to match in the source port check.
 - From the drop-down menu, select the application to match in the source port check.
 - **Do not care**: Disables source port checking.
9. In **Destination Port**, select one of the following:
 - **From/To**: Enter the destination port or range of destination ports to match in the destination port check.
 - From the drop-down menu, select the application to match in the destination port check.
 - **Do not care**: Disables destination port checking.
10. From the **Priority** drop-down menu, select the priority to place on this policy if match criteria is met. This can be **High**, **Medium**, **Normal**, or **Low**. Normal is the default.
11. In **Code Point - incoming** and **Code Point - outgoing**, select one of the following:
 - Click the button next to the box to specify the Code Point. Be sure to enter the Code Point in the appropriate field.
 - Click **Default** to accept the default Code Point.
12. In **Bidirection**, select one of the following:
 - **On**: Enables bidirectional operation of the policy.
 - **Off**: Disables bidirectional operation of the policy.
13. In **Start Time**, specify the time of day when the policy becomes active.
14. In **Duration**, specify the time period for the policy to remain active.
15. In **Repetition**, select one of the following:
 - **Always on**: Policy is applied every day.
 - **At**: Policy is applied only one time on the specified month (MM), day (DD), and year (YY).
 - **Every**: Policy is applied on the specified day of the week.
16. Click **Save**.

Reorder QoS Policies

To move a QoS policy:

1. On the QoS Policy Setting page, select the policy you want to move in the **IP Policy List** drop-down menu and click **Move**. This expands the QoS Policy Setting page.

The screenshot shows the 'QoS Policy Setting' window. At the top, there are five buttons: 'Create', 'Modify/View', 'Move', 'Delete', and 'Refresh'. Below these buttons is a dropdown menu labeled 'IP Policy List' with 'mypolicy' selected. The 'Move' button is highlighted, and the 'Move' section is expanded. In this section, there is a text input field labeled 'Policy' with 'mypolicy' entered. Below this field are two radio button options: 'to the end' and 'before policy'. The 'before policy' option is selected, and there is an empty text input field next to it. At the bottom of the 'Move' section are two buttons: 'Apply' and 'Cancel'.

2. To specify the new location, select one of the following:
 - **to the end:**
Moves the policy to the end of the policy list.
 - **before policy:**
Select the name of the policy where you want to move the Policy in the **policy** name drop-down menu.
The policy will be moved to the location immediately preceding the policy specified in **before policy**.
3. Click **Apply**.

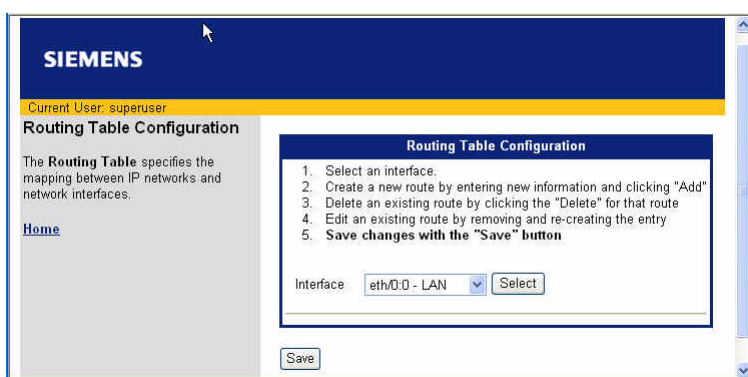
Routing Table Configuration

Every host has a default routing table that it uses to determine which physical interface address to use for outgoing IP traffic. The router supports virtual routing, which allows you to define multiple routing tables for a single host. Each routing table added has a defined range of IP source addresses that use that table. The router determines which routing table to use based on the source address in the packet.

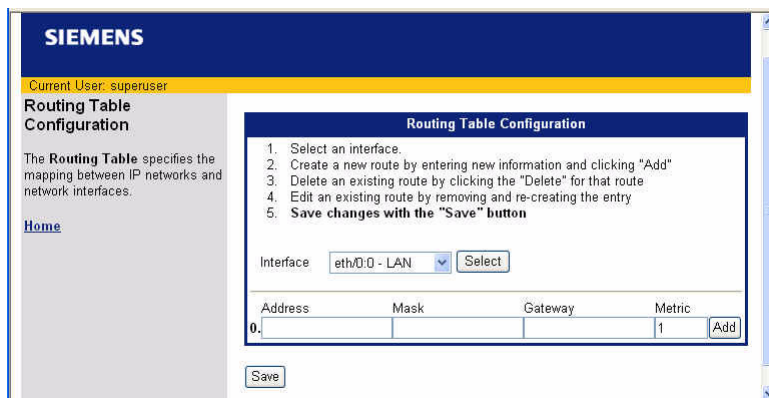
For example, if the router receives a packet whose source address is 192.168.254.10, it checks if that address is within the address range defined for a virtual routing table. If it is, the virtual routing table is used to route the packet. If it is not, the default routing table is used instead.

To configure additional routing tables:

1. Click **Routing Table Configuration** on the left navigation pane of the Router Information page. This displays the Routing Table Configuration page.



2. From the **Interface** drop-down menu, select the interface you want to configure.
3. Click **Select**. This expands the Routing Table Configuration page.



4. Enter the subnet **Address**, **Mask**, and **Gateway** IP address associated with the routing table.
5. In **Metric**, enter the priority for the routing table. This can be a number between 1 and 15 with 1 being the highest priority.
6. Click **Add**.
7. Click **Save**.

Dial Backup

Dial Backup provides a backup to the Internet through an asynchronous modem connection when the default WAN link service experiences interruption. The modem connection can be provided through either an internal V.90 modem or an external V.90 or ISDN modem connected to the MGMT Console port.

Dial Backup is intended for customers with critical applications for which continuous Internet access is vital. If the WAN link for those applications goes down, the router automatically switches traffic to the specified asynchronous modem. Once the WAN link is up and stable, the router automatically switches the modem traffic back to the WAN.

Use the Dial Backup option to configure a backup connection to the Internet through an external asynchronous modem connected to the console port. This backup connection can be activated in the event of WAN service interruption. During an interruption to the WAN interface connection, the router will use the dial backup modem connection while waiting for WAN service to be restored. Once the WAN link is active again, Dial Backup will automatically switch back to the WAN service. (This feature may also be useful for a customer whose WAN connection is not yet installed. The router begins providing service through an asynchronous modem and then automatically switches to the WAN when it becomes available.)

To configure a dial backup connection:

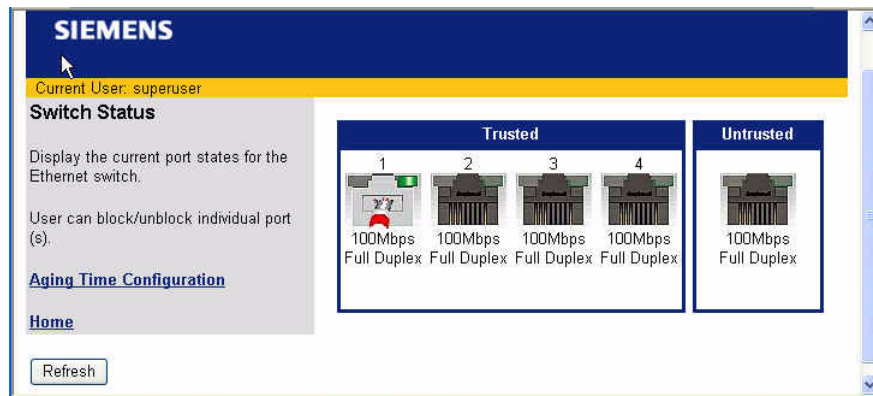
1. Click **Dial Backup** on the left navigation pane of the Router Information page. This displays the Dial Backup page.

2. Click **Enable Dial Backup**.
3. Enter the **User name** and **Password** to use for the dial up connection. This information is provided by your ISP.
4. In **Phone number**, enter the ISP's dial up phone number.
5. Optionally, in **Alternate Phone number**, enter an alternate phone number to use in the event the first number is unavailable.
6. Click **Apply**.

Switch Management

Each router provides four or eight Ethernet 10/100 switching ports for connection to the local area network (LAN). These RJ-45 ports are located on the rear panel and have individual Link Status LEDs to provide port status and link activity. Labeling is provided for port identification.

To manage the switches using the web interface, click **Switch Management** on the left navigation pane of the Router Information page. This displays the Switch Status page.



The Switch Status page provides a graphical representation of the switch port information (including connection speed, mode, and port status,) and provides links to switch management pages to perform the following tasks.

[Aging Time Configuration](#)

Configure the aging time of the switch

Switch Age Time

The Switch Age Time specifies the aging time of the switch. When the age time expires, the port MAC address entry is removed from the table containing this information.

To configure Switch Age Time:

1. Click **Aging Time Configuration** from the left navigation pane of the Switch Status page. This displays the Switch Aging Time Configuration page.

Current User: superuser

Switch Aging Time Configuration

Specifies the aging time of the switch. When age time expires the port-MAC address entry will be removed from the table containing this information.

Aging time must be within the range from 10 seconds to 1000000 seconds and must be an integer.

[Switch Management Main Page](#)

[Home](#)

Switch Aging Time Configuration

Aging Time seconds

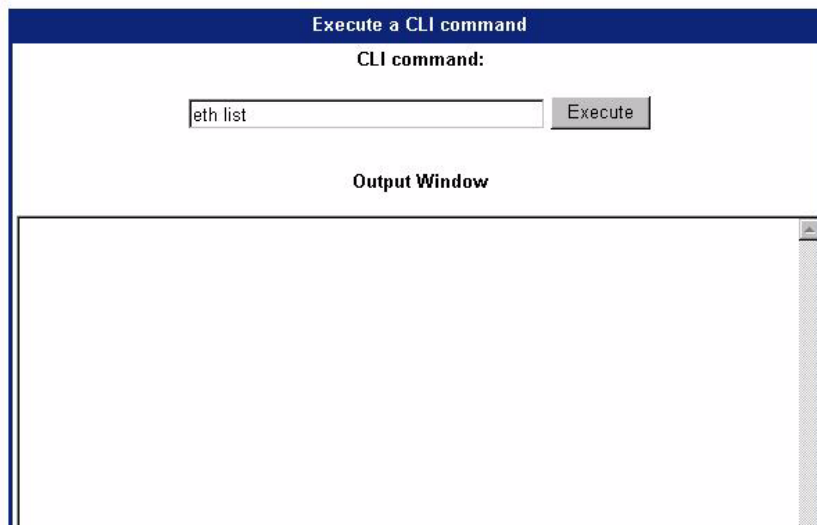
Apply

2. In Aging Time, enter the number of seconds that must pass before the port MAC address entry is removed from the table. This can be a number between 10 and 100,000.
3. Click **Apply**.

Command Line Interface

Use the Command Line Interface option to use the web interface to enter CLI commands. (Refer to the Command Line Interface Guide for available commands.) To execute a CLI command from the web interface:

1. Click **Command Line Interface** on the left navigation pane of the Router Information window. This displays the Execute a CLI command page.



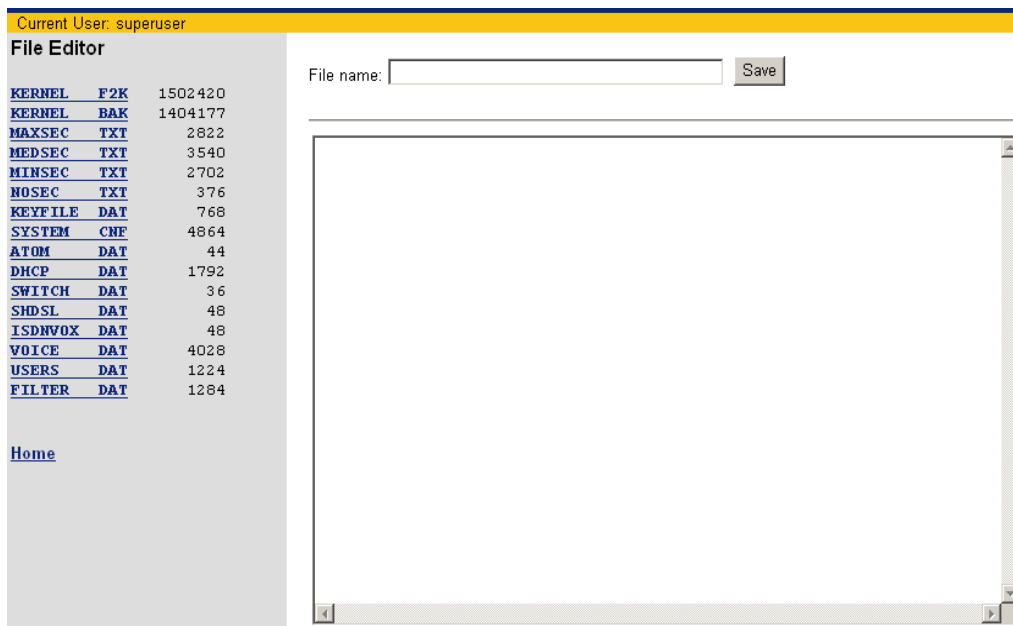
2. In the field provided, enter the desired command.
3. Click **Execute**. The response will be displayed in the Output Window.

File Editor

Use the File Editor to create and edit files stored on the router. These files contain configuration and other data used by the router. For advanced users who understand the file formats and syntax, this method may be more efficient than configuring the router with commands or the web interface, particularly when the amount of data is large or complex.

To use the File Editor:

1. Click **File Editor** on the left navigation pane of the Router Information window. This displays the File Editor page with a list of stored files in the left navigation pane.



2. Do one of the following:
 - To create a new file, enter file text in the editing window and the name of the file in **File name** (using filename.txt format), then click **Save**.
 - To edit an existing file, click the file you want to edit on the left navigation pane. This displays the contents of the file in the editing window. Make your changes and click **Save**.

Edits can be discarded without saving by clicking the **Home** link at the bottom of the navigation pane. If you save a file with the same name as an existing file, the existing file will be immediately over-written.

This chapter describes how to configure security features on the router. Security features are listed below. To configure one of these features, click the link on the left navigation pane of the Router Information page.

[NAT](#)

Network Address Translation provides a level of security by hiding the private IP addresses of your LAN behind a single public IP address of your router.

[SNMP](#)

Simple Network Management Protocol controls message exchanges between a management client and a management agent.

[Secure Shell](#)

Secure Shell (SSH) secures network services over an insecure network such as the public Internet.

[Firewall Scripts](#)

Secures network and data communications with built-in firewall capabilities. A firewall is any combination of hardware and software that secures a network and traffic on the network to prevent interception or intrusion.

[Stateful Firewall](#)

An IP filtering firewall that examines the packet's header information and matches it against a set of defined rules.

[IKE/IPSec Configuration](#)

Internet Key Exchange/Internet Protocol Security provides authentication and encryption of IP traffic for authenticity, integrity, and privacy.

[VPN Log On](#)

Start an IPSec session.

NAT

Network Address Translation (NAT) provides a level of security by hiding the private IP addresses of your LAN behind the single public IP address of your router. All connections pass through the router and are translated by NAT. Network addresses on inbound traffic are translated from public to private IP addresses; while addresses on outbound traffic are translated from private IP addresses to the router's public IP address.

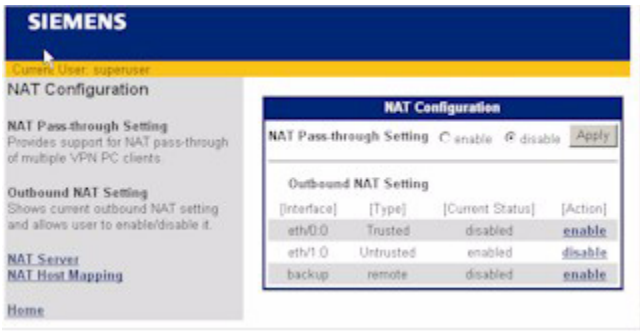
This section describes how to perform the following tasks.

- [Configure NAT](#)
- Configure passthrough settings and enable or disable NAT for outbound traffic on an interface.
- [Configure NAT Server](#)
- Configure NAT for inbound traffic.
- [Configure Host Mapping](#)
- Configure mapping between private IP addresses and public IP addresses.

Configure NAT

To configure NAT for outbound traffic:

1. Click **NAT** on the left navigation pane of the Router Information page. This displays the NAT Configuration page.



2. For **NAT Passthrough**, select **Enable** or **Disable** to specify whether or not multiple VPN clients are allowed. Enabled, multiple VPN clients are allowed; disabled, only a single VPN client is allowed.
3. Click **Apply**.
4. In the **Outbound NAT Setting** section of this page, select **Enable** or **Disable** for each of the listed interfaces to enable or disable NAT for communications for that interface.

Configure the NAT Server

To configure NAT for inbound traffic:

1. Click **NAT Server** on the left navigation pane. This displays the NAT Server Settings page.

SIEMENS

Current User: superuser

NAT Server Setting

Inbound NAT Server Creation
Provides two ways to configure inbound NAT setting.

- **Easy Setup:** User just picks one of the predefined services and provides the IP address of the local machine.
- **Advanced Setup:** User can pick a protocol and a pair of ports (first port and last port) from one interface and maps them to a local machine with IP address and the first private port number. User can leave last port empty if he/she wants to map only one port. User can leave local machine port empty if he/she wants to use the same port

NAT Server Setting

Inbound NAT Server Creation

Source Interface: eth0.0 - Trusted

Easy Setup: Service: TELNET, Default Port: [] Add

Advanced Setup: Protocol: TCP, First Port: [], Last Port: [], IP Address: [], Port: [] Add

Current Inbound NAT Servers

Src Interface	Protocol	First Port	Last Port	IP Address	Port
eth0.0	TCP	23	23	192.168.254.1	23

Delete

2. Select the interface you want to configure from the **Source Interface** drop-down menu.
3. Do one of the following:
 - Select the network service you are configuring from the **Service** drop-down menu for Easy Setup. This configures NAT to support the most common network services.
 - For Advanced Setup, select a protocol from the **Protocol** drop-down menu and specify a **First Port #** to assign a port number for the protocol to use. To assign a range of port numbers, specify a **Last Port #** as well.
4. Enter the IP address of the local machine in **IP Address**.
5. Do one of the following to enter port information for the selected service:
 - Click **Add** next to **Default Port #** to use the default port for the specified service.
 - Enter the port number on the local machine you want the specified service to use in **Port #**, and click **Add**. Leave this field blank if you want the local machine to use the same port number as the WAN.

Configure Host Mapping

To configure the mapping between private IP addresses and public IP addresses:

1. Click **NAT Host Mapping** on the left navigation pane. This displays the NAT Host Settings page.

The screenshot shows the 'NAT Host Settings' page. On the left is a sidebar with the Siemens logo, 'Current User: superuser', 'NAT Host Settings', 'Internal to External IP Mapping' (describing symmetric NAT), 'NAT Main Page', and 'Home'. The main content area is titled 'NAT Host Settings' and contains a 'Create Host Mapping Entry' section with an 'Add Host Mapping' sub-header. This section has four input fields: 'Interface' (a dropdown menu showing 'eth1.0 - Untrusted'), 'Beginning LAN IP', 'Ending LAN IP', and 'Beginning WAN IP', followed by an 'Add' button. Below this is a table titled 'Current Host Mapping Entries' with columns: Interface, Beginning LAN IP, Ending LAN IP, Beginning WAN IP, Ending WAN IP, and Delete.

2. Select the interface you want to configure from the **Interface** drop-down menu.
3. In **Beginning LAN IP**, enter the first private IP address you want to map to a public address.
4. In **Ending LAN IP**, enter the last private IP address you want to map to a public address.
5. In **Beginning WAN IP**, enter the first public IP address you want to map to a private IP address. It is only necessary to specify a starting IP address. The rest of the addresses in the range are computed automatically.
6. Click **Add**. This adds the entry to the Current Host Mapping Entries table.

SNMP

Simple Network Management Protocol (SNMP) exchanges messages between a management client and a management agent. Messages contain requests to get and set variables that exist in network nodes, thus allowing a management client to obtain statistics, set configuration parameters, and monitor events. Communication with the SNMP agent can occur over the LAN or WAN connection. To configure SNMP:

1. Click **SNMP** on the left navigation pane of the Router Information Page. This displays the SNMP Configuration page.

2. In **Community String**, enter the name of the SNMP community to which the router belongs. This name acts as a identifier between the SNMP manager and agent for requests. The community setting allows the SNMP manager to request information from a *community*, rather than each node (agent) individually.
3. In Write Community String, enter the name of the SNMP write community to which the router belongs.
4. In **Port Number**, select one of the following:
 - **Port Number:**
Enter the desired number in the field next to **Port Number**.
 - **Disable:**
Disables the SNMP port.
 - **Default:**
Sets the port to the default port of 161.
5. In **Enabled Interfaces**, select one or both of the following:
 - LAN designates the Local Area Network as a trusted interface.
 - WAN designates the Wide Area Network as a trusted interface.
6. In **Trap Enable**, select **Enable** or **Disable**. SNMP agents also have the ability to send (unrequested) messages to SNMP managers; these messages are called traps and notify the SNMP managers that an event has happened on the system.
7. If you enabled **Trap Enable**, in **Trap Manager[1-4]** specify the IP address for a node that will receive a Trap event from the router. You can specify up to four trap managers.
8. Click **Apply**.
9. Configure [SNMP IP Filter](#) and [SNMP Password](#).

SNMP IP Filter

Activating an IP Filter range will limit SNMP requests to only those that originate from the designated addresses or LAN. To activate IP filtering:

1. Click **SNMP IP Filter** from the SNMP Configuration page. This displays the SNMP IP Filter Configuration page. The current IP filter ranges are displayed in the IP Addresses.

Current User: superuser

SNMP IP Filter Configuration

Activating an IP Filter range will limit SNMP requests to ONLY those that originate from these addresses.

[SNMP Main Page](#)
[Home](#)

IP Addresses	
Beginning IP Addr.	Ending IP Addr.
192.168.61.1	192.168.61.255
1.1.1.1	1.1.1.1
LAN	LAN

[Delete](#) [Delete](#) [Delete](#)

Add an IP Range

To Add a IP Range, enter the IP Range or check LAN:

Start IP Range:

End IP Range:

LAN: ☐

[Add IP Range](#)

2. In **Start IP Range**, enter the first IP address in the range to be filtered.
3. In **End IP Range**, enter the last IP address in the range to be filtered.
4. Optionally click **LAN**.
5. Click **Add IP Range**.

SNMP Password

An SNMP password is used to authenticate an SNMP Manager. Once authenticated, SNMP set requests will be performed. To set the SNMP Password:

1. Click **SNMP Password** from the SNMP Configuration page. This displays the SNMP Password page.

Current User: superuser

SNMP Password

This is the password used by all Client based Support applications such as Configuration Manager and Quick Start.

[SNMP Main Page](#)
[Home](#)

Enter New Password:

New Password (again):

[Apply](#)

2. Enter the **New Password** and **New Password (again)**.
3. Click **Apply**.

Secure Shell

Secure Shell (SSH) secures network services over an insecure network such as the public Internet. The objective of SSH is to make a secure functional equivalent for telnet. Telnet connections and commands are vulnerable to a variety of different kinds of attacks, allowing unauthorized system access, and even allowing interception and logging of traffic to and from the system including passwords. SSH also provides secure FTP type file transfers.

To access the Secure Shell configuration pages, click **Secure Shell** from the left navigation pane on the Router Information page. This displays the Secure Shell (SSH) Configuration List page.

Current User: superuser

Secure Shell (SSH) Configuration List

This page shows the user the list of currently configured items for SSH.

[Configure SSH](#)
[Load Keys](#)
[Key Generator](#)
[Key Generator Status](#)
[Home](#)

SSH:	Enabled
SSH version:	ssh2
Encryption Set:	3des-cbc
MAC Set:	hmac-md5
Idle Timeout (secs):	600
D-H Rekey Interval (min):	60

This page displays the current SSH configuration settings as well as provides links to the other SSH configuration pages.

- | | |
|--------------------------------------|--|
| Configure SSH | Configure SSH. |
| Load Keys | Load public and private SSH keys used to authenticate the SSH server from a source file. |
| Key Generator | Generate public and private SSH keys. |
| Key Generator Status | Check the status of the key generation process. |

Configure SSH

To configure Secure Shell settings:

1. Click **Configure SSH** from the Secure Shell (SSH) Configuration List page. This displays the Configure Secure Shell (SSH) page.

2. For **Status**, select **Enable** or **Disable** to enable or disable the SSH feature. Before enabling SSH, a private/public key pair should be loaded on the router using either the [Key Generator](#) or [Load Keys](#) option.
3. For **Encryption**, select one or more of the encryption methods. The selected method(s) is configured locally on the router (or server). When a client initiates a session, the encryption type is realized and the client adheres to the server encryption mode. If the encryption method is not supported on the client side, the connection will fail.
4. For **MAC**, select the type of Message Authentication Code to use for the SSH connection.
5. For **Port**, select one of the following to specify the port that the SSH server listens on.
 - **Default**: Sets the SSH port to the default port of 22.
 - **Disable**: Disables the SSH port.
 - **Port Number**: Enter the desired number in the field next to **Port #**.
6. In **Idle Timeout**, enter the number of seconds an SSH connection can remain idle before the SSH session is disconnected. This can be a number between 30 and 1200 with 600 being the default.
7. In **D-H ReKey Interval**, enter the number of minutes that must pass between additional key exchanges. This can be a number between 0 and 600 with 600 being the default.
8. Click **Apply**.

Load Keys

Diffie-Hellman is the key exchange system used for authentication in the establishment and maintenance of SSH connections. The key exchange requires a Public Key and a Private Key. This key pair can either be loaded from a source file or generated by the router. This section describes how to load the key pair from a source file. Refer to the section title [Key Generator](#) for details on generating the key pair on the router.

To load the key pair from a source file:

1. Click **Load Keys** on the left navigation pane of the Secure Shell (SSH) Configuration List page. This displays the Load Private and Public Keys from file page.

Current User: superuser

Load Private and Public Keys from file

Allows the user to load a public and private key used to authenticate the SSH server from a source file.

[SSH Main Page](#)
[Home](#)

Load Public and Private SSH Keys

☒ Public key ☐ Private key

Key File:

2. Do one of the following:
 - Select **Public key** to load a public key from a file.
 - Select **Private key** to load a private key from a file.
3. In **Key File**, specify the file that contains the key. You can optionally **Browse** for the key file.
4. Click **Upload** to load the key file. A confirmation message will be displayed upon file upload completion.

Key Generator

Diffie-Hellman is the key exchange system used for authentication in the establishment and maintenance of SSH connections. The Key exchange requires a Public key and a Private key. This key pair can either be loaded from a source file or generated by the router. This section describes how to generate the key pair on the router. Refer to the section titled [Load Keys](#) for details on loading the key pair from a file.

Executing this function will generate new keys. This function may take in excess of one hour to complete. When started, the user will be redirected to a status page that is refreshed every 60 seconds. The status page indicates whether the task is running. When the task is no longer running, results are displayed.

Once the task is started, you can close this page and the Keygen function will continue. You can reopen it anytime by clicking **Key Generator Status** on the left navigation pane of the Secure Shell (SSH) Configuration List page.

To generate the key pair on the router:

1. Click **Key Generator** on the left navigation pane of the Secure Shell (SSH) Configuration List page. This displays the Generate Public-Private Key Pair page.

Current User: superuser

Generate Public-Private Key Pair

Allows the user to generate a public and private SSH key pair. The public key will be displayed upon completion however the private is hidden and protected. This function may take in excess of 1 hour to complete.

[SSH Main Page](#)
[Home](#)

CAUTION: Executing this function will generate new keys. This function may take in excess of 1 hour to complete. When started, the user will be redirected to a status page which will be refreshed every 60 seconds. The status page will indicate whether the task is running. When the task is no longer running, results will be displayed. Once the task is started, you may monitor key generation via the status page or you may browse to any other pages or you may close the browser. The Keygen function will continue running regardless of the state of your browser. You may also generate key files offline and upload them using the CLI or the [Load Keys](#) page.

CAUTION: Rebooting the router will terminate the task and new keys will not be generated.

Press the Generate button to confirm you wish to generate the public and private SSH keys.

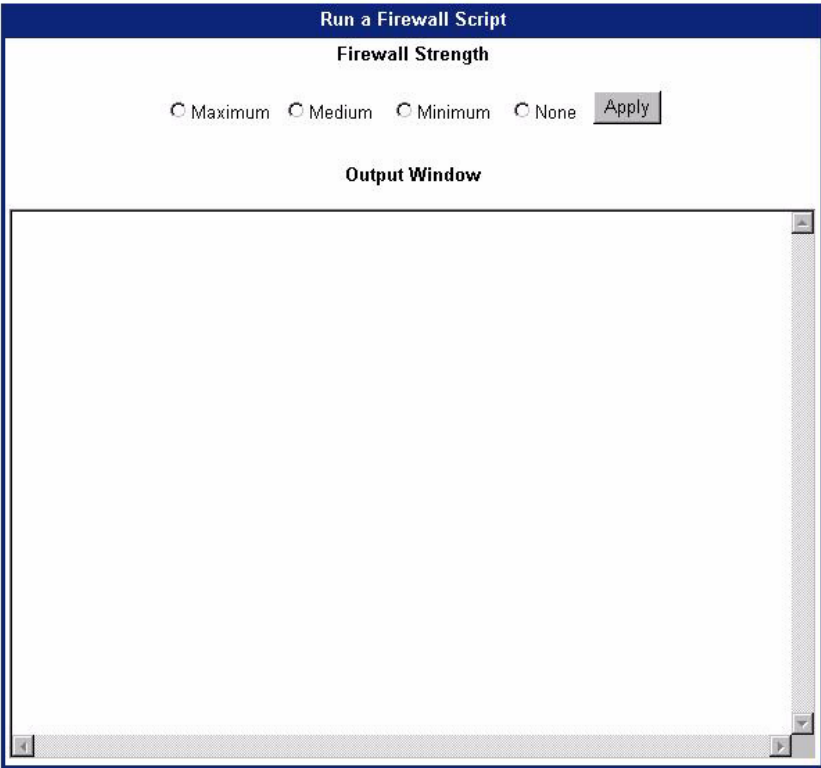
2. Click **Generate** to generate the keys.
3. To monitor the key generation progress, click **Key Generator Status** from the left navigation pane of the Secure Shell (SSH) Configuration List page.

Firewall Scripts

A firewall is any combination of hardware and software that secures a network and traffic to prevent interception or intrusion. The router has built-in firewall capabilities to secure your network and data communications. The router is equipped with predefined scripts that can be modified or used “as is” to construct firewalls. All network security efforts, including firewall configurations, should be performed by an experienced and qualified network security technician who is familiar with the unique architecture and requirements of their network. Siemens Subscriber Networks cannot be liable for security violations due to inadequate or incorrect firewall configurations.

To load a firewall script, perform the following:

1. Click **Firewall Scripts** on the left navigation pane of the Secure Shell (SSH) Configuration List page. This displays the Run a Firewall Script page.



2. Select the desired **Firewall Strength**. This can be one of the following:
 - **Maximum**: Establishes a firewall with the most restrictive policies for maximum network security.
 - **Medium**: Establishes a firewall with flexible policies for a moderate level of network security.
 - **Minimum**: Establishes a firewall with a basic set of policies for a minimum level of network security.
 - **None**: No firewall is established.
3. Click **Apply**. This displays the firewall script in the **Output Window**.

Stateful Firewall

Stateful Firewall varies from the IP Filtering Firewall in that it gathers and maintains state information about each session.

IP Filtering Firewall examines the packet's header information and matches it against a set of defined rules. If it finds a match, the corresponding action is performed. If not, the packet is accepted.

Stateful firewall intercepts outgoing packets and gathers information from them (for example IP address information, port number) to create state information for that session. When an incoming packet is received, the Stateful Firewall checks the packet against the state information it has maintained and accepts the packet if the packet belongs to the session. By default, the firewall is disabled, and your system is vulnerable until this feature is enabled.

This section describes how to perform the following tasks.

[Configure Stateful Firewall](#)

Configure settings that control how the Stateful Firewall performs.

[Dropped Packets](#)

View the most recent dropped packets.

[Firewall Rules](#)

Configure Stateful Firewall rules.

Configure Stateful Firewall

To configure the Stateful Firewall:

1. Click **Stateful Firewall** from the left navigation pane of the Router Information page. This displays the Stateful Firewall Configuration page.

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Current User: superuser

Stateful Firewall Configuration

[Dropped Packets Page](#)
[Firewall Rule Page](#)

Firewall Status
User can turn the firewall on/off.

Watch Setting
If watch is turned on, the messages are printed to the console whenever a packet is accepted or dropped.

Dropped Packet Threshold Setting
When the number of dropped packets exceeds the threshold value, the firewall will log a message to the console. Default value is 200 per second.

UDP Packet Threshold Setting
The firewall would block any subsequent UDP packets by default if the counter for the UDP packets exceeds the threshold value. Default value is 1000 per second.

ICMP Ping Packet Threshold Setting
The firewall would block any subsequent ICMP ping packets by default if the counter for the ICMP ping packets exceeds the threshold value. Default value is 1000 per second.

SYN Packet Threshold Setting
The firewall would block any subsequent SYN requests to a destination by default if the counter for the SYN packets for that destination exceeds the threshold.

Firewall Status
☐ On
☒ Off Current Setting

Watch Setting
☐ On
☒ Off Current Setting

Dropped Packet Threshold Setting
Current: 200 New:

UDP Packet Threshold Setting
Current: 1000 New:

ICMP Ping Packet Threshold Setting
Current: 1000 New:

SYN Packet Threshold Setting
Current: 200 New:

2. For **Firewall Status**, select **On** or **Off** to turn Stateful Firewall on or off.
3. For **Watch Setting**, select **On** or **Off** to control whether or not messages are printed to the console whenever a packet is accepted or dropped.
4. In **Dropped Packet Threshold Setting**, specify the number of packets per second that must be dropped before a message is logged to the console. The default value is 200 packets per second.
5. In **UDP Packet Threshold Setting**, specify the number of UDP Packets per second that can be received. When this number is exceeded, the firewall blocks any subsequent UDP packets. The default value is 1000 UDP packets per second.
6. In **ICMP Ping Packet Threshold Setting**, specify the number of ICMP Ping Packets per second that can be received. When this number is exceeded, the firewall blocks any subsequent ICMP ping packets. The default value is 1000 ICMP Ping Packets per second.
7. In **SYN Packet Threshold Setting**, specify the number of SYN requests per second that can be received. When this number is exceeded, the firewall blocks any subsequent SYN requests. The default value is 200 SYN packets per second.
8. Click **Apply**.

View Dropped Packets

To view the most recent dropped packets:

1. Click **Dropped Packets** from the left navigation pane of the Stateful Firewall Configuration page. This displays the Firewall Dropped Packet List page.

Firewall Dropped Packet List

How many packets do you want to see?

☐ (1-200)
☒ Default (200 packets)

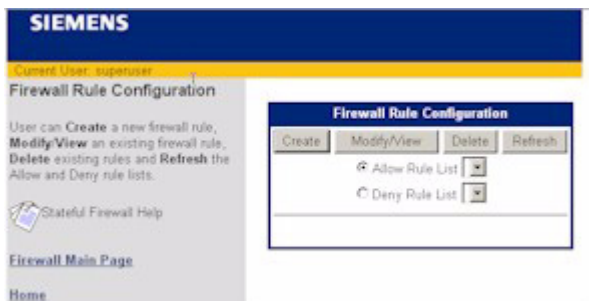
#	Date	Time	Protocol	Source IP	Src Port/ ICMP Type	Destination IP	Dst Port/ ICMP Code	Reason
1	11/30/2001	00:41:45: 0	icmp	172.17.32.3	8	172.17.20.69	0	denied
2	11/30/2001	00:41:44: 0	icmp	172.17.32.3	8	172.17.20.69	0	denied
3	11/30/2001	00:41:43: 0	icmp	172.17.32.3	8	172.17.20.69	0	denied
4	11/30/2001	00:41:42: 0	icmp	172.17.32.3	8	172.17.20.69	0	denied
5	11/30/2001	00:41:41: 0	icmp	172.17.32.3	8	172.17.20.69	0	denied

2. Do one of the following:
 - **Specify the number of dropped packets to view** from 1 to 200. Netscape 4 users, may have to wait a very long time to get the complete list of 200 displayed. Select a smaller value for viewing if this is the case.
 - Click **Default** to view the most recent 200 dropped packets.
3. Click **Apply**.

Configure Firewall Rules

To configure firewall rules:

1. Click **Firewall Rules** from the left navigation pane of the Stateful Firewall Configuration page. This displays the Firewall Rule Configuration page.



When firewall rules are created, they are specified as Allow or Deny rules. When a packet is evaluated, the Deny rules are applied first, then the Allow rules.

2. Select one of the following:
 - Click **Allow Rule List** to define a new rule that allows an action if the action matches the specified criteria.
 - Click **Deny Rule List** to define a new rule that denies an action if the action matches the specified criteria.
 - Select an existing rule from the **Allow Rule List** or **Deny Rule List** drop-down menu.
3. Click **Create** or (**Modify/View** if you selected an existing rule). This expands the Firewall Rule Configuration page to include appropriate fields for the **Allow Rule List** and **Deny Rule List** selection.

4. For **Target**, select one of the following to specify the characteristics a packet must have in order to match the firewall rule:
 - **Protocol/Port**
Specifies the protocol or port that applies to the rule. This can be one of the following:
 - **tcp** to specify TCP protocol for this rule. You can specify a source and destination port or port range. If only one source/destination port is specified, the packet must have the specified port. If a range is defined, the packet can have a port within the specified range. If no source/destination port is specified, the firewall rule matches any port in the range 0 - 65535.
 - **udp** to specify UDP protocol for this rule. You can specify a source and destination port or port range. If only one source/destination port is specified, the packet must have the specified port. If a range is defined, the packet can have a port within the specified range. If no source/destination port is specified, the firewall rule matches any port in the range 0 - 65535.
 - **number** to specify a protocol number.
 - **icmp** to specify ICMP protocol for this rule. If you select this protocol, you must specify an ICMP Type for matching the packet source and ICMP Code for matching the packet destination.
 - **Application**
Select the application that must match from the **Application** drop-down menu.
5. For **Source** and **Destination** under **Address**, optionally specify the **First IP** and **Last IP** addresses to define the source and destination IP address boundaries to apply to the firewall rule. The packet must have a source/destination IP address within the specified address range. If only **First IP** address is specified, the packet must have that source/destination IP address. If no source/destination IP address is specified, the firewall rule matches any valid IPV4 address.
6. For **Source** and **Destination** under **Address**, optionally specify a **Mask** that must match for the rule to apply. If no mask is specified, 255.255.255.255 is used.
7. From the **Mode** drop-down menu, select one of the following to specify when watch messages are displayed for this firewall rule. The messages are sent to the console serial port and a Syslog server.
 - **Quiet**: No messages are displayed for this firewall rule, even if the rule causes a packet to be dropped. This is the default setting for firewall *allow* rules.
 - **Verbose**: A message is displayed every time this firewall rule matches a packet, regardless of the rule action.
8. From the **Direction** drop-down menu, select the direction of the packet to which the firewall rule is applied. The default is **both**.
9. Click **Save**.

Delete Firewall Rules

To delete firewall rules:

1. Click **Firewall Rules** from the left navigation pane of the Stateful Firewall Configuration page. This displays the Firewall Rule Configuration page.

Current User: superuser

Firewall Rule Configuration

User can **Create** a new firewall rule, **Modify/View** an existing firewall rule, **Delete** existing rules and **Refresh** the Allow and Deny rule lists.

[Firewall Main Page](#)

[Home](#)

Firewall Rule Configuration

Create Modify/View Delete Refresh

☐ Allow Rule List 1-UDP-both

☐ Deny Rule List 1-TCP-both

2. Click **Delete**. This expands the Firewall Rule Configuration page.

Firewall Rule Configuration

Create Modify/View Delete Refresh

☐ Allow Rule List 1-UDP-both

☒ Deny Rule List 1-TCP-both

Delete

☐ all rules in allow list

☐ all rules in deny list

☐ all rules in allow list and deny list

☐ rule number from to in Allow

Apply Cancel

3. Select the rule list(s) or range of rules you want to delete. To delete a single rule, only enter a number in the **from** field. When entering a range of rules to be deleted, the rule range specified is inclusive of the first and last rules.
4. Click **Apply**.

IKE/IPSec Configuration

IKE/IPSec (Internet Key Exchange/Internet Protocol Security) provides authentication and encryption of IP traffic for the authenticity, integrity and privacy of your communications. IPSec sessions are established through Security Associations (SAs) that enable secure devices to negotiate a level of security attributes needed for a Virtual Private Network (VPN).

To configure IKE/IPSec:

1. Click **IKE/IPSec Configuration** from the left navigation pane of the Router Information window. This displays the IKE/IPSec Information page.

Current User: superuser

IKE/IPSec Information

[Easy IKE/IPSec Setup](#)
[Advanced IKE/IPSec Setup](#)
[Home](#)

IKE/IPSec Information	
IKE Peers	No IKE Peers defined
IKE Proposals	No IKE Proposals defined
IKE IPSec Proposals	No IPSec Proposals defined
IKE IPSec Policies	No IPSec Policies defined

2. Select one of the following from the left navigation pane:

[Easy IKE/IPSec Setup](#)

Perform basic IKE/IPSec setup.

[Advanced IKE/IPSec Setup](#)

Perform advanced IKE/IPSec setup.

Easy IKE/IPSec Setup

Internet Key Exchange (IKE) is a means of dynamically creating IP Security (IPSec) connections. IPSec uses encryption and authentication to virtual private networks over an insecure network. The Easy IKE/IPSec Setup form is used to create a default IKE configuration.

To perform Easy IKE/IPSec setup:

1. Click **Easy IKE/IPSec Setup** from the left navigation pane of the IKE/IPSec Information page. This displays the Easy IKE/IPSec Setup page.

Current User: superuser

Easy IKE/IPSec Setup

Internet Key Exchange (IKE) is a means of dynamically creating IP Security (IPSec) connections. IPSec uses encryption and authentication to create virtual private networks over an insecure network.

This screen will create a default IKE configuration.

The **IKE Peer Name** is a logical name for an IKE Peer. This name has no significance to the remote party.

The **Pre-shared Secret** is a mutually agreed-upon secret between both parties.

The **Peer Gateway IP Address** specifies the IP address of the other end of the IKE connection.

The **Destination IP Address** is the IP address of the remote private network that uses this policy.

The **Destination Subnet Mask** is the subnetwork mask of the remote private network that uses this policy.

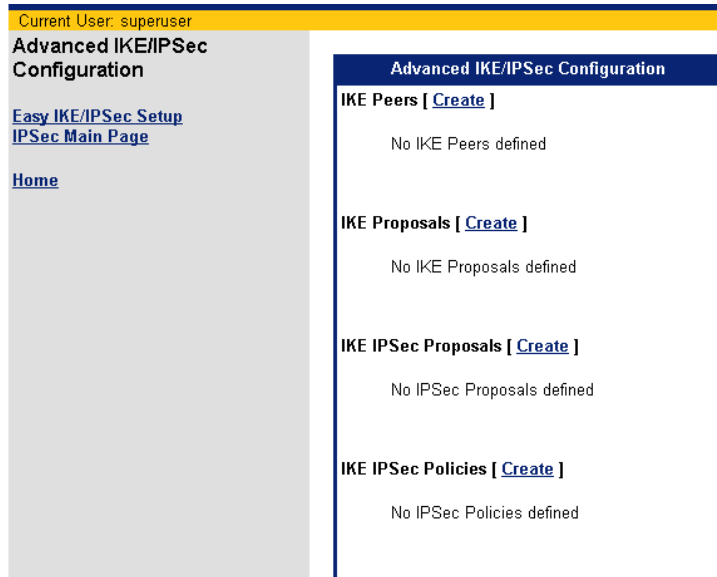
[Advanced IKE/IPSec Setup](#)
[IPSec Main Page](#)

Easy IKE/IPSec Setup	
IKE Peer Name	
Pre-shared Secret	
Peer Gateway IP Address	
Destination IP Address	0.0.0.0
Destination Subnet Mask	0.0.0.0

2. In **IKE Peer Name**, enter a logical name for an IKE Peer. This name is of no importance to the remote IKE peer. Choose a name that is meaningful to you.
3. In **Pre-shared Secret**, enter a case-sensitive character string used for authentication. This secret can be up to 256 characters, with no spaces or non-printable characters. The pre-shared secret must be mutually agreed upon by both parties to the IKE connection.
4. In **Peer Gateway IP Address**, enter the IP address of the gateway at the remote end of the IKE connection.
5. In **Destination IP Address**, enter the IP address of the remote private network that your system will authenticate using this IKE policy.
6. In **Destination Subnet Mask**, enter the destination subnet mask of the remote private network that your system will authenticate using this IKE policy.
7. Click **Apply**.

Advanced IKE/IPSec Setup

The Advanced IKE/IPSec Setup page presents information about current IKE and IPSec peers, policies and proposals. To perform Advanced IKE/IPSec setup, click **Advanced IKE/IPSec Setup** from the left navigation pane of the IKE/IPSec Information page. This displays the Advanced IKE/IPSec Configuration page. This page shows the current configuration and includes a **Create** button for each category to create new IKE and IPSec definitions.



This section describes how to perform the following tasks:

[IKE Peers](#)

Create IKE peers. IKE peers are those devices known to your ADSL Internal Modem as capable of participating in IKE connections.

[IKE Proposals](#)

Create IKE proposals. IKE I proposals specify how packets will be encrypted/authenticated for Phase I.

[IKE IPSec Proposals](#)

Create IKE IPSec proposals. IKE IPSec proposals specify how packets will be encrypted/authenticated for the final SA.

[IKE IPSec Policies](#)

Create IKE IPSec policies. IPSec policies are criteria for packets that IPSec will recognize, and actions that IPSec will take upon recognition.

IKE Peers Definition

IKE peers are those devices known to your internal modem as capable of participating in IKE connections. To define a new IKE Peer:

1. Click **Create** next to IKE Peers from the Advanced IKE/IPSec Setup page. This displays the IKE Peer Definition page.

Current User: superuser

IKE Peer Definition

NOTE: If the remote peer does not have a fixed IP address, enter "0.0.0.0" for the Peer Gateway IP Address and use Aggressive Mode.

The **IKE Peer Name** is a logical name for an IKE Peer. This name has no significance to the remote party.

The **Pre-shared Secret** is a mutually agreed-upon secret between both parties.

The **Peer Gateway IP Address** specifies the IP address of the other end of the IKE connection.

[Advanced IKE/IPSec Setup](#)
[IPSec Main Page](#)

[Home](#)

IKE Peer Definition

IKE Peer Name

Pre-shared Secret

Peer Gateway IP Address

2. In **IKE Peer Name**, enter a logical name for an IKE Peer. This name is of no importance to the remote IKE peer. Choose a name that is meaningful to you.
3. In **Pre-shared Secret**, enter a case-sensitive character string used for authentication. This secret can be up to 256 characters, with no spaces or non-printable characters. The pre-shared secret must be mutually agreed upon by both parties to the IKE connection.
4. In **Peer Gateway IP Address**, enter the IP address of the gateway at the remote end of the IKE connection. If the remote IKE peer does not have a fixed or permanent IP address, enter "0.0.0.0" to use Aggressive Mode in Phase 1 negotiations. (Your system supports two Phase 1 IKE modes: Main and Aggressive. Use Main Mode when both the source and destination IP addresses are known and use Aggressive Mode when either the source or destination IP addresses could change.)
5. Click **Apply**.

IKE Proposals Definition

IKE I proposals specify how packets will be encrypted/authenticated for Phase I. To define a new IKE proposal:

1. Click **Create** next to IKE Proposals from the Advanced IKE/IPSec Setup page. This displays the IKE Proposal Definition page.

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Current User: superuser

IKE Phase I Proposal Definition

The **IKE Proposal Name** is a logical name for an IKE Proposal. This name has no significance to the remote party.

The **Message Authentication Scheme** is the hashing algorithm used to validate the IKE Phase I exchange.

The **Diffie-Hellman (Oakley) group** specifies the polynomial function for the IKE Phase I exchange.

The **Encryption Type** specifies the encryption algorithm that will be used during the IKE Phase II ("Quick Mode") exchange.

Key Length is the length of the AES encryption key. Other encryption methods use a fixed length key that is not user selectable.

The **Phase I Proposal Lifetime** is the duration of time after which the Phase I negotiation expires. A new IKE Phase I exchange will occur automatically.

[Advanced IKE/IPSec Setup](#)
[IPSec Main Page](#)
[Home](#)

IKE Phase I Proposal Definition

IKE Proposal Name:

Message Authentication Scheme: SHA-1

Diffie-Hellman (Oakley) group: Group 2

Encryption Type: 3-DES

Key Length (AES Encryption only): 128

Phase I Proposal Lifetime (seconds): 86400

Apply

2. In **IKE Proposal Name**, enter a logical name for the IKE Proposal Definition. This name is of no importance to the remote IKE peer.
3. From the **Message Authentication Scheme** drop-down menu, select one of the following hashing (authentication) options to use to validate IKE Phase I exchange:
 - **MD5**: Performs message authentication using Message Digest 5.
 - **SHA1**: Performs message authentication using Secure Hashing Algorithm 1 (default).
4. From the **Diffie-Hellman (Oakley) Group** drop-down menu, select one of the following Diffie-Hellman key generation groups to use during IKE Phase I exchange:
 - **Group 1**: Uses Diffie-Hellman Group 1 (768 bits).
 - **Group 2**: Uses Diffie-Hellman Group 2 (1024 bits).
5. From the **Encryption Type** drop-down menu, select one of the following encryption types to use during IKE Phase II (Quick Mode) exchange:
 - **DES**: Encrypts using a 56-bit key.
 - **3-DES**: Encrypts using three 56-bit keys to produce 168-bit encryption.
 - **AES**: Encrypts using a 128-, 192-, or 256-bit key.
6. If you selected AES as the encryption type, specify the key bit size to use in **Key Length**. This can be 128, 192, or 256.
7. In **Phase I Proposal Lifetime**, enter the number of seconds after which the Phase I negotiation expires. The default is 1800 seconds. Once this time is elapsed, the system will renegotiate the IKE connection.
8. Click **Apply**.

IKE IPSec Proposals Definition

IKE IPSec Proposals specify how packets will be encrypted/authenticated for the final SA. To define a new IKE IPSec proposal:

1. Click **Create** next to IKE IPSec Proposals from the Advanced IKE/IPSec Setup page. This displays the IKE IPSec Proposal Definition page.

SIEMENS

Current User: superuser

IKE IPSec Proposal Definition

The **IPSec Proposal Name** is a logical name for an IPSec Proposal. This name has no significance to the remote party.

The **AH Authentication Scheme** is the hashing algorithm used for Authentication Header (AH) IPSec.

The **ESP Authentication Scheme** is the hashing algorithm used for Encapsulating Security Payload (ESP) IPSec.

The **ESP Encryption Scheme** is the algorithm used to encrypt ESP IPSec packets.

Key Length is the length of the AES encryption key. Other encryption methods use a fixed length key that is not user selectable.

The **Phase II Proposal Lifetime** is the duration of time after which the IKE Phase II negotiation expires. A new IKE Phase II exchange will occur automatically.

The **Phase II Proposal Lifedata** is the number of kilobytes of data after which the IKE Phase II negotiation expires. A new IKE Phase II exchange will occur automatically.

IKE IPSec Proposal Definition

IPSec Proposal Name

AH Authentication Scheme

ESP Authentication Scheme

ESP Encryption Scheme

Key Length (AES Encryption only)

Phase II Proposal Lifetime (seconds)

Phase II Proposal Lifedata (KBytes)

2. In **IPSec Proposal Name**, enter the logical name for the IKE IPSec Proposal Definition. This name is of no importance to the remote IKE peer.
3. From the **AH Authentication Scheme** drop-down menu, select one of the following to use as the hashing algorithm for Authentication Header (AH) IPSec:
 - **NONE**: Requests no AH encapsulation.
 - **SHA1**: Requests AH encapsulation and authenticate using Secure Hashing Algorithm 1.
 - **MD5**: Requests AH encapsulation and authenticate using Message Digest 5.
4. From the **ESP Authentication Scheme** drop-down menu, select one of the following ESP specify the hashing algorithm to used for Encapsulating Security Payload (ESP) IPSec:
 - **NONE**: Requests no AH encapsulation.
 - **SHA1**: Requests AH encapsulation and authenticate using Secure Hashing Algorithm 1.
 - **MD5**: Requests AH encapsulation and authenticate using Message Digest 5.

5. From the **ESP Encryption Scheme** drop-down menu, select one of the following to specify the algorithm to use to encrypt ESP IPSec packets:
 - **NONE**: No ESP encapsulation and no encryption is used.
 - **NULL**: ESP encapsulation, but no data encryption. ESP encapsulation verifies the source, but data is sent in the clear to increase throughput.
 - **DES-CBC**: Encrypts using a 56-bit key.
 - **3-DES**: Encrypts using three 56-bit keys to produce 168-bit encryption.
 - **AES**: Encrypts using a 128-, 192-, or 256-bit key.
6. If you selected AES as the encryption type, specify the key bit size to use in **Key Length**. This can be 128, 192, or 256.
7. In **Phase II Proposal Lifetime**, enter the number of seconds after the IPSec SA expires. The default is 1800 seconds. Once this time is elapsed, the system will renegotiate the IKE connection.
8. In **Phase II Proposal Life Data**, enter the amount of data, measured in kilobytes, before the IPSec SA terminates. After the specified quantity of data has been transferred, the system will renegotiate the IKE connection. If zero is entered, the data quantity will be unlimited. By setting a limit on the amount of data transferred, the risk of a key becoming compromised is reduced.
9. Click **Apply**.

IKE IPSec Policies Definition

IPSec policies are criteria for packets that IPSec will recognize, and actions that IPSec will take upon recognition. To define a new IKE IPSec policy:

1. Click **Create** next to IKE IPSec Policies from the Advanced IKE/IPSec Setup page. This displays the IKE IPSec Policy Definition page.

SIEMENS

Current User: superuser

IKE IPSec Policy Definition

The **IPSec Policy Name** is a logical name for an IPSec Policy. This name has no significance to the remote party.

The **Peer Binding** identifies the remote peer for which this policy applies.

The **PFS Group** identifies the Diffie-Hellman group for Perfect Forward Secrecy.

The **IPSec Proposal Bindings** identify the IPSec Proposals which may be used for this policy.

The **IP Protocol** identifies the protocol of the IP traffic that uses this policy.

The **Source IP Address** is the IP address from the local private network that uses this policy.

The **Source Subnet Mask** is the subnet mask of the local private network that uses this policy.

The **Destination IP Address** is the IP address of the remote private network that uses this policy.

IKE IPSec Policy Definition

IPSec Policy Name:

Peer Binding:

IPSec Proposal Bindings:

PFS Group:

IP Protocol:

Source IP Address:

Source Subnet Mask:

Destination IP Address:

Destination Subnet Mask:

Source Port:

Destination Port:

Default Tunnel:

2. In **IPSec Policy Name**, enter a logical name for the IPSec policy. The name specified is of no consequence to the other IPSec party.
3. From the **Peer Binding** drop-down menu, select the remote IKE peer to which this policy will apply. This peer must already be defined as an [IKE Peer](#).
4. From the **IPSec Proposal Bindings** drop-down menu, select the IKE IPSec proposal to be used with this policy. The IKE IPSec proposal must be already defined as an [IKE IPSec Proposal](#).
5. From the **PFS Group** drop-down menu, select one of the following the Diffie-Hellman group to use for Perfect Forward Secrecy. Perfect Forward Secrecy enhances the security of the key exchange. In the event of a key becoming compromised, only the data protected by that compromised key becomes vulnerable:
 - **None**
 - **Group 1:** Uses Diffie-Hellman Group 1 (768 bits).
 - **Group 2:** Uses Diffie-Hellman Group 2 (1024 bits).
6. From the **IP Protocol** drop-down menu, select the protocol of the IP traffic that uses this protocol.
7. In **Source IP Address**, enter the IP address of the local area network that will use this policy. This will usually be the IP address assigned to the network local to your router.
8. In **Source Subnet Mask**, enter the subnet mask of the local area network that will use this policy. This will usually be the subnet mask assigned to the network local to your router.
9. In **Destination IP Address**, enter the IP address of the remote private network to which your router will connect using this policy.

10. In **Destination Subnet Mask**, enter the subnet mask of the remote private network to which your router will connect using this policy.
11. In **Source Port**, enter the port that will be the source of TCP/UDP traffic under this policy. You can specify All ports, a port number, or an IP application associated with a particular port. Because port numbers are TCP and UDP specific, a port filter is effective only when the protocol filter is TCP or UDP.
12. In **Destination Port**, enter the port that will be the destination of TCP/UDP traffic under this policy. You can specify All ports, a port number, or an IP application associated with a particular port.
13. From the **Default Tunnel** drop-down menu, select the tunnel you want to search last. Only one tunnel can be specified as the default tunnel.
14. Click **Apply**.

VPN Log On

VPN Log On starts an IPSec session. IPSec sessions are initiated through Security Associations (SAs), which allow peers to negotiate a common set of security attributes that assures source authenticity, data integrity and confidentiality of IP packets, providing the level of security required by Virtual Private Networks (VPNs).

To start an IPSec session:

1. Click **VPN Log On** on the left navigation pane of the Router Information page. This displays the VPN Log On page.

[Name]	[Status]	[Dest IP]	[Dest Mask]	[Protocol]	[Src Port]	[Dest Port]	[Action]
vrrew	down	0.0.0.0	0.0.0.0	all	all	all	log on

2. For **Feature**, click **enable**.
3. For **Available IPSEC tunnels**, select the tunnel you wish to use for the IPSec session.
4. Click **log on** corresponding to the tunnel you selected.

You must keep the VPN Logon window open to remain logged into the VPN over IPSec. Do not close the window until you have finished using the VPN Log On.

This chapter describes how to monitor the health of your router connections. Router health can be monitored using the following functions.

[System Summary](#)

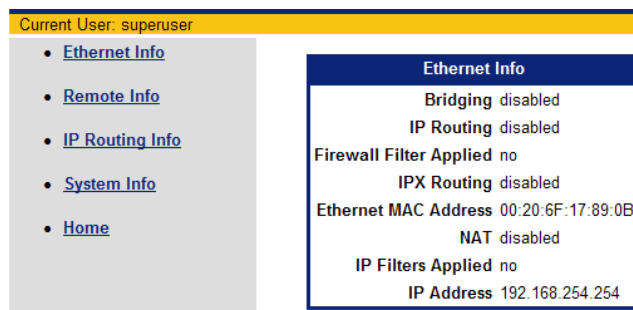
View status and statistical information.

[Diagnostics](#)

Run diagnostic programs to determine potential problems.

System Summary

To view system summary information, click **System Summary** on the left navigation pane of the Router Information page. This displays the System Summary page.



From the System Summary page, you can view information for the following:

- [Ethernet interface](#)
- [Remote connections](#)
- [IP Routing](#)
- [System](#)

Ethernet Interface Information

Click **Ethernet Info** on the left navigation pane of the System Summary page to display information about the Ethernet interface.

Current User: superuser

- Ethernet Info
- Remote Info
- IP Routing Info
- System Info
- Home

Ethernet Info

Bridging disabled
IP Routing disabled
Firewall Filter Applied no
IPX Routing disabled
Ethernet MAC Address 00:20:6F:17:89:0B
NAT disabled
IP Filters Applied no
IP Address 192.168.254.254

Remote Connection Information

Click **Remote Info** on the left navigation pane of the System Summary page to display information about remote connections for all entries in the Remote Router database.

Current User: superuser

- Ethernet Info
- Remote Info
- IP Routing Info
- System Info
- Home

Remote Info

[Name]	[Protocol]	[PVC]	[NAT]	[IP Address]	[Bridging]	[Status]
internet	PPP	not set	disabled	0.0.0.0	disabled	enabled

IP Routing Information

Click **IP Routing Info** on the left navigation pane of the System Summary page to display information about the active interfaces in the IP routing table.

Current User: superuser

- [Ethernet Info](#)
- [Remote Info](#)
- [IP Routing Info](#)
- [System Info](#)
- [Home](#)

IP Routing Info

IP route	/ Mask	--> Gateway	Interface	Hops	Flags
192.168.254.0	/ffffff00	--> 0.0.0.0	ETHERNET/0	1	NW FW DIR PRM RP1 RP
192.168.254.254	/fffffffe	--> 0.0.0.0	ETHERNET/0	0	ME

superuser@lan->

System Information

Click **System Info** on the left navigation pane of the System Summary page to display general information for select system settings.

Current User: superuser

- [Ethernet Info](#)
- [Remote Info](#)
- [IP Routing Info](#)
- [System Info](#)
- [Home](#)

System Info

System Start Time Up for 0 days 0 hours 40 minutes (started 1/5/2000 at 12:55)

Telnet Port 23

Telnet Clients Allowed all

SSH Port 22

SSH Clients Allowed all

SNMP Port 161

SNMP Clients Allowed all

HTTP Port 80

HTTP Clients Allowed all

Syslog Port 514

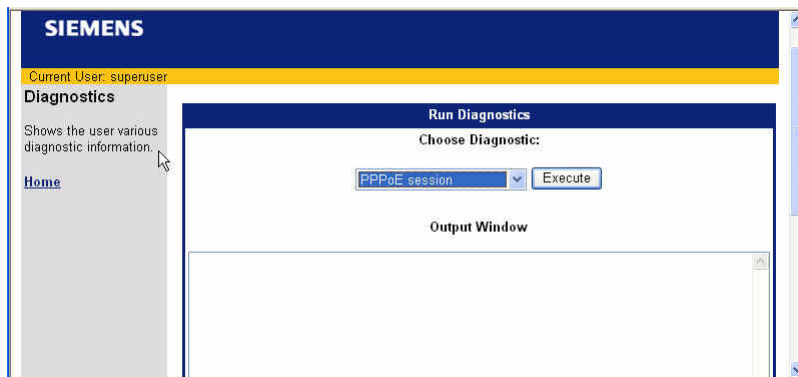
Syslog Servers Allowed all

Secure Mode Status - enabled
LAN - trusted
WAN - untrusted

Backup Interface Defined no

Diagnostics

The Diagnostic feature provides information about various components of your system that might help in diagnosing a problem. To run diagnostics, click **Diagnostics** on the left navigation pane of the Router Information page. This displays the Run Diagnostics page.

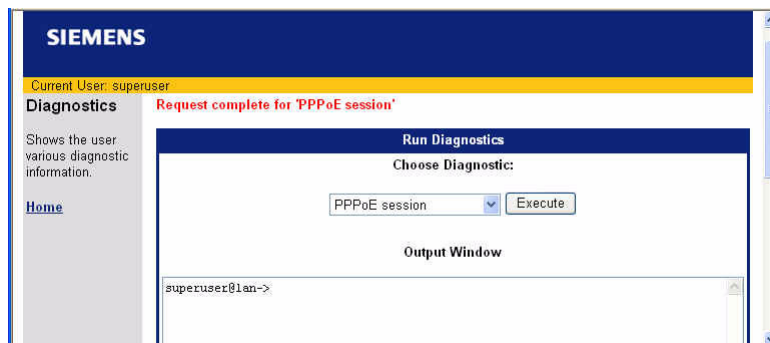


From the Run Diagnostics page, you can view information for the following:

- [PPPoE session](#)
- [Interface information](#)
- [Routing Table information](#)
- [Files information](#)
- [Memory usage](#)
- [List all configuration data](#)
- [TCP/IP statistics](#)

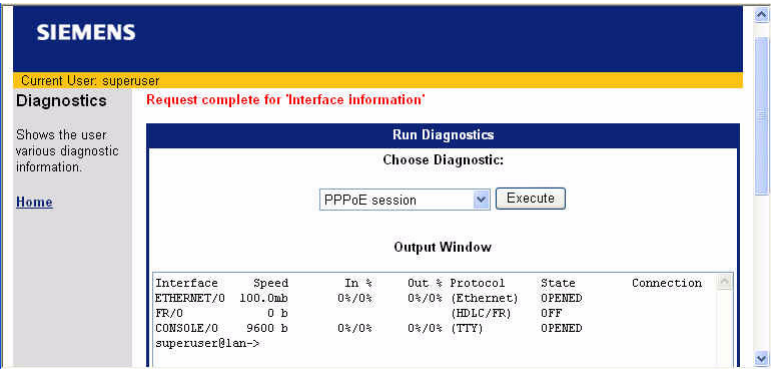
PPPoE Session

Select **PPPoE session** from the drop down menu and click **Execute** to display PPPoE session information. This option is available only if you have a PPPoE session configured.



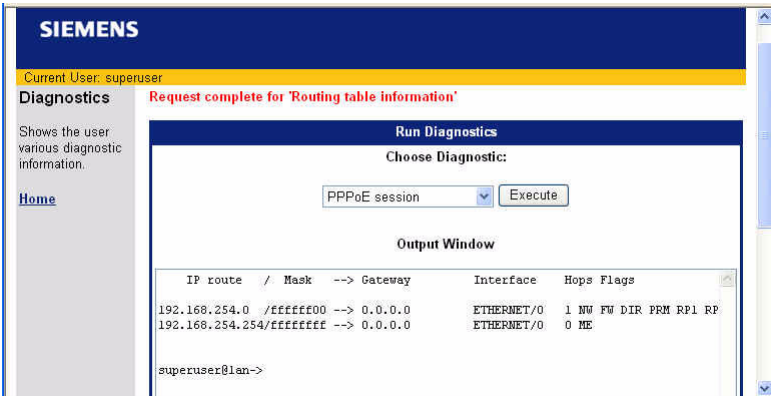
Interface Information

Select **Interface information** from the drop down menu and click **Execute** to display interface information.



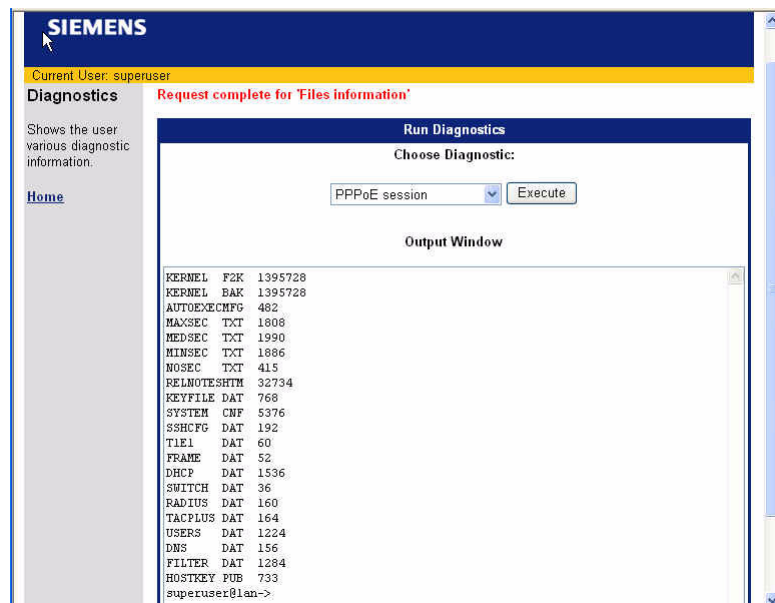
Routing Table Information

Select **Routing Table information** from the drop down menu and click **Execute** to display information about the configured routing tables.



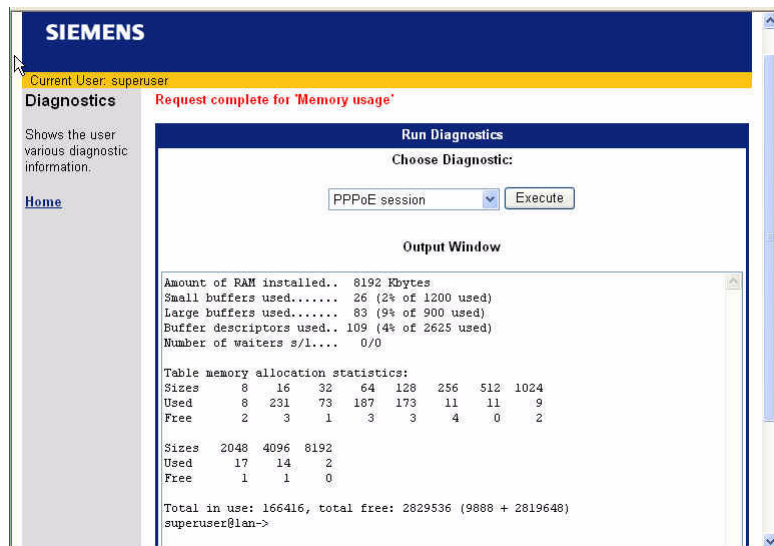
Files Information

Select **Files information** from the drop down menu and click **Execute** to display files store on the router.



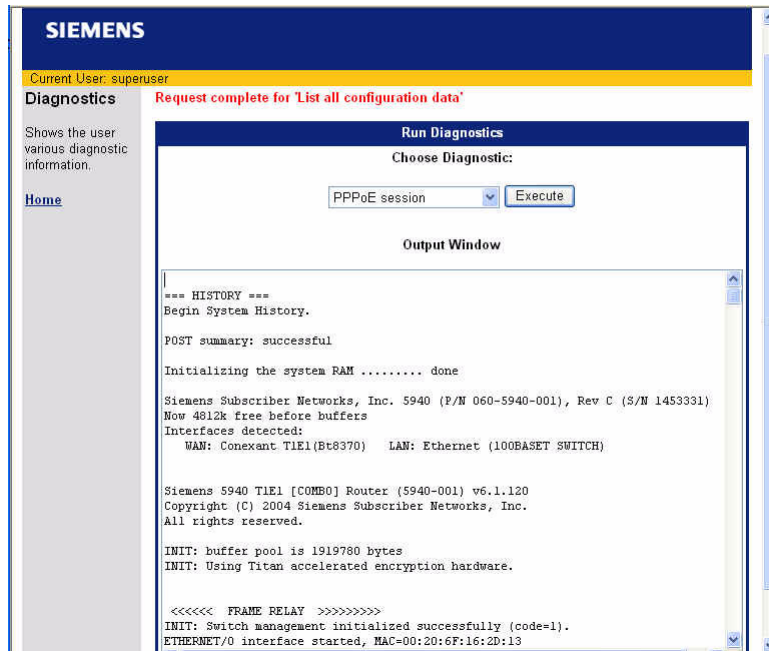
Memory Usage

Select **Memory usage** from the drop down menu and click **Execute** to display memory usage information.



List All Configuration Data

Select **List all configuration data** from the drop down menu and click **Execute** to display configuration information.



TCP/IP Statistics

Select **TCP/IP statistics** from the drop down menu and click **Execute** to display TCP/IP information.

