

Huawei AR1200&2200&3200 Series Enterprise Routers

SAE Card Usage Guide

Issue **02**

Date **2012-08-30**

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About This Document

Intended Audience






This document provides the overview, application, installation and configuration of the SAE board.

This document is intended for:

- Data configuration engineers
- Commissioning engineers
- Network monitoring engineers
- System maintenance engineers

Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
 DANGER	Indicates a hazard with a high level of risk, which if not avoided, will result in death or serious injury.
 WARNING	Indicates a hazard with a medium or low level of risk, which if not avoided, could result in minor or moderate injury.
 CAUTION	Indicates a potentially hazardous situation, which if not avoided, could result in equipment damage, data loss, performance degradation, or unexpected results.
 TIP	Indicates a tip that may help you solve a problem or save time.
 NOTE	Provides additional information to emphasize or supplement important points of the main text.

Command Conventions

The command conventions that may be found in this document are defined as follows.

Convention	Description
Boldface	The keywords of a command line are in boldface .
<i>Italic</i>	Command arguments are in <i>italics</i> .
[]	Items (keywords or arguments) in brackets [] are optional.
{ x y ... }	Optional items are grouped in braces and separated by vertical bars. One item is selected.
[x y ...]	Optional items are grouped in brackets and separated by vertical bars. One item is selected or no item is selected.
{ x y ... }*	Optional items are grouped in braces and separated by vertical bars. A minimum of one item or a maximum of all items can be selected.
[x y ...]*	Optional items are grouped in brackets and separated by vertical bars. Several items or no item can be selected.
&<1-n>	The parameter before the & sign can be repeated 1 to n times.
#	A line starting with the # sign is comments.

Interface Numbering Conventions

Interface numbers used in this manual are examples. In device configuration, use the existing interface numbers on devices.

Change History

Updates between document issues are cumulative. Therefore, the latest document version contains all updates made to previous versions.

文档版本 02 (2012-08-30)

Based on issue 01 (2012-07-10), the document is updated as follows:

The following information is modified:

- **5 Installing the Operating System on the SAE Board**
- **6.1 Installing the Chipset Driver**
- **6.2 Installing the Display Adapter Driver**
- **6.3 Installing the Network Adapter Driver**

- **2.3 Technical Specifications**

The following information is added:

- **5.1 Operating Systems Supported by SAE Cards**

Changes in Issue 01 (2012-07-10)

Initial commercial release.

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1 Overview

This section describes operating systems and application scenarios of the Service Accelerated Engine (SAE) board.

The SAE board is an open service platform where the Linux, Windows Server, or VMware operating system can be installed for users to configure and deploy services. The SAE board can be used in scenarios, such as enterprise application software, antivirus gateway, WAN optimization, and VPN encryption.

The SAE board meets the following new service requirements:

- Encryption: data encrypted transmission, special protocol processing, and customized network monitoring capability
- Security: Intrusion Prevention System (IPS), Intrusion Detection Systems (IDS), and uniform resource locator (URL) filtering
- Voice: Unified Communication (UC) server
- Data: WAN optimization

2 SAE Description

About This Chapter

This section describes SAE functions, applications, panels, indicators, interfaces, and technical specifications.

Table 2-1 shows the two models of SAE boards.

Table 2-1 SAE board models

Board	Slot
SAE220 (WSIC)	WSIC
SAE550 (XSIC)	XSIC

[2.1 Functions and Applications](#)

[2.2 Panels and Interfaces](#)

[2.3 Technical Specifications](#)

2.1 Functions and Applications

Functions

The SAE220 or SAE550 provides two external Gigabit Ethernet (GE) interfaces for data transmission and one internal GE interface to connect to the main control board.

 **NOTE**

The internal GE interface number on device is named according to the slot number of the SAE board. If the SAE board is installed in slot 6, the internal GE interface number is GE6/0/0.

When the SAE board is used, four local area connections are displayed. Two of them are internal GE interfaces, but only one internal GE interface is available. If two main control boards are available in redundancy mode, the two internal GE interfaces are connected to main control boards.

Applications

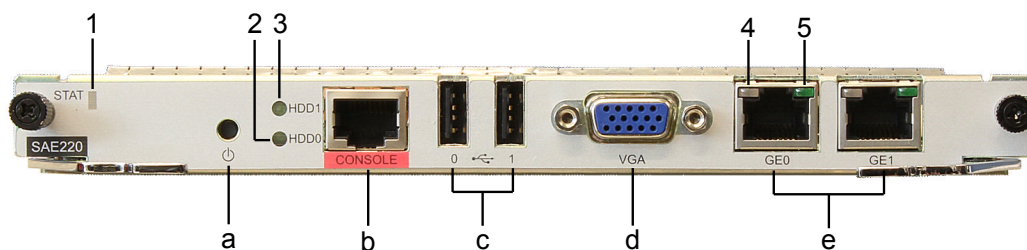
The SAE220 can be inserted into a WSIC slot of the AR1200, AR2220, AR2240, or AR3260. On the AR1200, two SIC slots are combined into one WSIC slot.

The SAE550 can be inserted into an XSIC slot of the AR2220, AR2240, or AR3260. On the AR2220, two WSIC slots are combined into one XSIC slot.

2.2 Panels and Interfaces

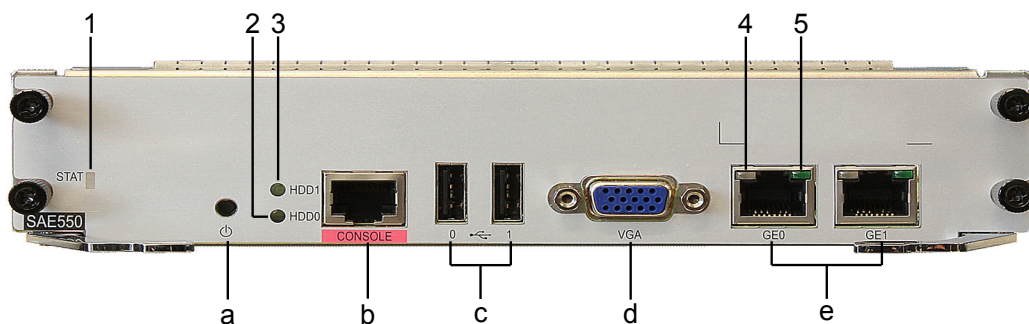
[Figure 2-1](#) shows the SAE220 panel.

Figure 2-1 SAE220 panel



[Figure 2-2](#) shows the SAE550 panel.

Figure 2-2 SAE550 panel



Indicators on the Panel

Table 2-2 lists the indicators on the SAE220 or SAE550 panel.

Table 2-2 Indicators on the SAE220 or SAE550 panel

Number in Figure 2-1 and Figure 2-2	Indicator	Color	Description
1	STAT	Green	If the indicator is steady green, the operating system is starting.
		Orange	If the indicator is steady orange, the BIOS runs normally.
		Red	If the indicator is steady red, a fault that affects services has occurred and cannot be rectified automatically. The fault needs manual rectification.
		Off	If the indicator is off, the board is powered off or is being reset.
2	HDD0	Green	If the indicator is blinking, the system is accessing the flash memory. If the indicator is off, the system does not start or access the flash memory.
3	HDD1	Green	If the indicator is blinking, the system is accessing the hard disk. If the indicator is off, the system does not start or access the hard disk.
4 and 5	GE interface indicators:	Green	If the indicator is steady on, a link has been established. If the indicator is off, no link is established.

Number in Figure 2-1 and Figure 2-2	Indicator	Color	Description
	<ul style="list-style-type: none"> ● The LINK indicator is in green. ● The ACT indicator is in yellow. 	Yellow	<p>If the indicator is blinking, the interface is transmitting or receiving data.</p> <p>If the indicator is off, no data is being transmitted or received.</p>

Interfaces

Table 2-3 lists the interfaces on the SAE220 or SAE550.

Table 2-3 Interfaces on the SAE220 or SAE550

Letter in Figure 2-1 and Figure 2-2	Name	Quantity	Description	Cable Type
a	Power on/off button	1	<p>Used to power on or off the operating system.</p> <ul style="list-style-type: none"> ● Hold down the button to forcibly power off the operating system. ● Press the button to power on or off the operating system. <p>NOTE Press the power button to shut down the operating system before powering off or remove the SAE board.</p>	-
b	Console interface	1	Used to connect to the console to implement on-site system configuration.	Console Cable
c	USB port	2	Used to connect to a mouse, keyboard, flash memory, or USB drive.	USB2.0, compatible with USB1.0 and USB1.1
d	VGA interface	1	Used to connect to a computer monitor.	VGA cables

Letter in Figure 2-1 and Figure 2-2	Name	Quantity	Description	Cable Type
e	1000BASE-T electrical interface	2	Provides two GE electrical interfaces to transmit and receive GE services.	Network Cable

Interface Attributes

Table 2-4 Attributes of the console interface

Item	Description
Connector type	RJ45
Standards compliance	RS232
Operating mode	Full duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)

Table 2-5 Attributes of the USB-A interface

Item	Description
Connector type	USB-A
Standards compliance	USB2.0, compatible with USB1.0 and USB1.1
Operating mode	Host

Table 2-6 Attributes of 1000BASE-T electrical interfaces

Item	Description
Connector type	RJ45

Item	Description
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> • The interfaces of most network cards are medium dependent interfaces (MDIs). • MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, or Ethernet_SNAP
Network layer protocol	IP

2.3 Technical Specifications

[Table 2-7](#) lists the SAE technical specifications.

Table 2-7 Technical specifications of SAE Cards

Item	SAE220	SAE550
Processor	Dual-core, 1.1 GHz	Dual-core, 2.4 GHz
Memory	2 GB	2 GB
Flash Memory	4 GB	4 GB
Hard disk	500 GB	500 GB
Ethernet port	Two GE ports	Two GE ports
USB port	Two USB ports	Two USB ports
Physical specifications	<ul style="list-style-type: none"> • Dimensions (D x W x H): 223.5 mm × 201 mm × 19.82 mm • Operating temperature: 0°C to 40°C • Relative humidity: 5% RH to 90% RH (non-condensing) • Weight: 2.0 kg 	<ul style="list-style-type: none"> • Dimensions (D x W x H): 223.5 mm × 201 mm × 40.14 mm • Operating temperature: 0°C to 40°C • Relative humidity: 5% RH to 90% RH (non-condensing) • Weight: 3.4 kg
Maximum power consumption	23.2 W	48 W

3 Installing the SAE Board

This section describes how to install the SAE board.

Preparations

1. Remove the filler panel of the slot where the SAE board will be installed.
2. Wear an ESD wrist strap or ESD gloves.

 **NOTE**

Insert a board smoothly along the guide rails in the slot.

Do not touch the components on the board to avoid damage to the board.

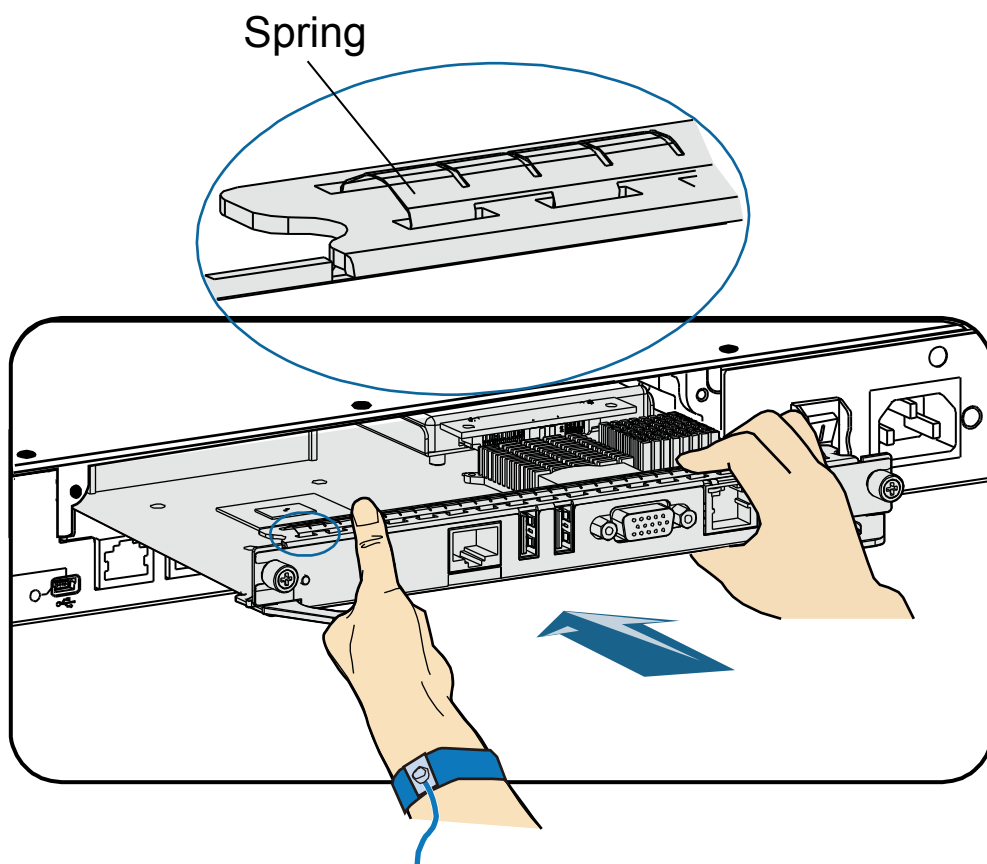
Installing the SAE220

 **NOTE**

Two SIC slots can be combined into one WSIC slot by removing the guide rail.

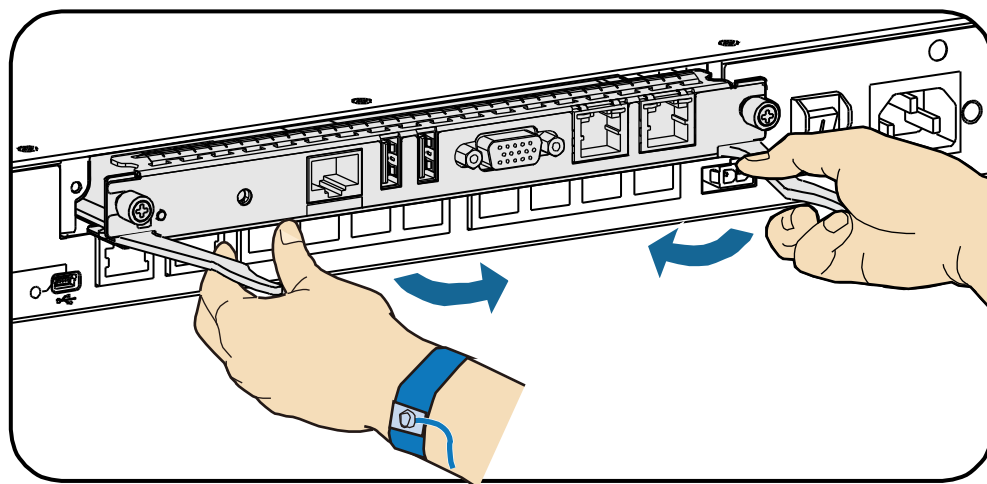
1. Insert the SAE220 into the WSIC slot.

Figure 3-1 Insert the SAE220



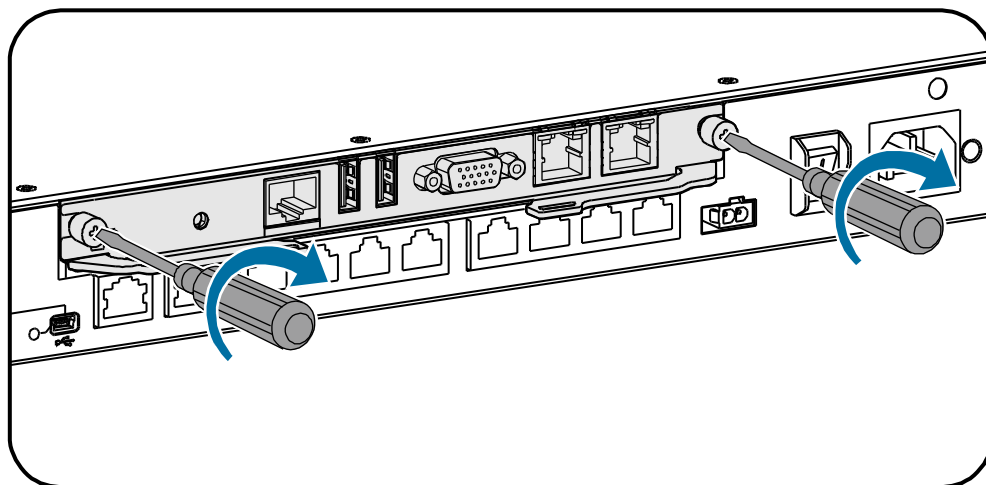
2. Squeeze inward ejector levers on two sides of the SAE220 until the spring on the board comes into close contact with the device.

Figure 3-2 Squeeze ejector levers



3. Turn the Phillips screwdriver to tighten the captive screws.

Figure 3-3 Fix the board



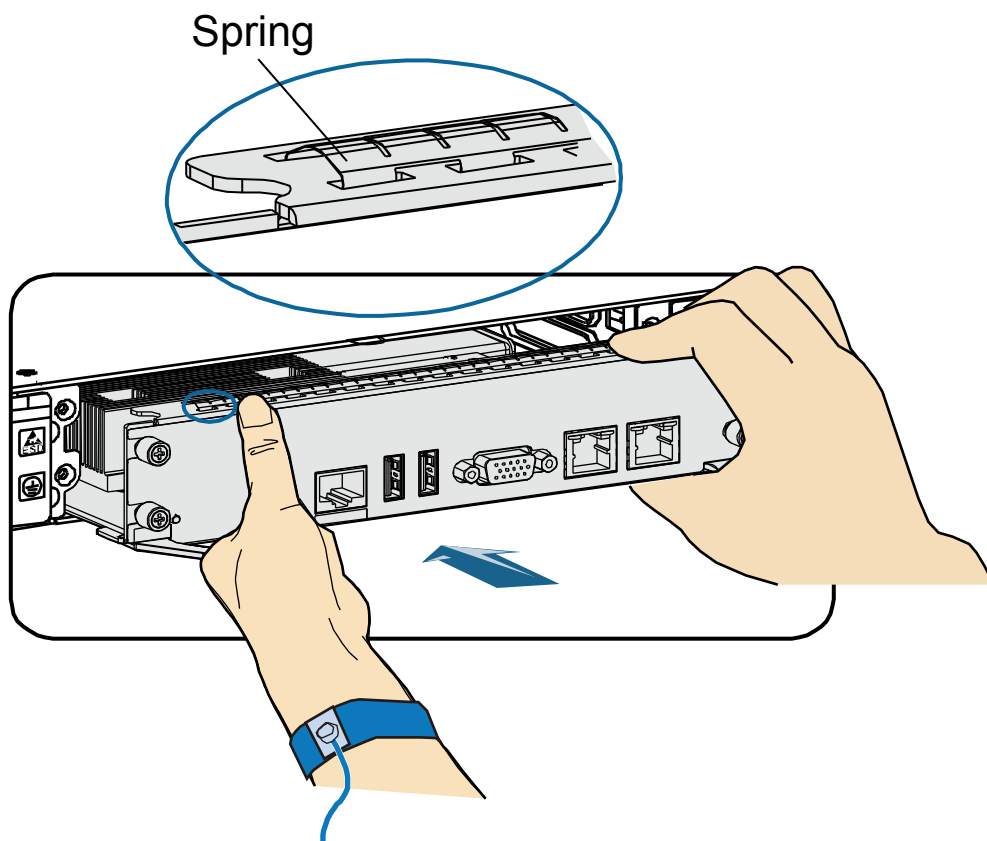
Installing the SAE550

 **NOTE**

Two WSIC slots can be combined into one XSIC slot by removing the guide rail.

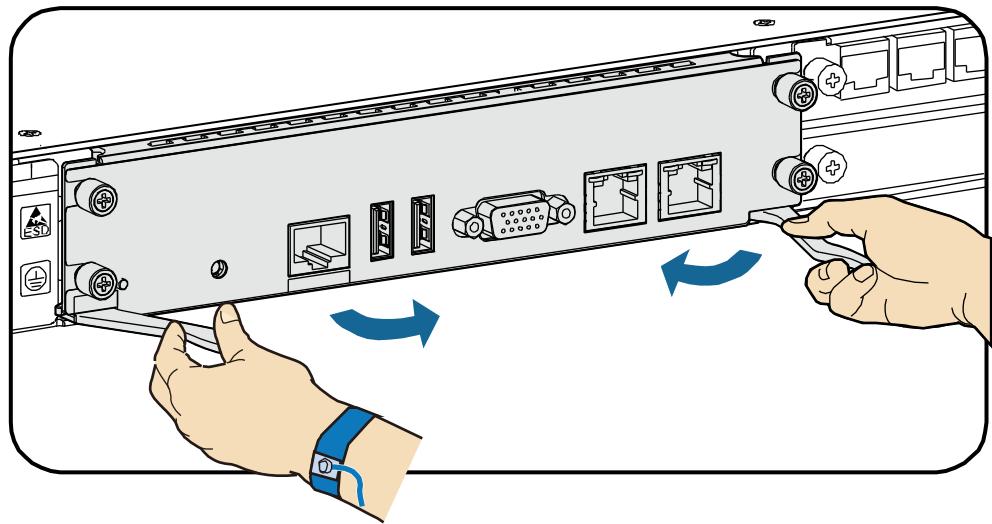
1. Insert the SAE550 into the XSIC slot.

Figure 3-4 Insert the SAE550



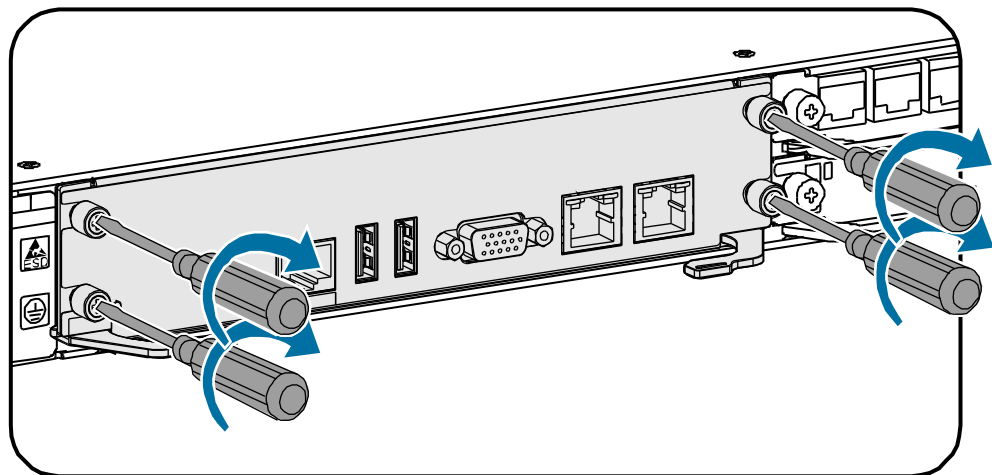
2. Squeeze inward ejector levers on two sides of the SAE550 until the spring on the board comes into close contact with the device.

Figure 3-5 Squeeze ejector levers



3. Turn the Phillips screwdriver to tighten the captive screws.

Figure 3-6 Fix the board



4 Connecting the SAE Board

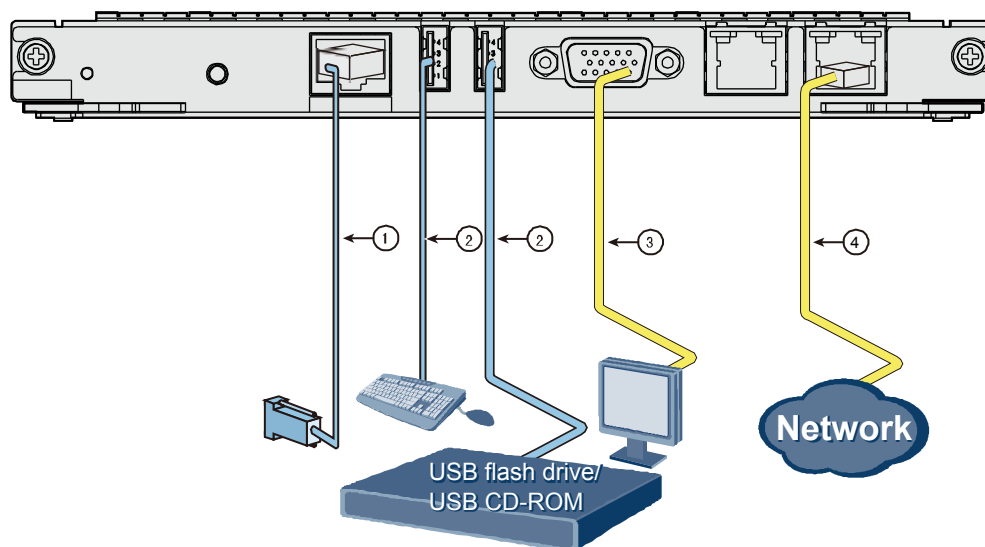
This section describes how to connect the SAE board to the network.



NOTE

SAE220 and SAE550 have the same interfaces. The following takes the SAE220 board as example.

Figure 4-1 Connection diagram of the SAE220 board interfaces



1: Console cable

- The 8-pin RJ45 connector is inserted into the Console port (CON/AUX port) of the SAE board.
- The DB9 male connector is connected to a maintenance terminal, such as a computer.

2: USB port cable, used to connect to a mouse, keyboard, flash memory, or USB drive.

3: VGA interface cable, used to connect to a computer monitor. The cable connectors are both DB15 male connectors.

4: GE interface cable, used to connect to the network. The cable connectors are RJ45 connectors.

5 Installing the Operating System on the SAE Board

About This Chapter

This section describes the operating systems supported by the Service Accelerated Engine (SAE) cards and Basic Input/Output System (BIOS) settings before the SAE card is installed.

[5.1 Operating Systems Supported by SAE Cards](#)

This section describes the operating systems supported by SAE cards.

[5.2 Installing the Operating System Using a USB Storage Device](#)

This section describes how to set the boot priority in the BIOS system and install the operating system using a USB storage device.

[5.3 Installing the SAE Board Through a Network Server](#)

This section describes how to set the boot priority in the BIOS system and install the operating system through the preboot execution environment (PXE) server.

5.1 Operating Systems Supported by SAE Cards

This section describes the operating systems supported by SAE cards.

SAE cards support the following operating systems:

- Windows Server 2008 R1 32bit
- Windows Server 2008 R2 64bit
- Windows Xp 32bit
- Windows 7 32bit
- Windows Vista Enterprise SP1
- Red Hat Enterprise 6.1
- SUSE Enterprise 11 SP1
- Fedora core 15
- Ubuntu 12.04
- VMware ESXi 5.0

 **NOTE**

You can use operating systems of the offered version or later version.

5.2 Installing the Operating System Using a USB Storage Device

This section describes how to set the boot priority in the BIOS system and install the operating system using a USB storage device.

Context

A USB storage device can be a flash drive, a disk drive, or a mobile hard disk that supports USB ports and stores the operating system installation program.

Procedure

Step 1 Connect a USB mouse, keyboard, and storage device to a USB port on the SAE board, and connect a monitor to the VGA interface through a VGA cable.

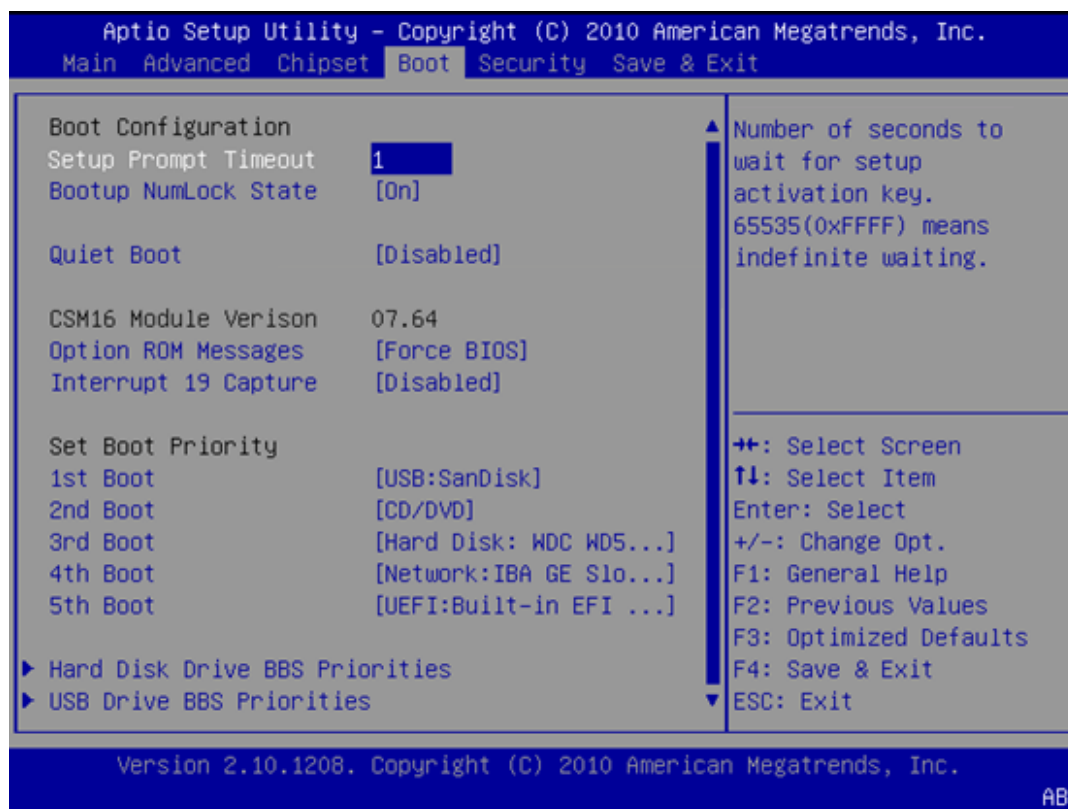
 **NOTE**

The SAE board provides two USB2.0 ports. You can use a USB hub to obtain more USB ports.

Step 2 Power on the SAE board. Press **DEL** or **F2** to enter the BIOS menu when the message "Press or <F2> to enter setup" is displayed.

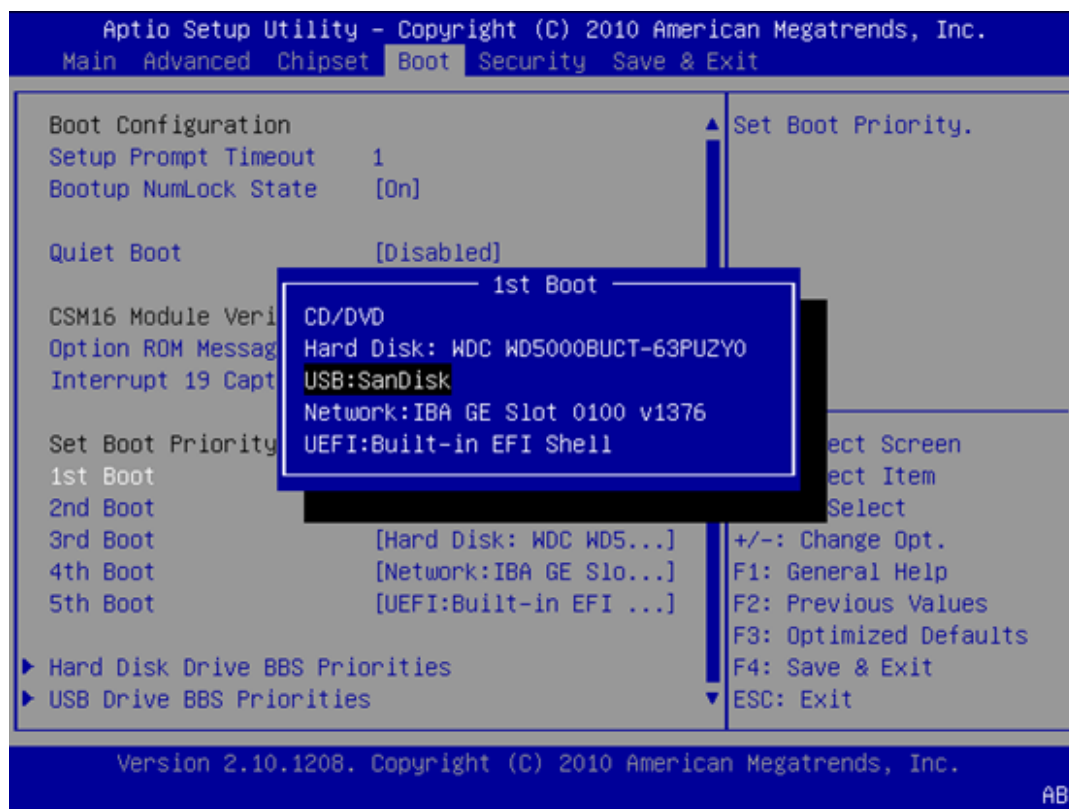
Step 3 Press the arrow keys to choose the **Boot** menu, as shown in [Figure 5-1](#).

Figure 5-1 Boot menu



Step 4 Choose **1st Boot**, press **Enter**, and choose **USB:SanDisk**, as shown in [Figure 5-2](#).

Figure 5-2 Setting the USB storage device as the first boot device

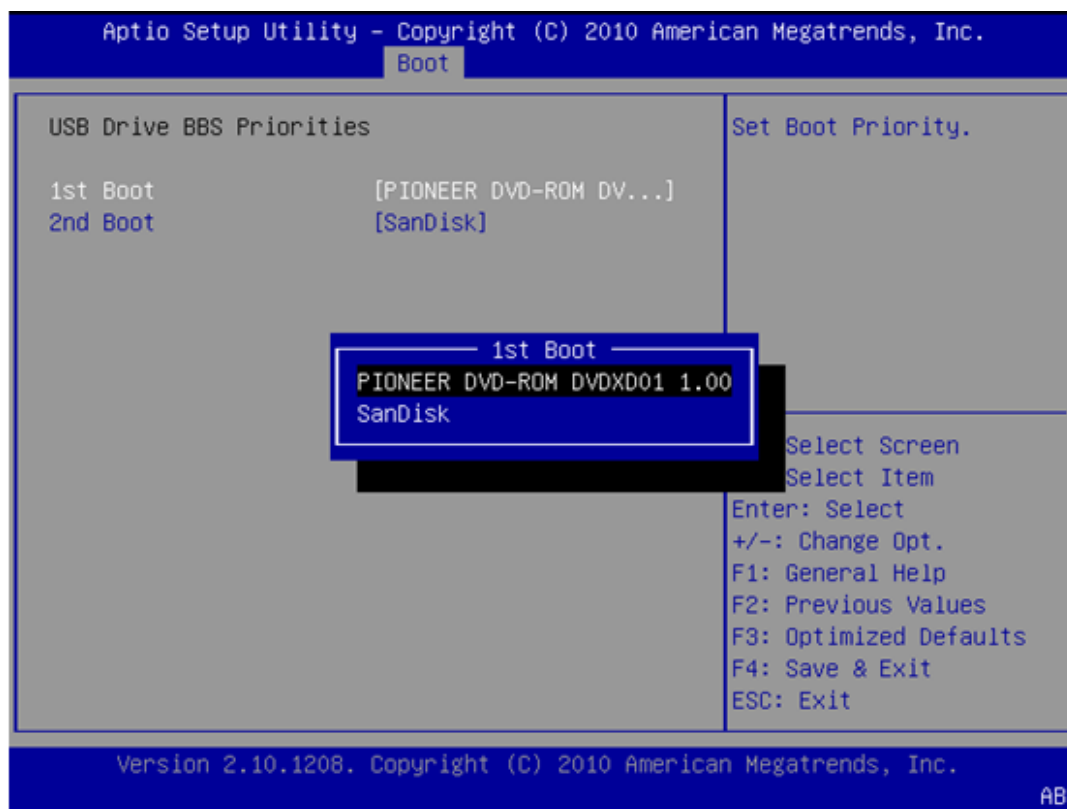


TIP

After entering the BIOS menu, you can press **F3** to read default settings. The default first boot option is **USB:SanDisk**.

- Step 5** If multiple USB storage devices are connected, set **1st Boot** in **USB Drive BBS Priorities** to the storage device you want to use, as shown in [Figure 5-3](#). If only one USB storage device is connected, skip this step.

Figure 5-3 Adjusting the boot priority of multiple USB storage devices



Step 6 Press **F4** to save configurations and exit.

Step 7 Reboot the SAE board.

The board starts from the preset USB storage device and the operating system installation page is displayed.

Step 8 Install the operating system as prompted.

NOTE

Ensure that the operating system installation program is stored in the USB storage device.

To install Windows XP or Linux with kernel version earlier than 2.6.19, change the SATA mode to **IDE**. By default, the SATA mode is **AHCI**.

To change the SATA mode to IDE, enter the BIOS menu, choose **Advanced**, and set **SATA Mode Selection** to **IDE**.

---End

5.3 Installing the SAE Board Through a Network Server

This section describes how to set the boot priority in the BIOS system and install the operating system through the preboot execution environment (PXE) server.

Context

After the boot priority in the BIOS system is set to the network, the SAE board automatically connects to the PXE server after startup, which enables you to install the operating system over the network.

Procedure

- Step 1** Connect a USB mouse, keyboard, and monitor to the SAE board, and connect a network cable to interface GE0 or GE1.

 **NOTE**

The SAE board provides two USB2.0 ports. You can use a USB hub to obtain more USB ports.

Ensure that the SAE board is properly connected to the PXE server over the network.

- Step 2** Power on the SAE board. Press **DEL** or **F2** to enter the BIOS menu when the message "Press or <F2> to enter setup" is displayed.

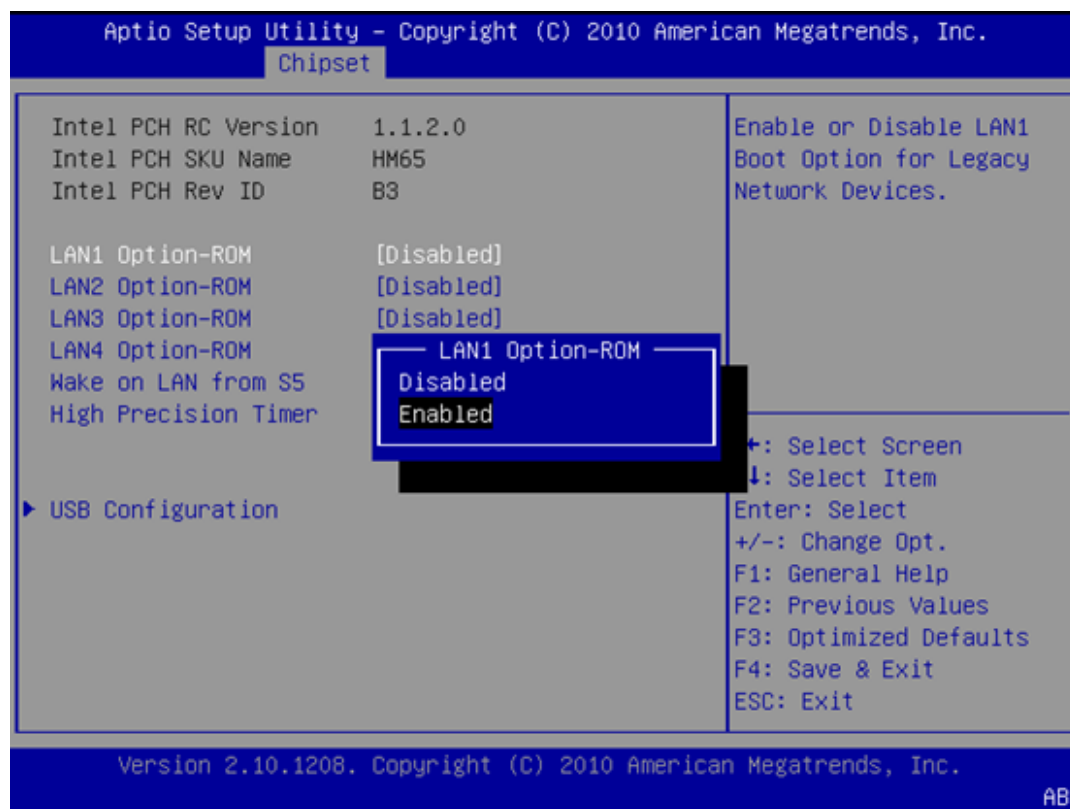
- Step 3** Press the arrow keys to choose the **Chipset** menu, as shown in [Figure 5-4](#).

Figure 5-4 Chipset menu



- Step 4** Choose **PCH-IO Configuration**, and set **LAN1 Option-ROM** or **LAN2 Option-ROM** to **Enabled**, as shown in [Figure 5-5](#).

Figure 5-5 Enabling the PXE ROM function for a GE interface

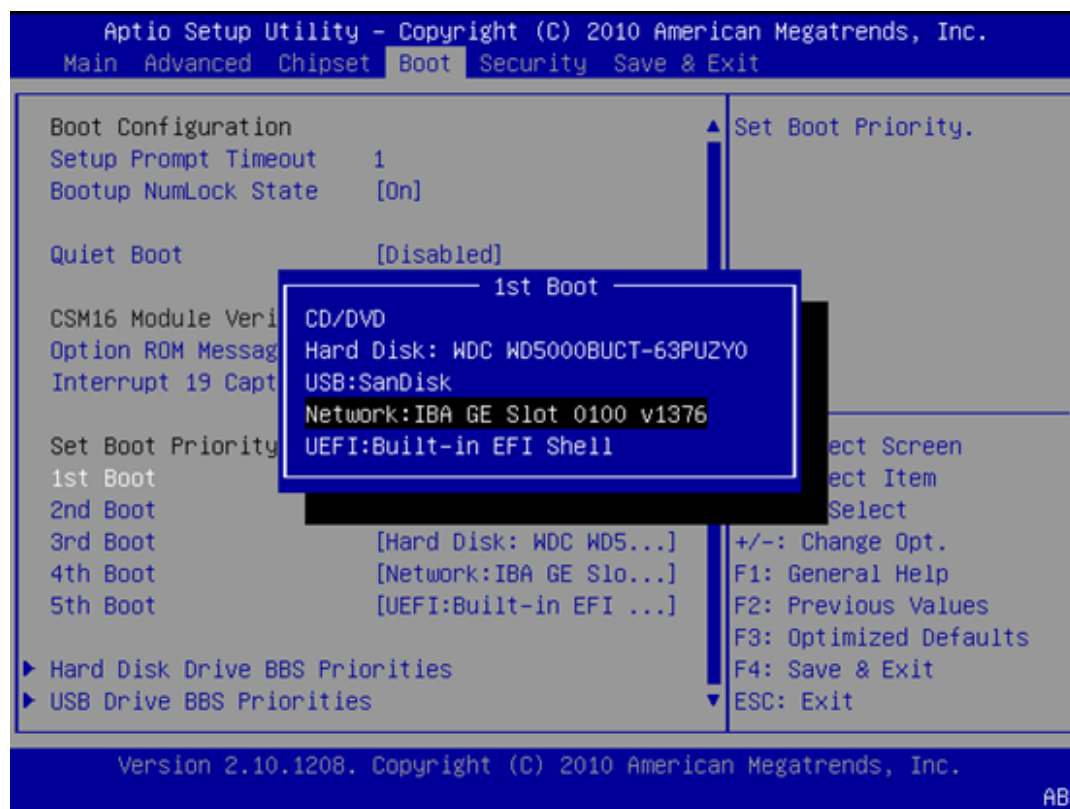


NOTE

Parameter **LAN1 Option-ROM** corresponds to interface GE0, and parameter **LAN2 Option-ROM** corresponds to interface GE1.

Step 5 Press **Esc** to return to the BIOS main menu. Choose the **Boot** menu and set **1st Boot** to the network device that the SAE board is connected to, as shown in **Figure 5-6**.

Figure 5-6 Set the network device as the first boot device



Step 6 Press **F4** to save configurations and exit.

Step 7 Reboot the SAE board.

The board starts from the preset network device and connects to the PXE server.

Step 8 Install the operating system as prompted.

NOTE

Ensure that the operating system installation program is stored in the PXE server.

---End

6 Installing the SAE Drivers

About This Chapter

This section describes how to install the chipset, display adapter, and network adapter drivers for the SAE board.

[6.1 Installing the Chipset Driver](#)

This section describes how to install the chipset driver for the SAE board.

[6.2 Installing the Display Adapter Driver](#)

This section describes how to install the display adapter driver.

[6.3 Installing the Network Adapter Driver](#)

This section describes how to install the network adapter driver.

6.1 Installing the Chipset Driver

This section describes how to install the chipset driver for the SAE board.

Context

The chipset driver is delivered with the SAE board in a CD-ROM.

The chipset driver is automatically installed when any of the following operating system is installed:

- VMware ESXi 5.0
- Red Hat Enterprise Linux
- SUSE Enterprise 11 SP1
- Fedora core 15
- Ubuntu Linux 12.04

The following describes how to install the chipset driver on the SAE board that runs Windows Server 2008 R2.

Procedure

- Step 1** Power on the SAE board and enter the Windows Server 2008 R2 operating system. Insert the driver installation CD-ROM into the USB disk drive and connect the disk drive to the SAE board.
- Step 2** Open the CD-ROM directory in the computer, double-click the chipset driver, and click **Next**.

Figure 6-1 Running the chipset driver



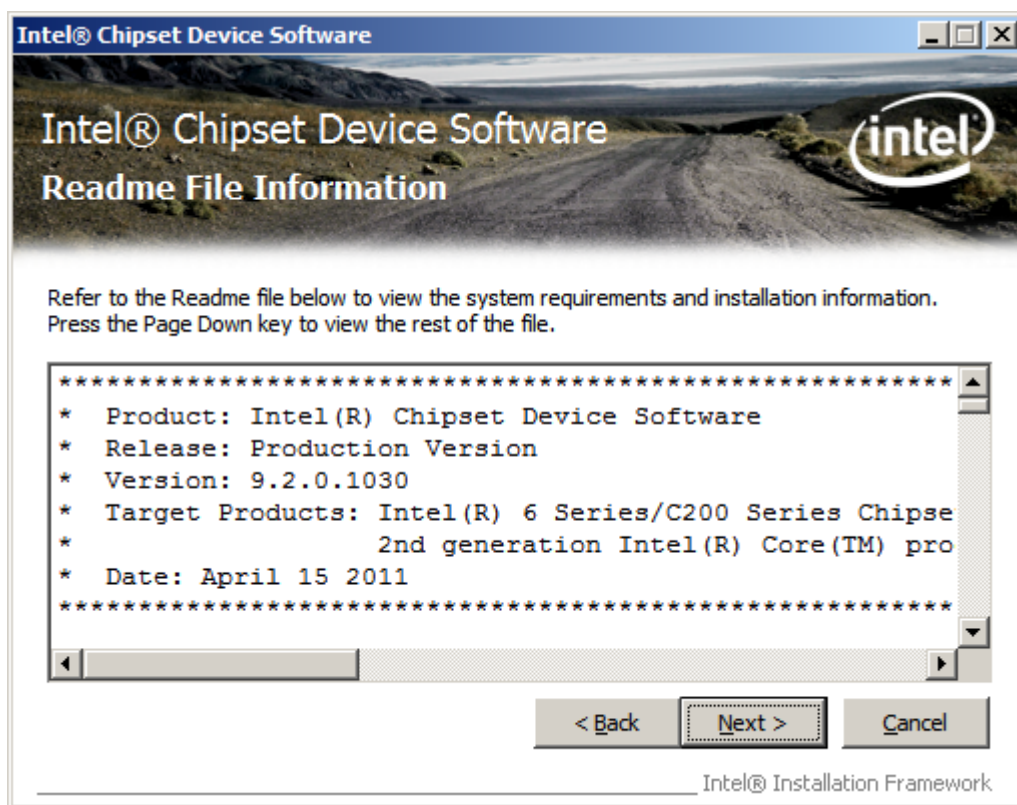
Step 3 Click **Yes** to accept the license agreement.

Figure 6-2 Accepting the license agreement



Step 4 Click **Next** to start chipset driver installation.

Figure 6-3 Installing the chipset driver



Step 5 Click **Next** when the installation is complete.

Figure 6-4 Installation complete



Step 6 Choose to restart the computer now or later and click **Finish**.

Figure 6-5 Choosing to restart the computer now or later



 **NOTE**

If you select **Yes, I want to restart this computer now.**, the computer will restart when you click **Finish**. To avoid data loss, save all files before clicking **Finish**.

You are advised to restart the computer when the chipset driver is installed.

----End

6.2 Installing the Display Adapter Driver

This section describes how to install the display adapter driver.

Context

The display adapter driver is delivered with the SAE board in a CD-ROM.

The display adapter driver is automatically installed when any of the following operating system is installed:

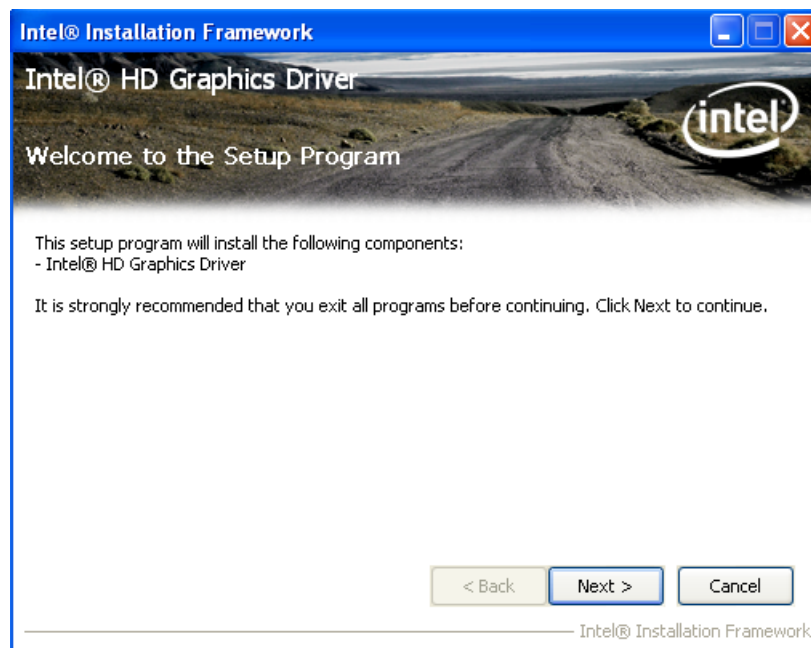
- VMware ESXi 5.0
- Red Hat Enterprise Linux
- SUSE Enterprise 11 SP1
- Fedora core 15
- Ubuntu 12.04
- Windows Server 2008 R2

The following describes how to install the display adapter driver on the SAE board that runs Windows XP.

Procedure

- Step 1** Open the CD-ROM directory in the computer, double-click the display adapter driver, and click **Next**.

Figure 6-6 Run the display adapter driver



 **NOTE**

Select the appropriate display adapter driver based on the operating system type and CPU bit number.

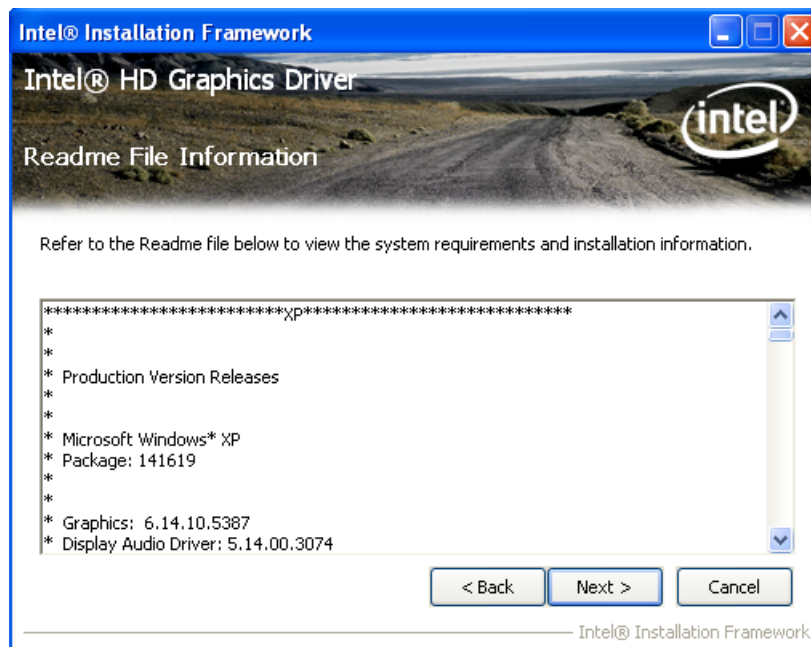
- Step 2** Click **Yes** to accept the license agreement.

Figure 6-7 Accept the license agreement



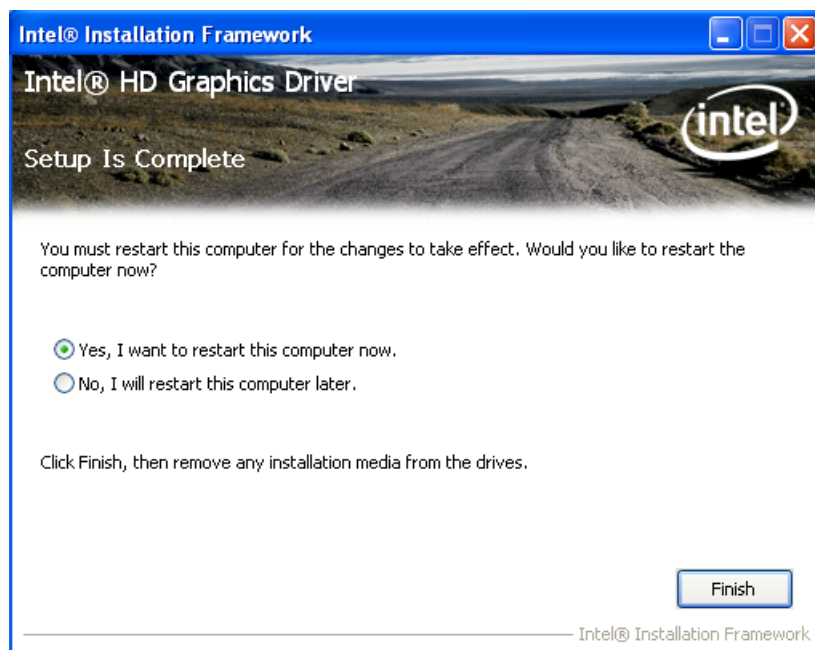
Step 3 Click **Next** to start display adapter driver installation.

Figure 6-8 start display adapter driver installation



Step 4 Click **Next** when the installation is complete. Choose to restart the computer now or later and click **Finish**.

Figure 6-9 Installation completed



 **NOTE**

If you select **Yes, I want to restart this computer now.**, the computer will restart when you click **Finish**. To avoid data loss, save all files before clicking **Finish**.

You are advised to restart the computer when the display adapter driver is installed.

----End

6.3 Installing the Network Adapter Driver

This section describes how to install the network adapter driver.

Context

The network adapter driver is delivered with the SAE board in CD-ROM form.

The network adapter driver is automatically installed when any of the following operating system is installed:

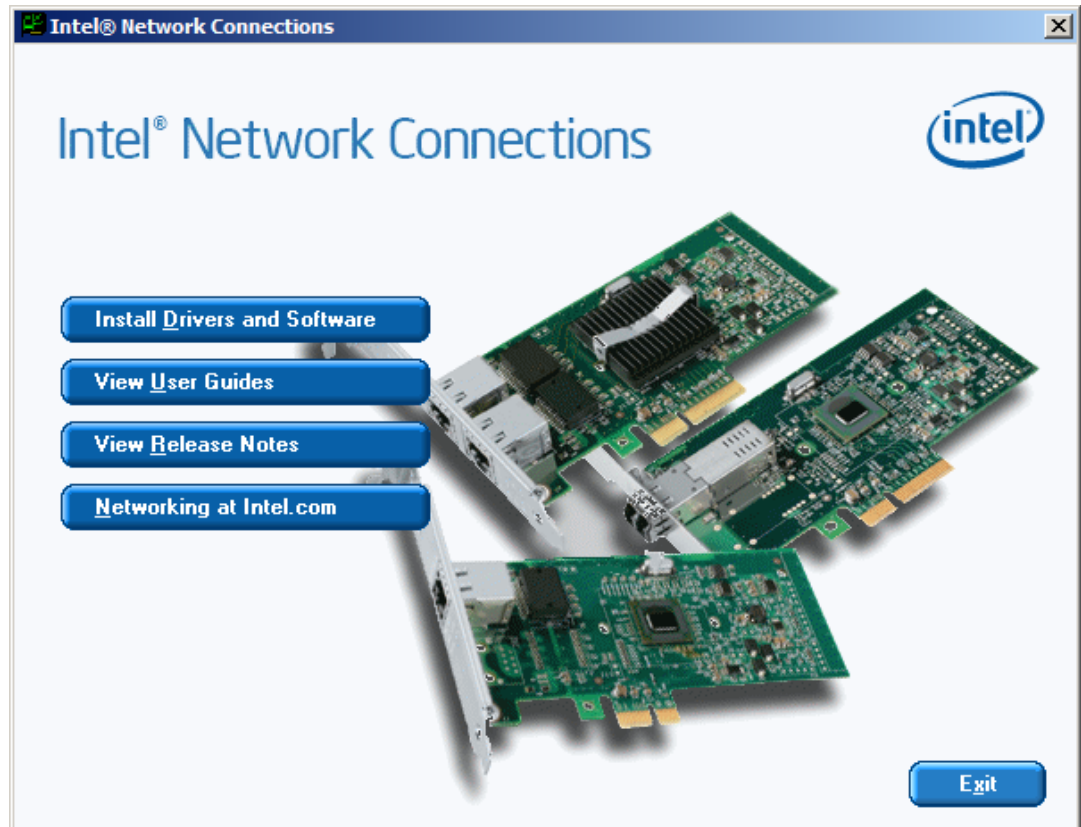
- VMware ESXi 5.0
- Red Hat Enterprise Linux
- SUSE Enterprise 11 SP1
- Fedora core 15
- Ubuntu 12.04

The following describes how to install the network driver on the SAE board that runs Windows Server 2008 R2.

Procedure

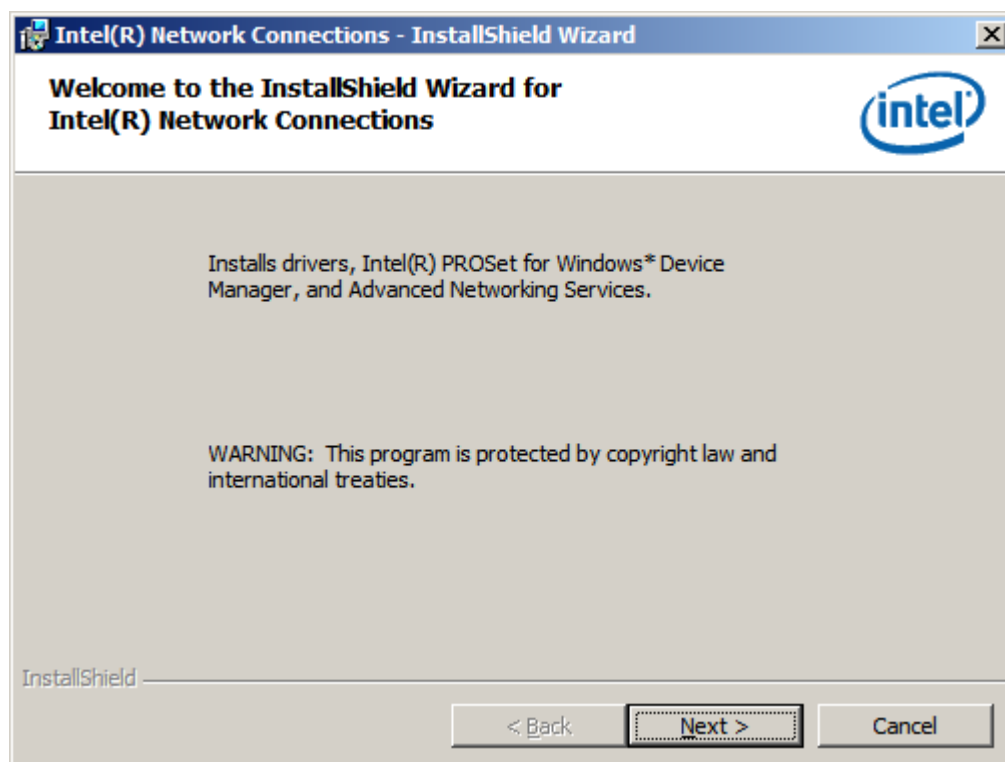
- Step 1** Open the CD-ROM directory in the computer, double-click the network adapter driver, and click **Install Drivers and Software**.

Figure 6-10 Run the network adapter driver



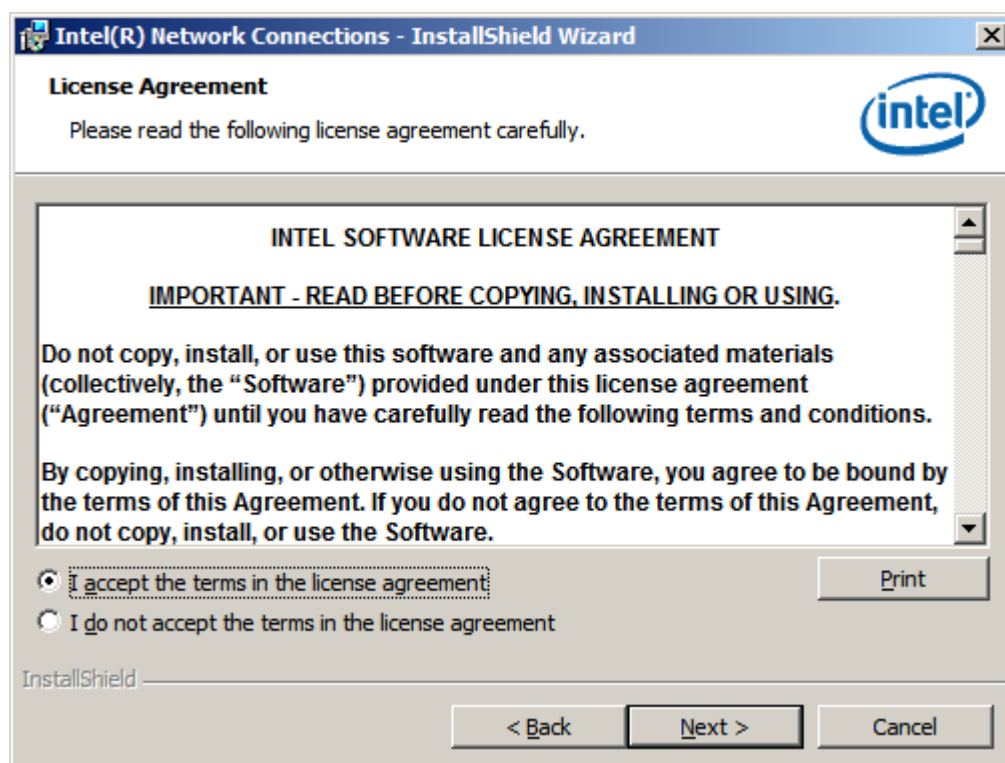
- Step 2** Click Next.

Figure 6-11 Installation wizard



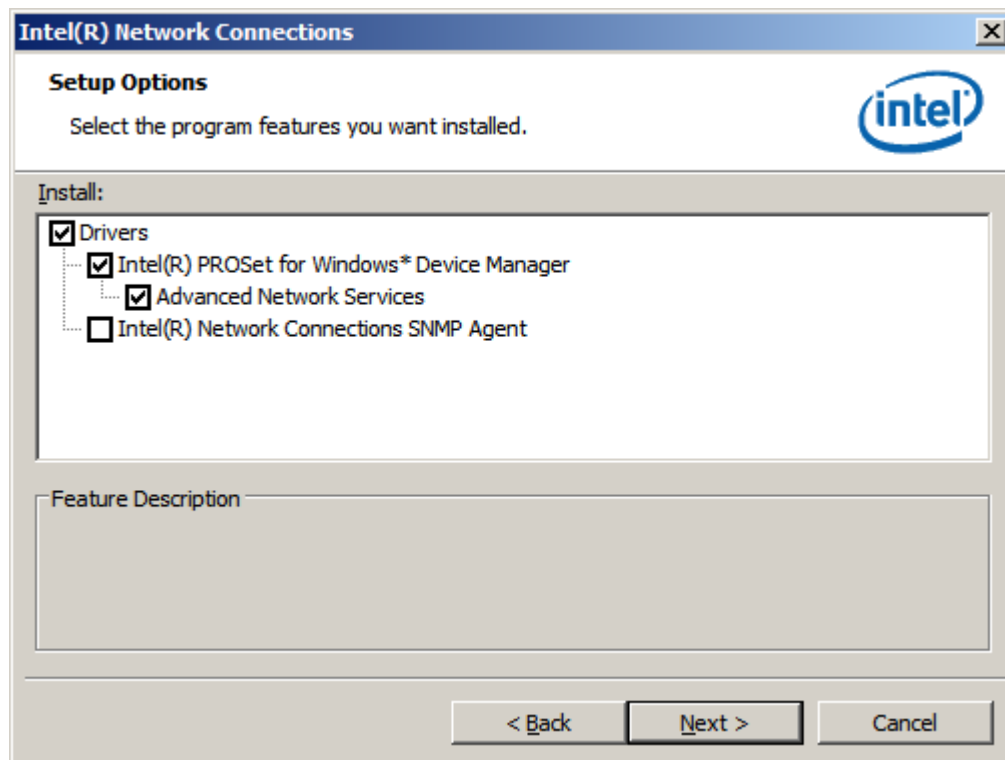
Step 3 Accept the license agreement and click Next.

Figure 6-12 Accept the license agreement



Step 4 Select program modules you want to install, and click **Next**.

Figure 6-13 Select program modules

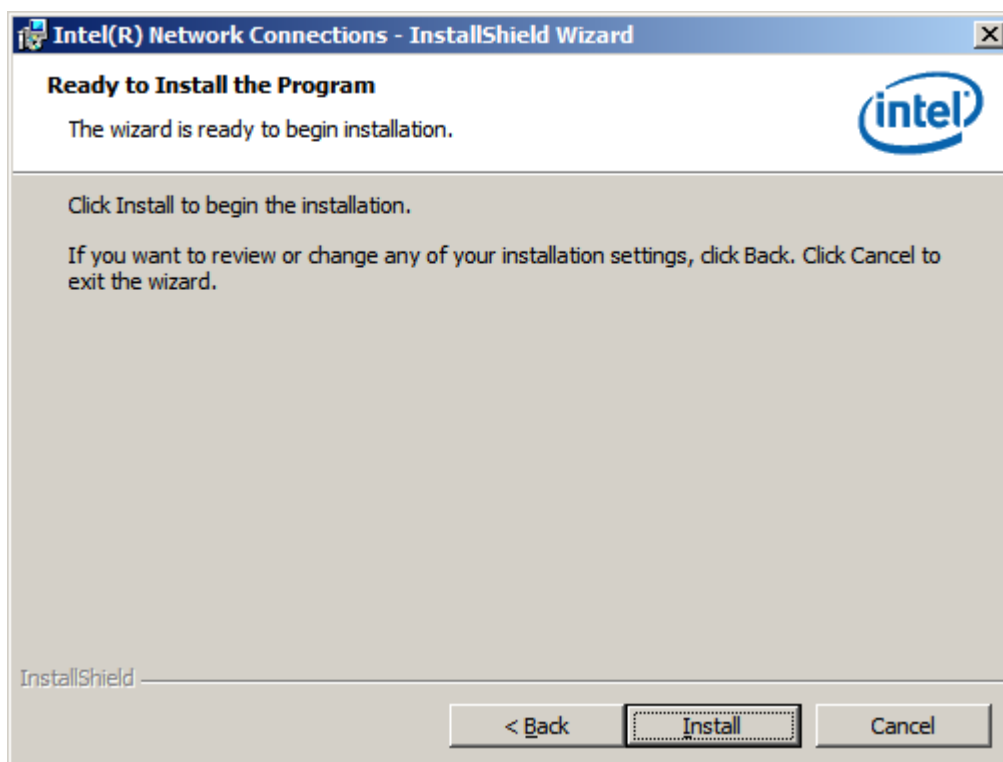


NOTE

The **Drivers** option must be selected. Other options can be selected as required.

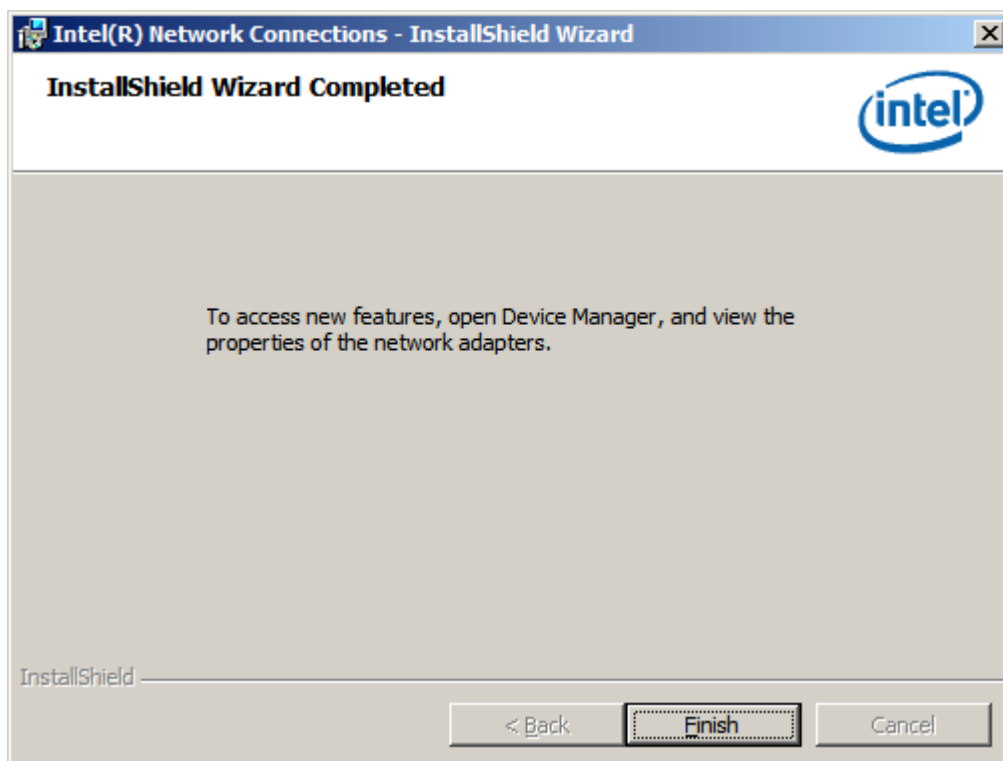
Step 5 Click **Install**.

Figure 6-14 Start network driver Installation



Step 6 Click Finish.

Figure 6-15 installation completed



---End

7 Managing the SAE Board

About This Chapter

After configuring the IP address and remote access services for the SAE board, you can remotely operate and manage the SAE board.

[7.1 Configuring the IP Address and Default Gateway Address](#)

This section describes how to configure the IP address and default gateway address of interface GE0 or GE1 for the SAE board that run Windows Server 2008 R2.

[7.2 Logging In to the SAE Board Remotely](#)

Users can remotely log in to the SAE board through the remote desktop or in Telnet mode, which facilitates user operations on the SAE board.

[7.3 Restarting the SAE Board](#)

This section describes how to restart the SAE board.

7.1 Configuring the IP Address and Default Gateway Address

This section describes how to configure the IP address and default gateway address of interface GE0 or GE1 for the SAE board that run Windows Server 2008 R2.

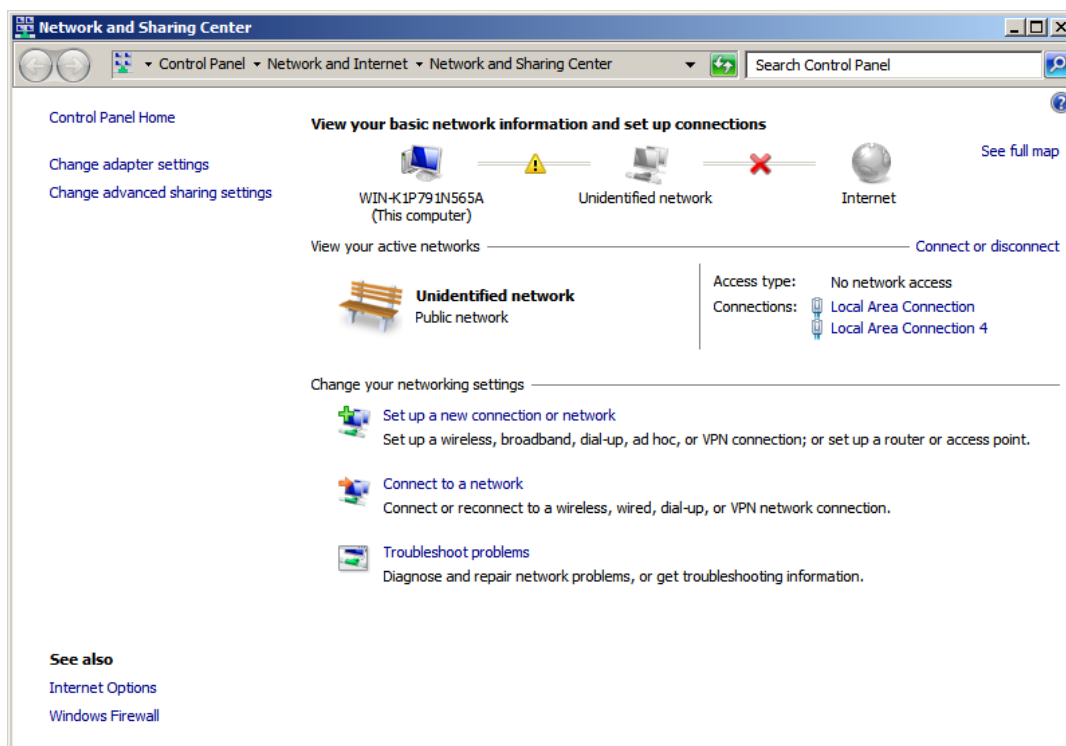
Pre-configuration Tasks

- Installing the operating system and drivers on the SAE board.
- Planning the IP address, subnet mask, and default gateway address of interface GE0 or GE1.

Procedure

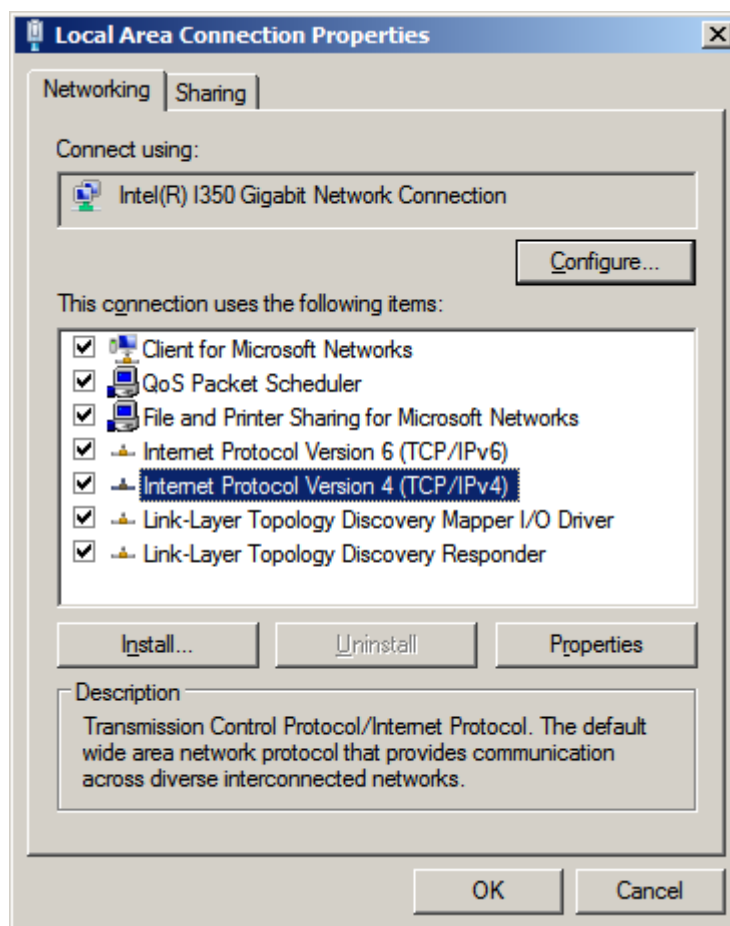
- Step 1** Power on the SAE board and enter the Windows Server 2008 R2 operating system. Connect a network cable to interface GE0 or GE1.
- Step 2** Choose **Start > Control Panel > Network and Internet > Network and Sharing Center**. Click **Local Area Connection** that corresponds to interface GE0 or GE1, and click **Properties**.

Figure 7-1 Network and Sharing Center



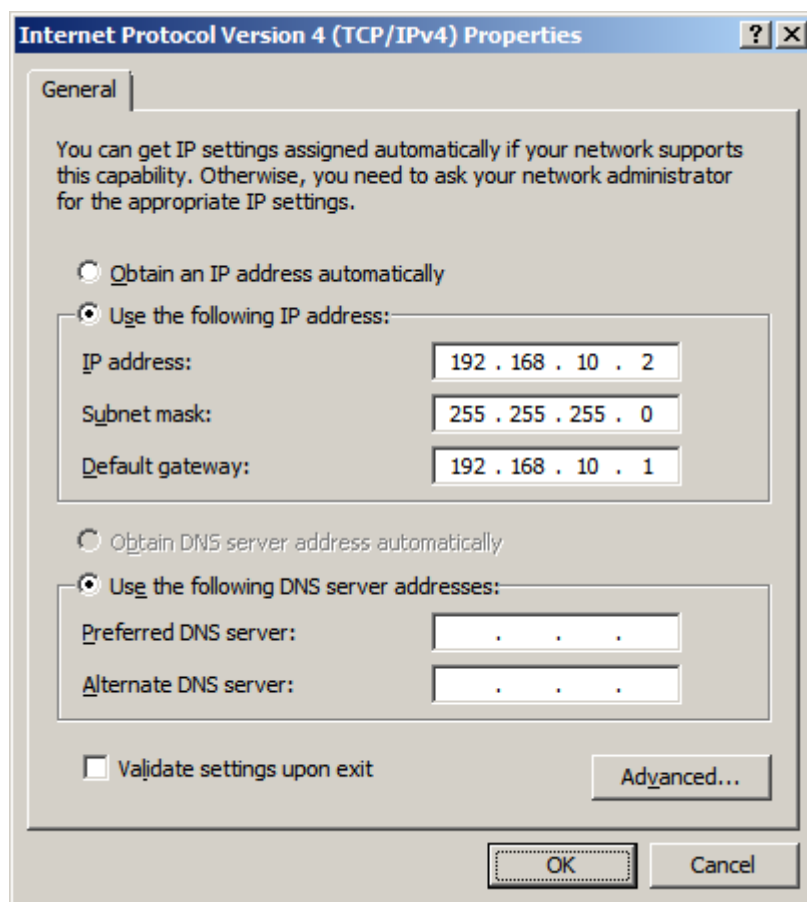
- Step 3** Choose **Internet Protocol Version 4(TCP/IPv4)** and click **Properties**.

Figure 7-2 Local Area Connection Properties



Step 4 Choose **Use the following IP address**, set **IP address**, **Subnet mask**, and **Default gateway**, and click **OK**.

Figure 7-3 Internet Protocol Version 4 (TCP/IPv4) Properties

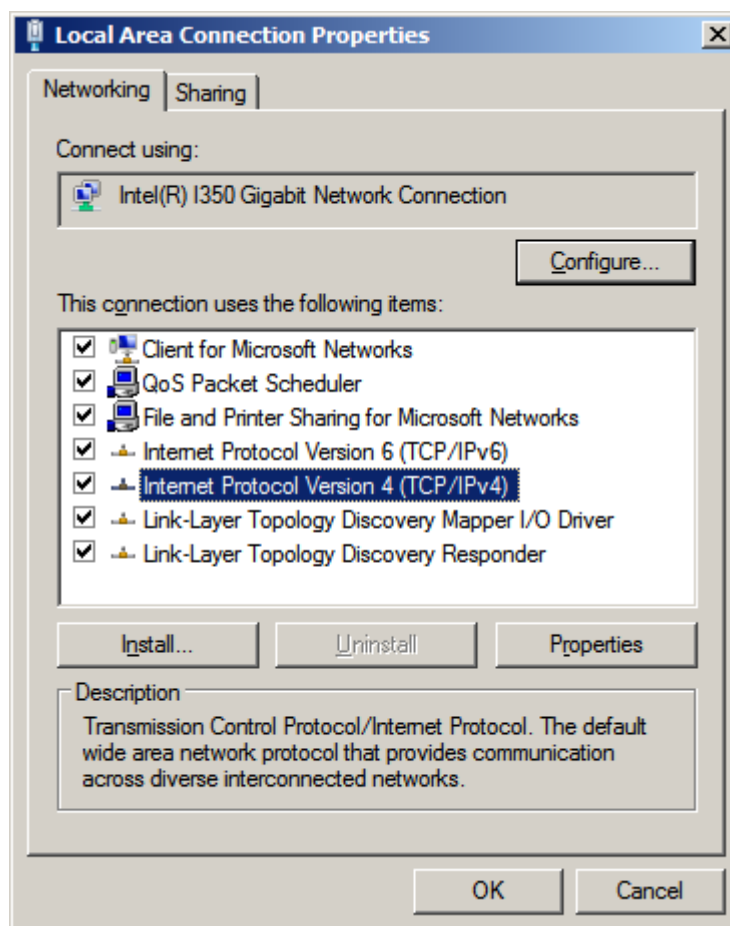


NOTE

Choose to set DNS server IP addresses as required.

Step 5 Click **OK**. The configurations take effect immediately.

Figure 7-4 Local Area Connection Properties



----End

7.2 Logging In to the SAE Board Remotely

Users can remotely log in to the SAE board through the remote desktop or in Telnet mode, which facilitates user operations on the SAE board.

7.2.1 Establishing the Configuration Task

This section describes the applicable environment and pre-configuration task for configuring remote access services on the SAE board.

Applicable Environment

You can configure remote access services on the SAE board to manage and maintain multiple SAE boards from one network terminal.

Pre-configuration Tasks

- Installing the operating system and drivers on the SAE board.
- Configuring the IP address, subnet mask, and default gateway of the SAE board to ensure the normal connection between the user terminal and SAE board.

7.2.2 Enabling Remote Access Services on the SAE Board

Before logging in to the SAE board remotely, enable remote access services on the operating system of the SAE board.

Context

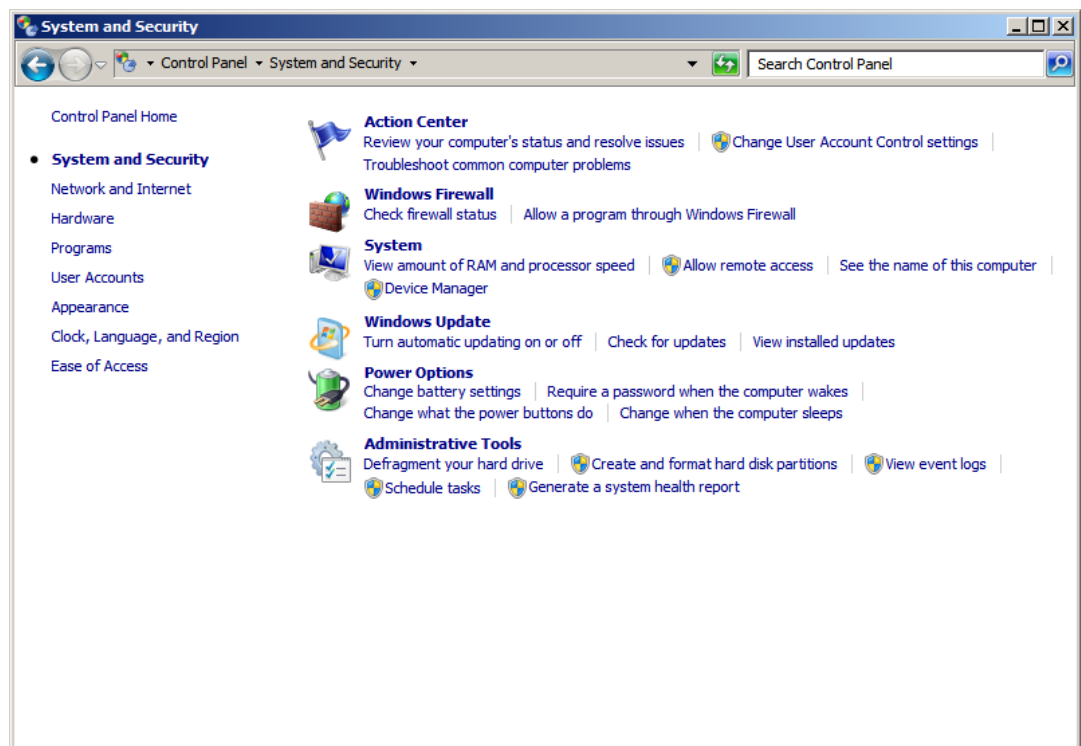
The following describes how to enable remote access services on the SAE board that runs Windows Server 2008 R2.

By default, remote desktop access and Telnet services are disabled on Windows Server 2008 R2.

Procedure

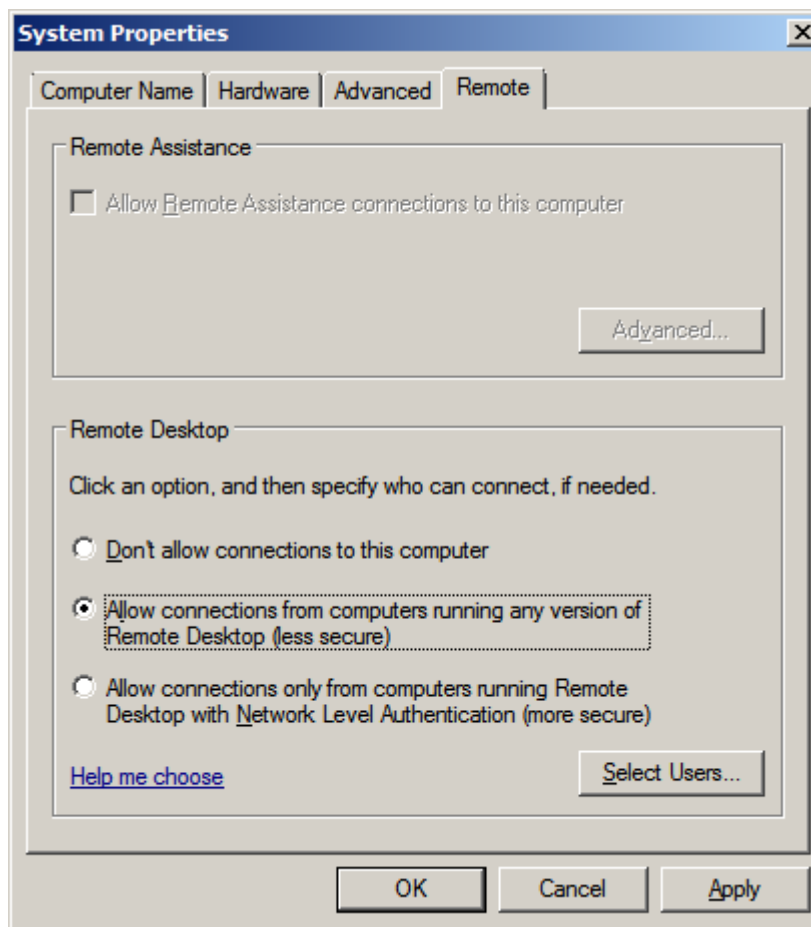
- Enable the remote desktop access service.
 1. Power on the SAE board and enter the Windows Server 2008 R2 operating system. Choose **Start > Control Panel > System and Security > Allow remote access**.

Figure 7-5 System and Security



2. Choose **Allow connections for computers ...** or **Allow connections only from computers ...**, and click **OK**.

Figure 7-6 System Properties

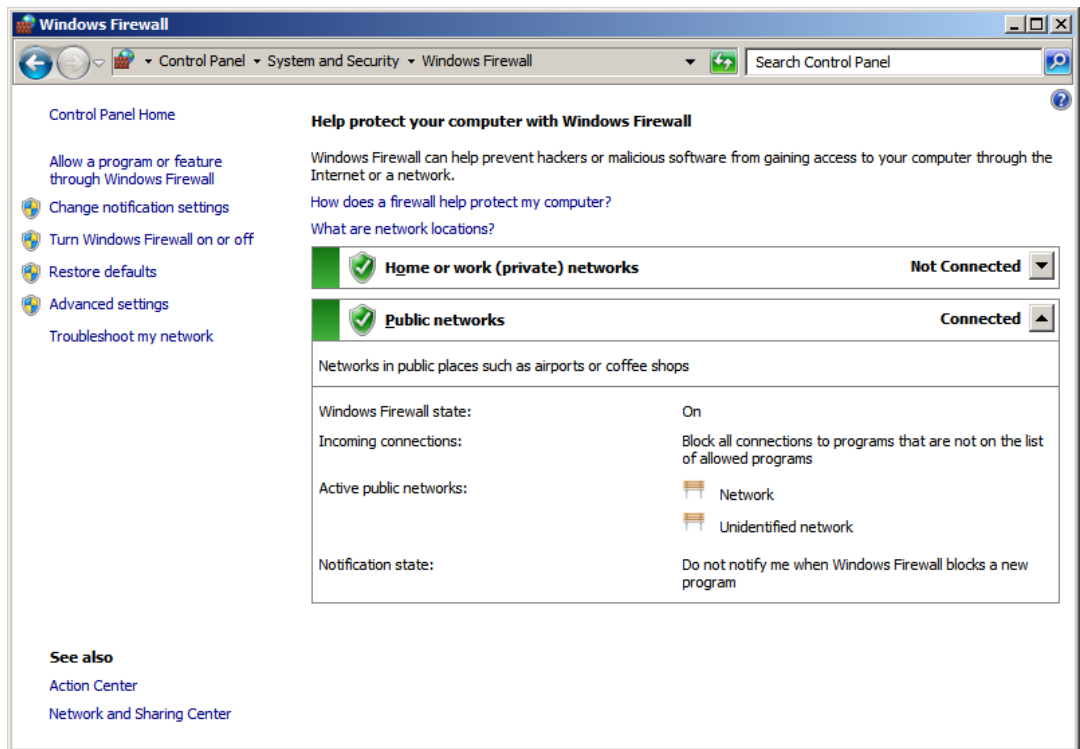


 **NOTE**

To grant remote access permission to specific users, click **Select Users**.

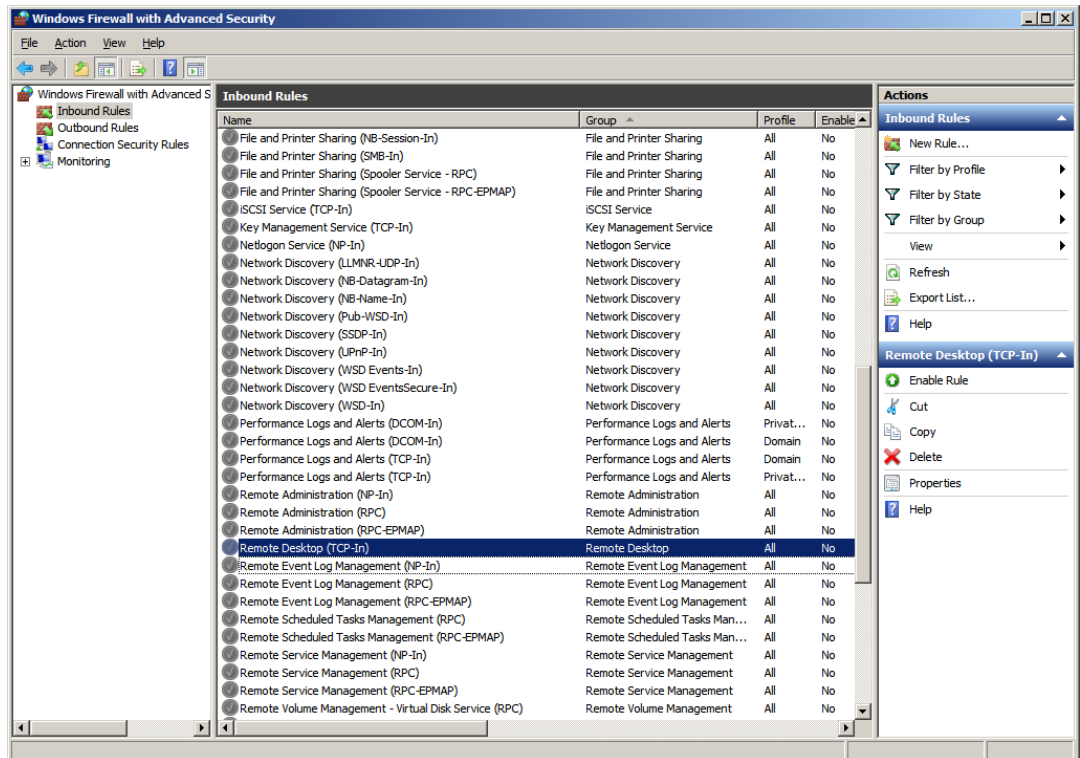
3. Choose **Control Panel > System and Security > Windows Firewall > Advanced settings**.

Figure 7-7 Windows Firewall



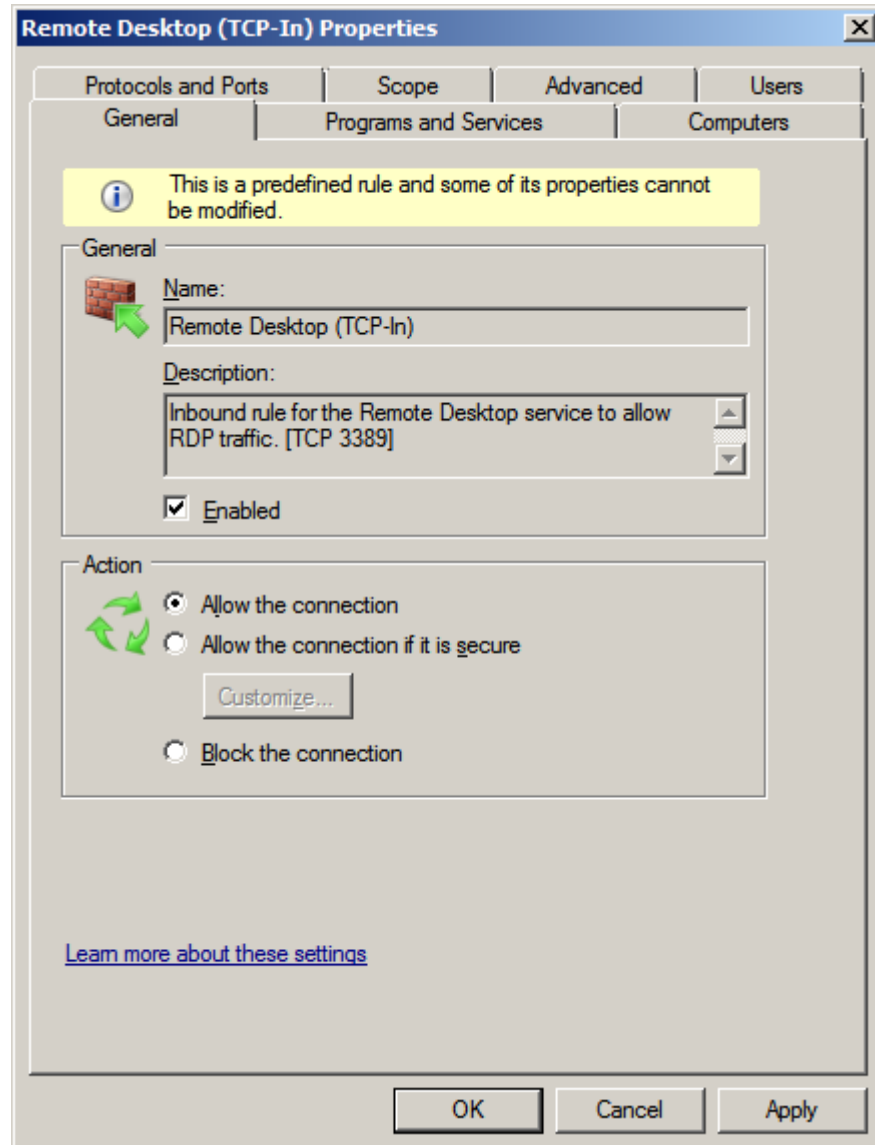
4. Click **Inbound Rules** and double-click **Remote Desktop(TCP-In)** in the right list.

Figure 7-8 Inbound Rules



5. Select **Enabled** and click **OK**. Then you can manage SAE boards through the remote desktop.

Figure 7-9 Remote Desktop (TCP-In) Properties



- Enable the Telnet service.

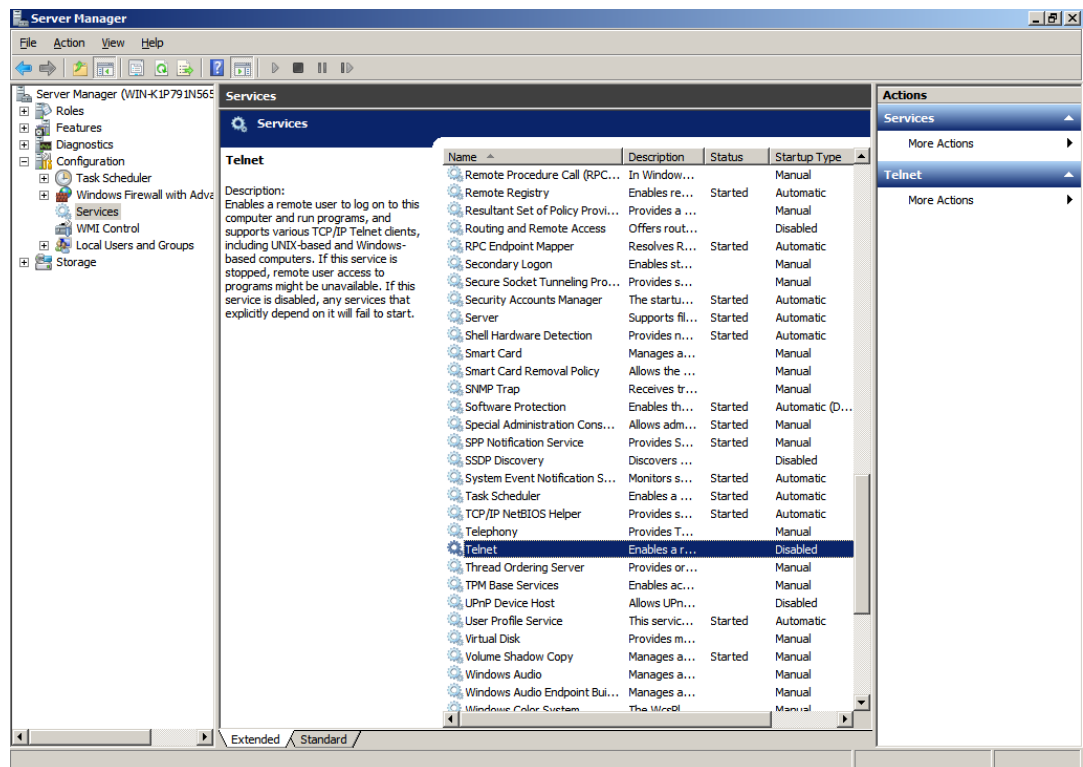
NOTE

By default, the Telnet service is not installed on Windows Server 2008 R2. To install the Telnet service, in **Server Manager > Features**, click **Add Features** and use **Add Features Wizard** to install **Telnet Server** and **Telnet Client**.

The **Telnet Server** rule in the inbound rule list of **Windows Firewall with Advanced Security** is automatically enabled when the Telnet server is installed.

1. Choose **Start > Administrative > Server Manager**. In the left navigation tree that is displayed, choose **Configuration > Services**, and double-click **Telnet** in the right list.

Figure 7-10 Services

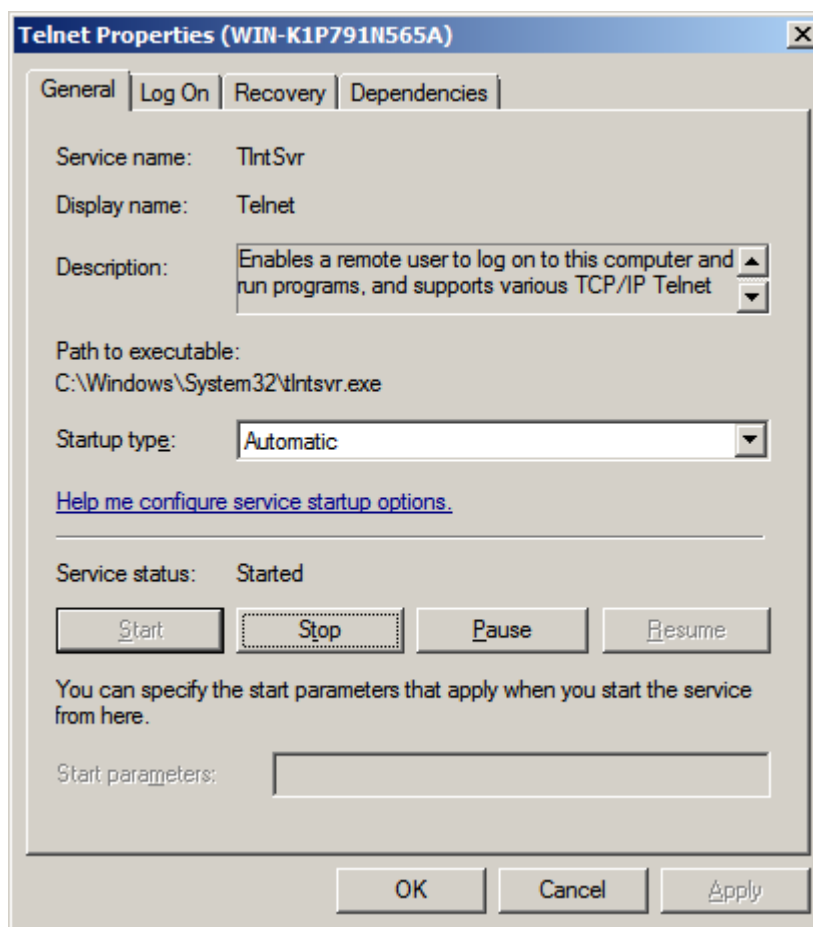


2. Set **Startup** to **Automatic** and click **Start**.

 **NOTE**

If you select **Automatic**, the Telnet service will be enabled automatically when the operating system starts. If you select **Manual**, you need to click **Start** to enable the Telnet service when the system starts.

Figure 7-11 Telnet Properties



---End

7.2.3 Logging In to the SAE Board Remotely

This section describes how to log in to the SAE board remotely.

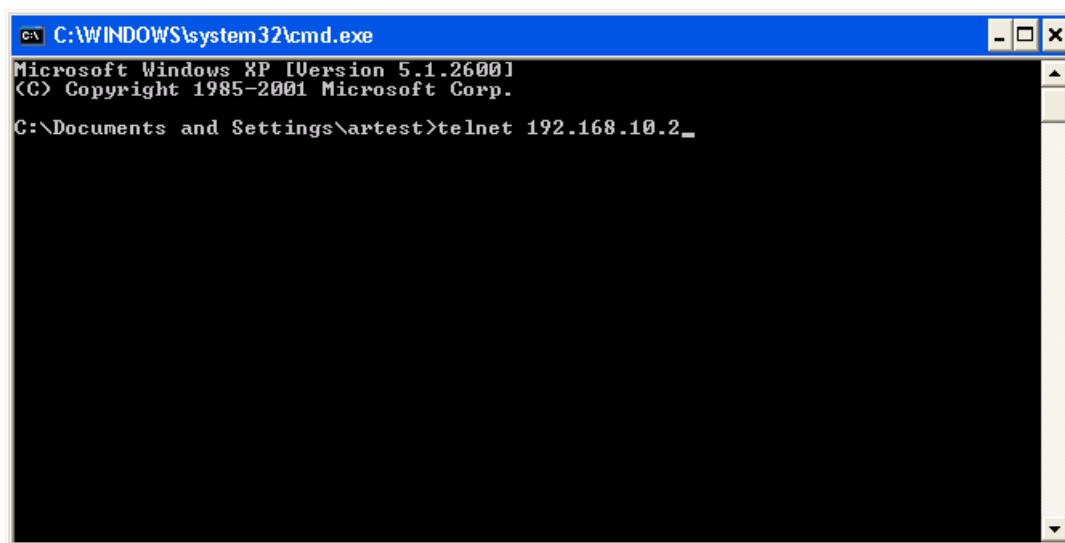
Context

You can log in to the SAE board by using Windows command line interface (CLI) or remote desktop software. You can also use non-Windows remote desktop software as alternatives. Before establishing a remote connection to the SAE board, ensure that the user name and password have been configured for the operating system of the SAE board. The following describes how to log in to the SAE board using Windows XP CLI and remote desktop software.

Procedure

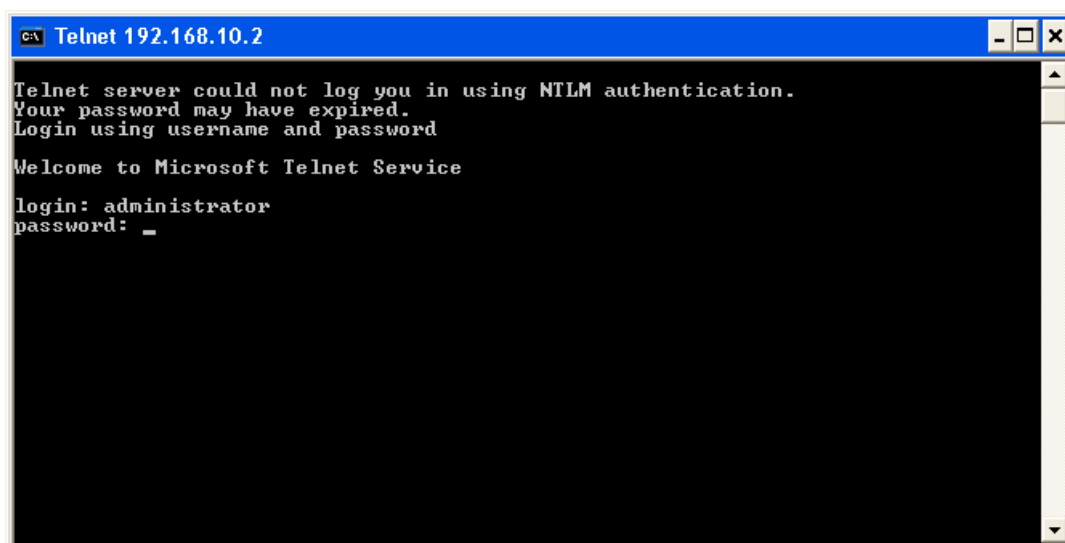
- **Logging In to the SAE Board Using Windows CLI**
 1. In a computer that runs Windows XP, choose **Start > Programs > Accessories > Command Prompt**.
 2. Run the **telnet ip-address** command to remotely log in to the SAE board.

Figure 7-12 Logging In to the SAE board remotely



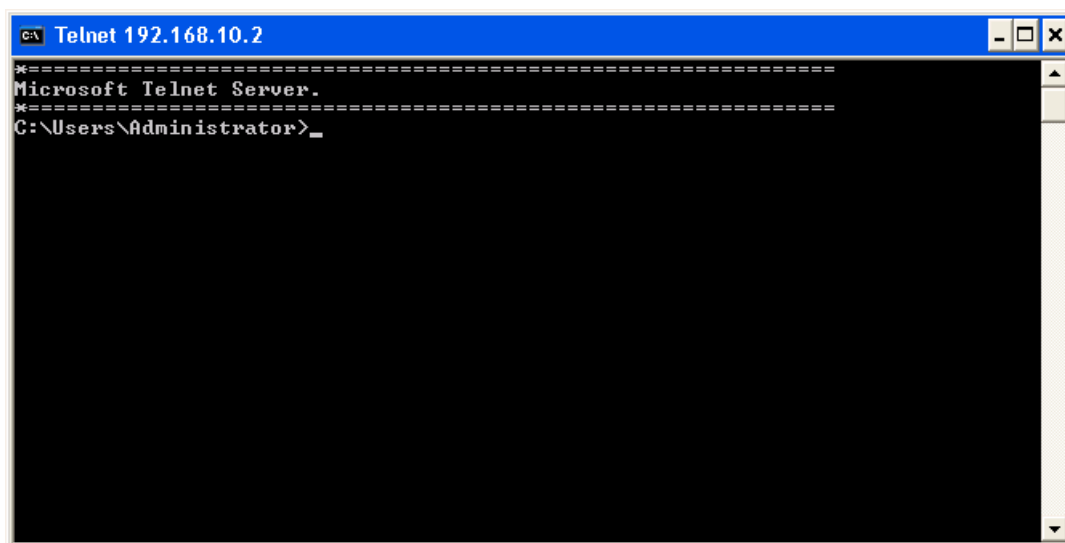
3. Enter the user name and password of the SAE board.

Figure 7-13 Authentication



4. Press **Enter**.

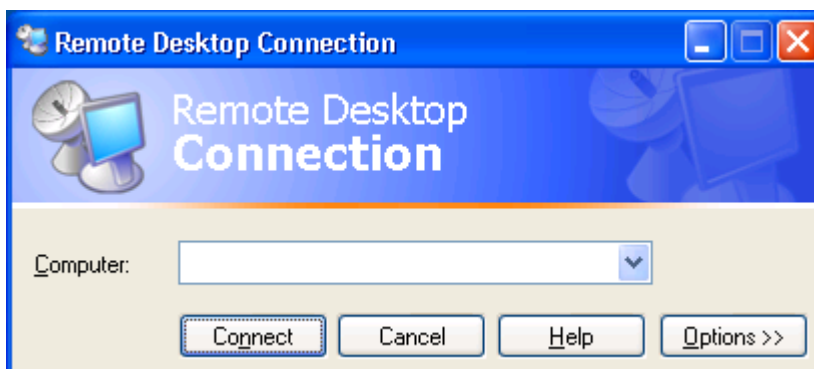
Figure 7-14 Successful login



The login is successful. You can use Windows CLI to manage and maintain the SAE board remotely.

- **Logging In to the SAE Board Using Windows Remote Desktop Software**
 1. In a user terminal that runs Windows XP, choose **Start > Programs > Accessories > Communications > Remote Desktop Connection**.

Figure 7-15 Remote Desktop Connection



2. Enter the IP address or user name of the SAE board, and click **Connect**. On the login page that is displayed, enter the user name and password of the SAE board.

The login is successful. You can use Windows remote desktop software to manage and maintain the SAE board remotely.

----End

7.3 Restarting the SAE Board

This section describes how to restart the SAE board.

Context

The following describes three ways to restart the SAE board.



CAUTION

Save the configuration on the SAE board before restart. Forcibly restarting the SAE board will result in configuration data loss.

Procedure

- **Restarting the SAE Board by Pressing the Power Button**

To restart the SAE board, press the power button.

To shut down the SAE board, hold down the power button for at least 5 seconds.

- **Restarting the SAE Board in the User View of the Device Where the SAE Board Is Located**

Run the **reset slot *slot-number*** command to power off and restart the SAE board in the specified slot.

- **Restarting the SAE Board on the Operating System**

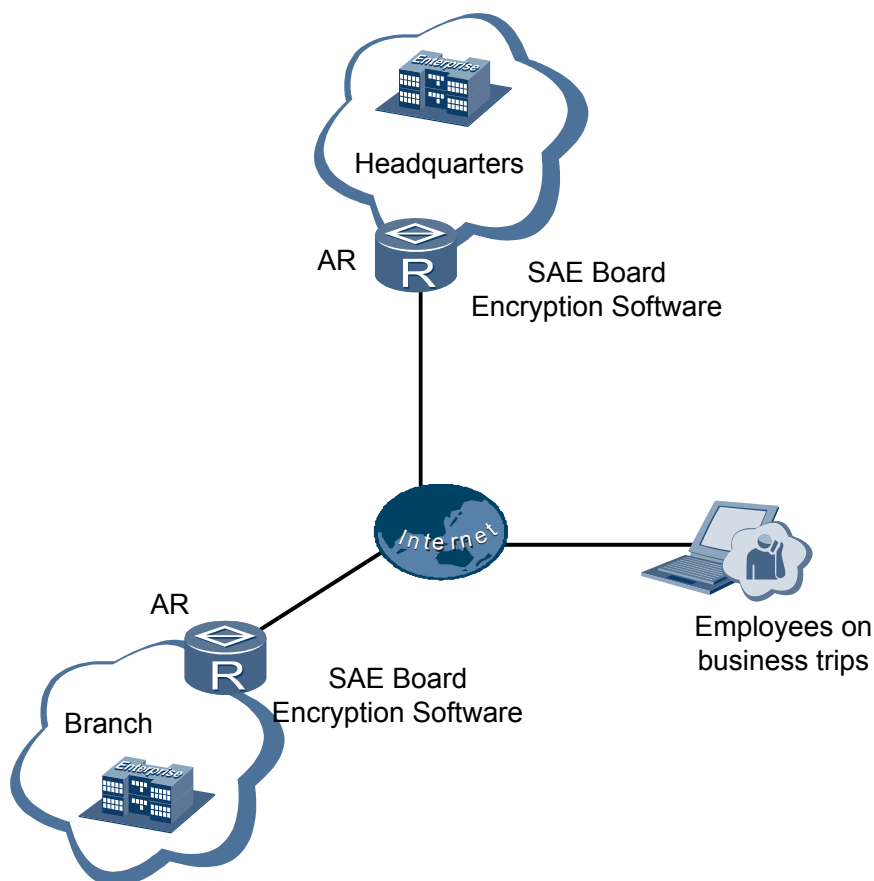
On Windows Server 2008 R2, choose **StartRestart**, and click **OK**.

----End

8 SAE Application

As shown in **Figure 8-1**, private networks at a company's headquarters and branches are connected through the Internet. The device at the headquarters and branches have SAE boards and encryption software installed to secure data transmission. Employees on a business trip can also use SAE boards to communicate with the headquarters.

Figure 8-1 SAE application



9 Configuration Example

About This Chapter

The following describes configuration examples for using a computer to log in to the SAE board that runs Windows Server 2008 R2.

[9.1 Example for Logging In to the SAE Board Using Remote Desktop Software](#)

This example describes how to log in to the SAE board using Windows remote desktop software.

[9.2 Example for Logging In to the SAE Board Using Windows CLI](#)

This example describes how to log in to the SAE board using Windows CLI.

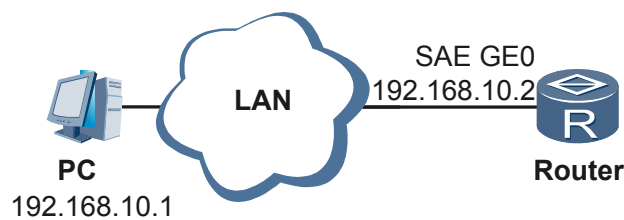
9.1 Example for Logging In to the SAE Board Using Remote Desktop Software

This example describes how to log in to the SAE board using Windows remote desktop software.

Networking Requirements

The SAE board connects to a LAN through its GE interface and has a reachable route to a computer. A user needs to log in to the SAE board from the computer to manage and maintain the SAE board.

Figure 9-1 Networking for remote login to the SAE board



Configuration Roadmap

1. Connect a GE interface of the SAE board to a LAN.
2. Configure network parameters, including the IP address of the SAE board.
3. Enable the remote desktop service.
4. Add the remote desktop service to the inbound rule list of the firewall.
5. Log in to the SAE board using the computer.

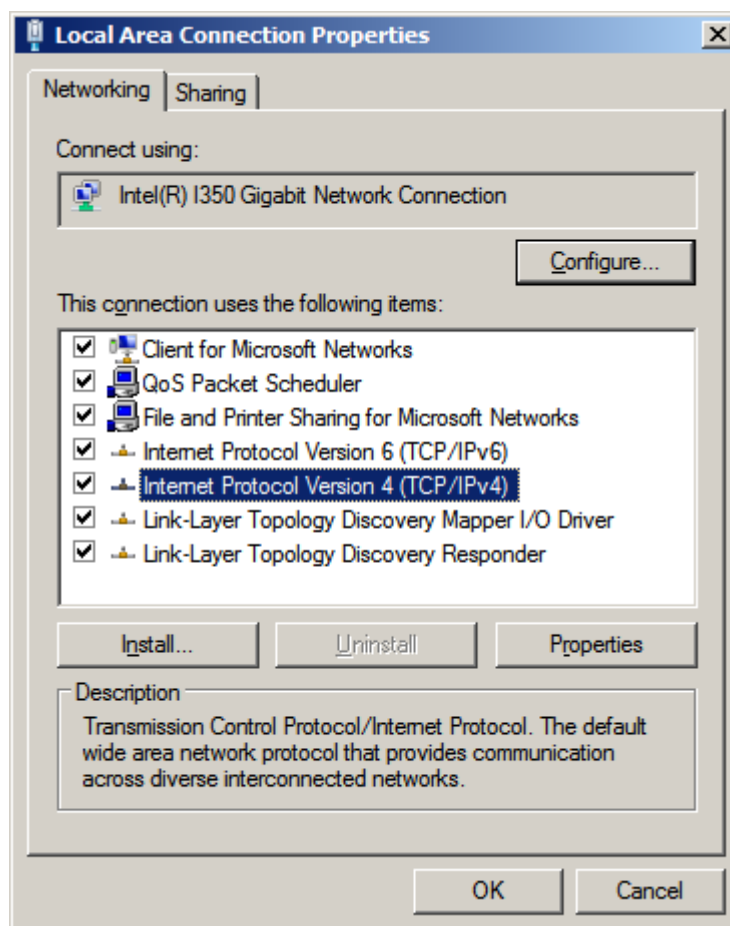
Procedure

Step 1 Connect a GE interface of the SAE board to a LAN.

Step 2 Configure the IP address of the SAE board.

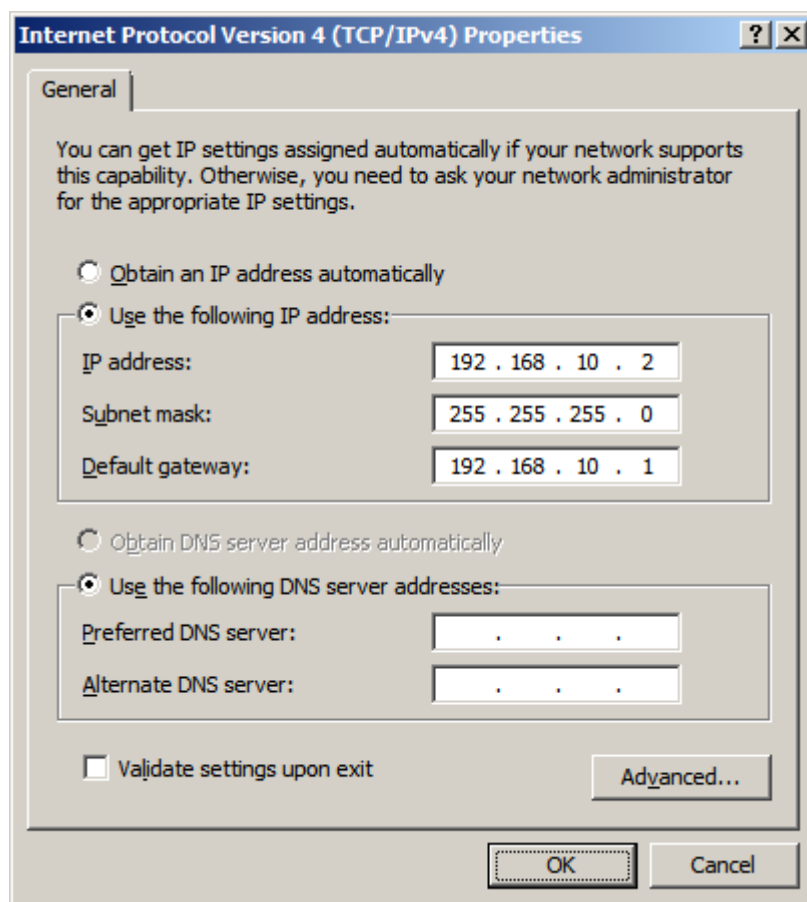
Access the **Local Area Connection Properties** dialog box of the SAE GE interface.

Figure 9-2 Local Area Connection Properties



Double-click **Internet Protocol Version 4(TCP/IPv4)** and configure the IP address and default gateway address of the SAE board.

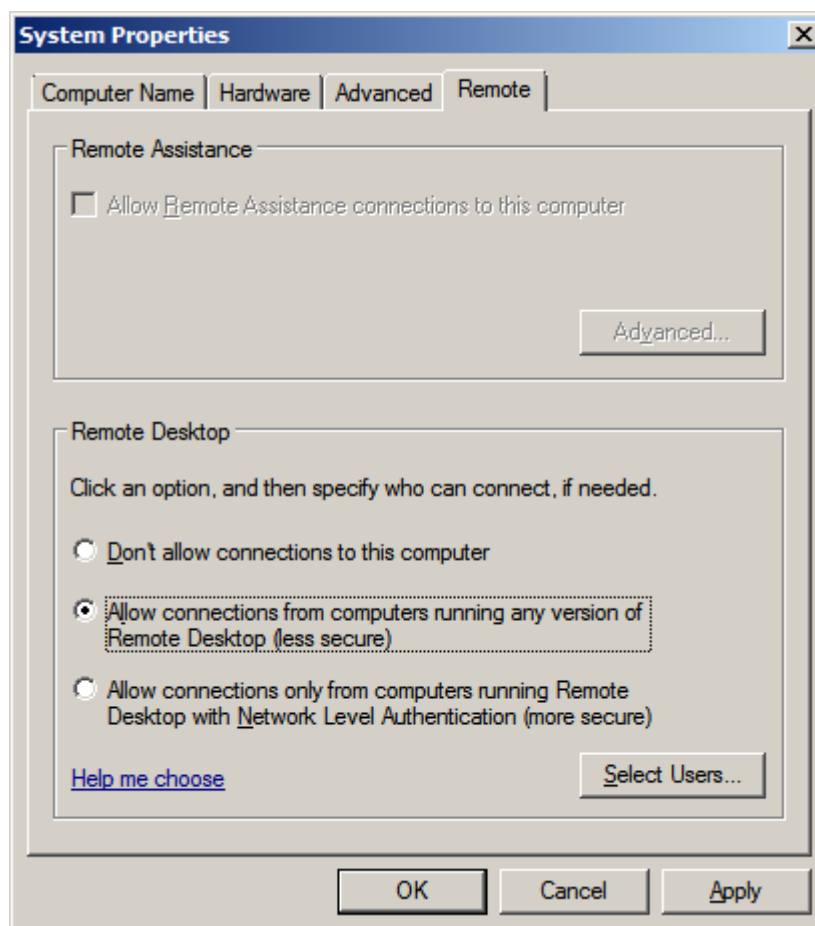
Figure 9-3 Internet Protocol Version 4(TCP/IPv4) Properties



Step 3 Enable the remote desktop service.

On the operating system, choose **System and Security > Allow Remote Access**, and enable remote desktop.

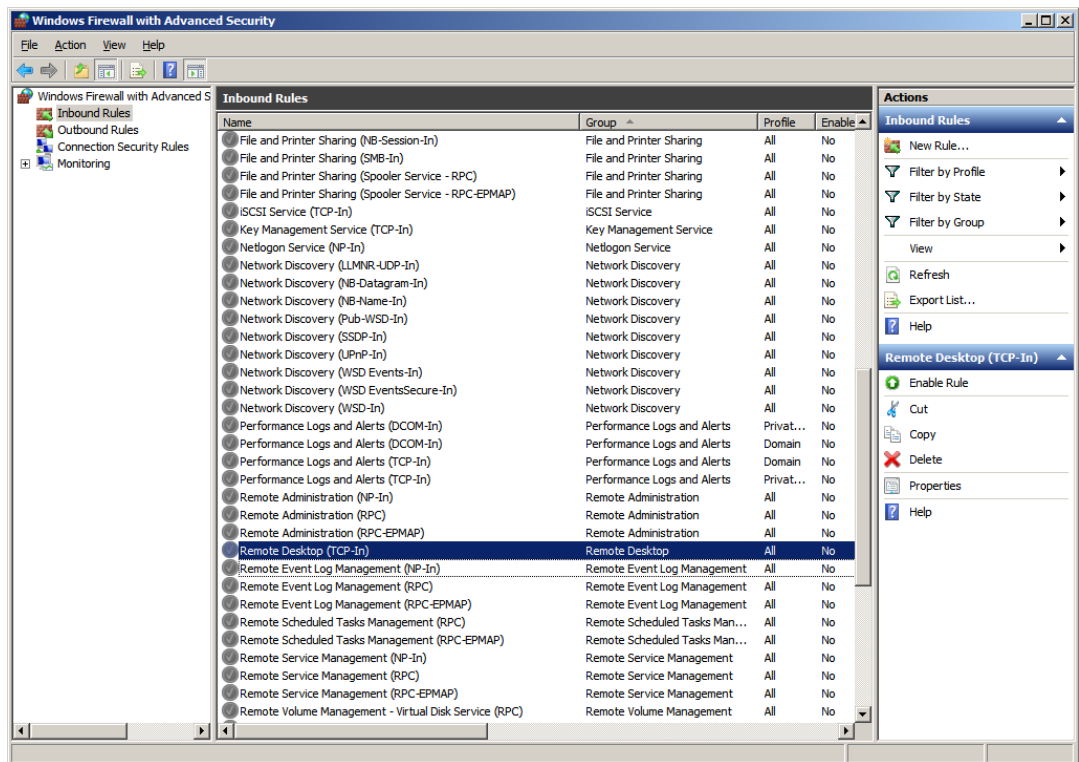
Figure 9-4 System Properties



Step 4 Add the remote desktop service to the inbound rule list of the firewall.

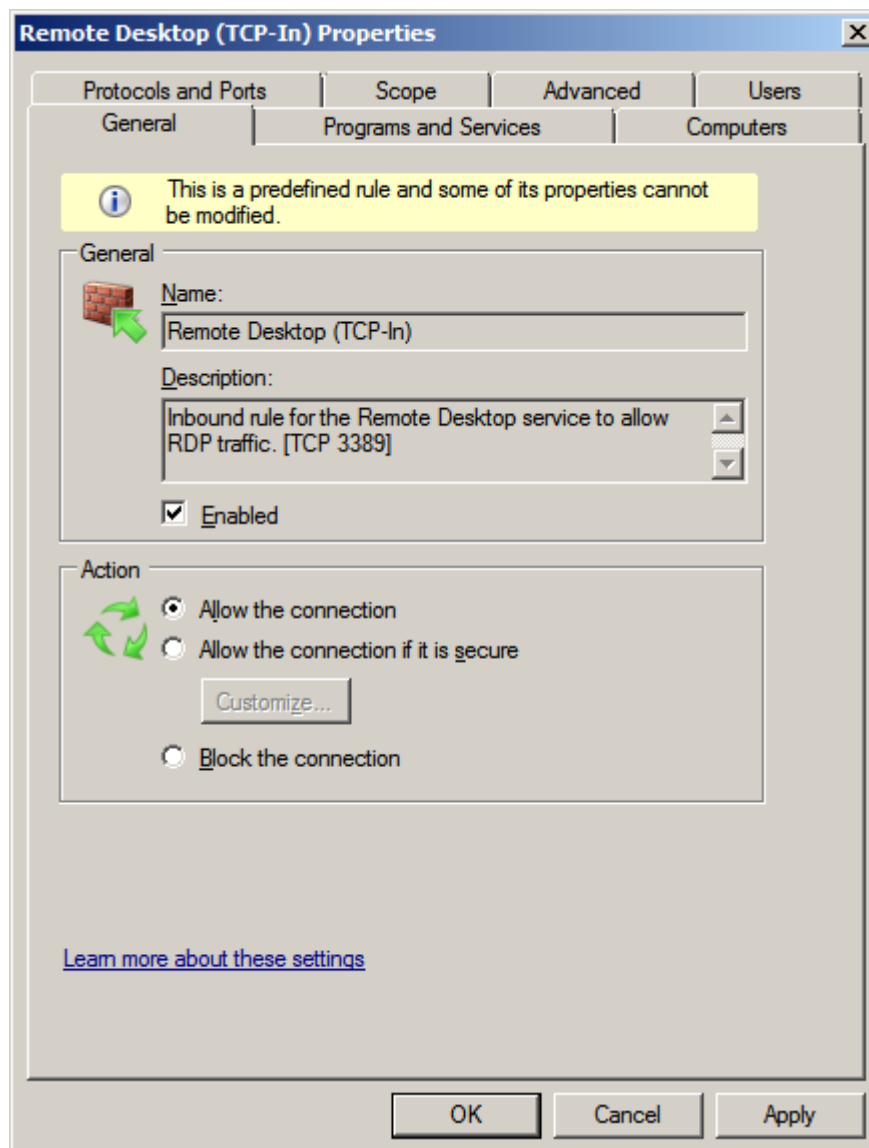
Choose **Advanced Setting** > **Inbound Rules**, and double-click **Remote Desktop (TCP-In)**.

Figure 9-5 Inbound Rules



Select **Enabled** and click **OK**.

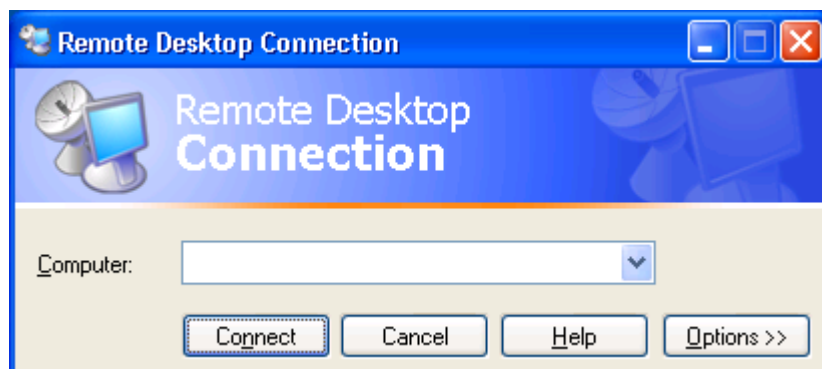
Figure 9-6 Remote Desktop (TCP-In) Properties



Step 5 Log in to the SAE board using the computer.

In the computer that runs Windows XP, choose **Start**→**Run**, enter **mstsc** to open **Remote Desktop Connection**.

Figure 9-7 Remote Desktop Connection



Enter the IP address of the SAE board. On the displayed page, enter the user name and password of the SAE board.

----End

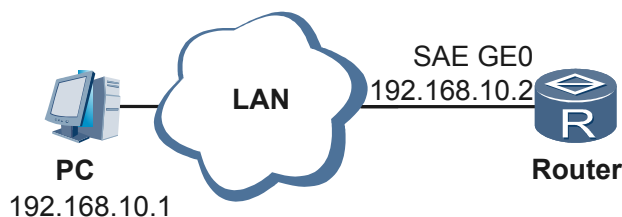
9.2 Example for Logging In to the SAE Board Using Windows CLI

This example describes how to log in to the SAE board using Windows CLI.

Networking Requirements

The SAE board connects to a LAN through its GE interface and has a reachable route to a computer. A user needs to log in to the SAE board from the computer to manage and maintain the SAE board.

Figure 9-8 Networking for remote login to the SAE board



Configuration Roadmap

1. Connect a GE interface of the SAE board to a LAN.
2. Configure network parameters, including the IP address of the SAE board.
3. Enable the Telnet service of the SAE board.
4. Log in to the SAE board using the computer.

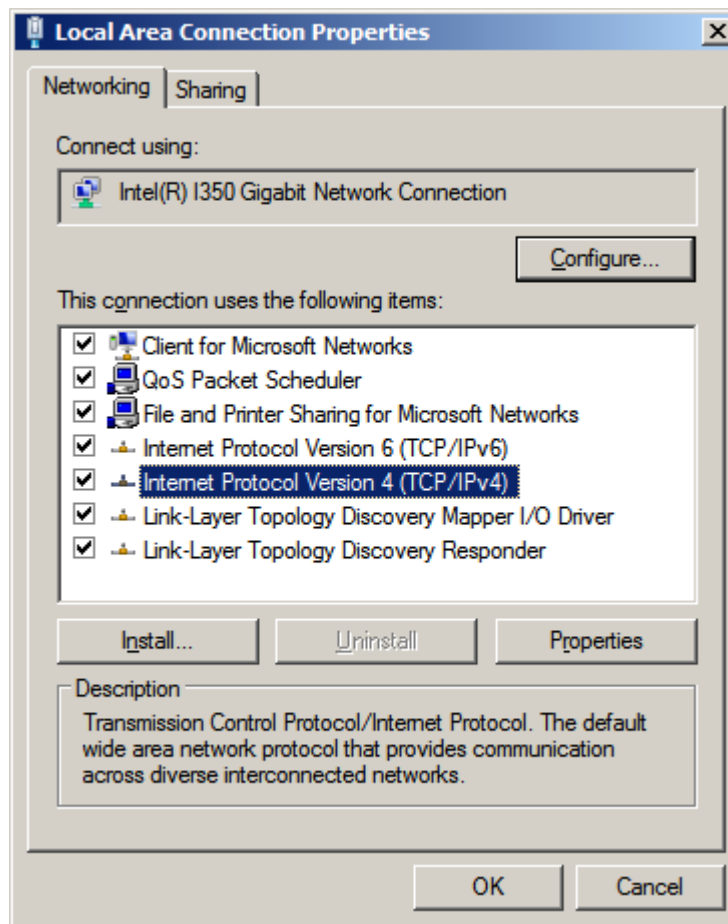
Procedure

Step 1 Connect a GE interface of the SAE board to a LAN.

Step 2 Configure the IP address of the SAE board.

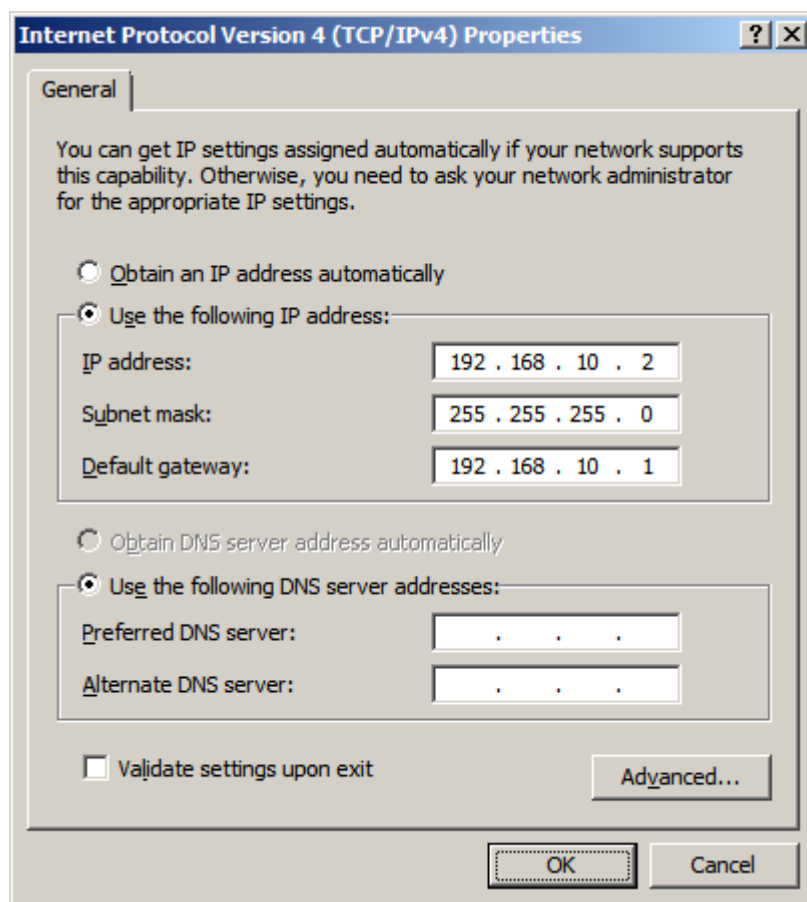
Access the **Local Area Connection Properties** dialog box of the SAE GE interface.

Figure 9-9 Local Area Connection Properties



Double-click **Internet Protocol Version 4(TCP/IPv4)** and configure the IP address and default gateway address of the SAE board.

Figure 9-10 Internet Protocol Version 4(TCP/IPv4) Properties



Step 3 Enable the Telnet service of the SAE board.

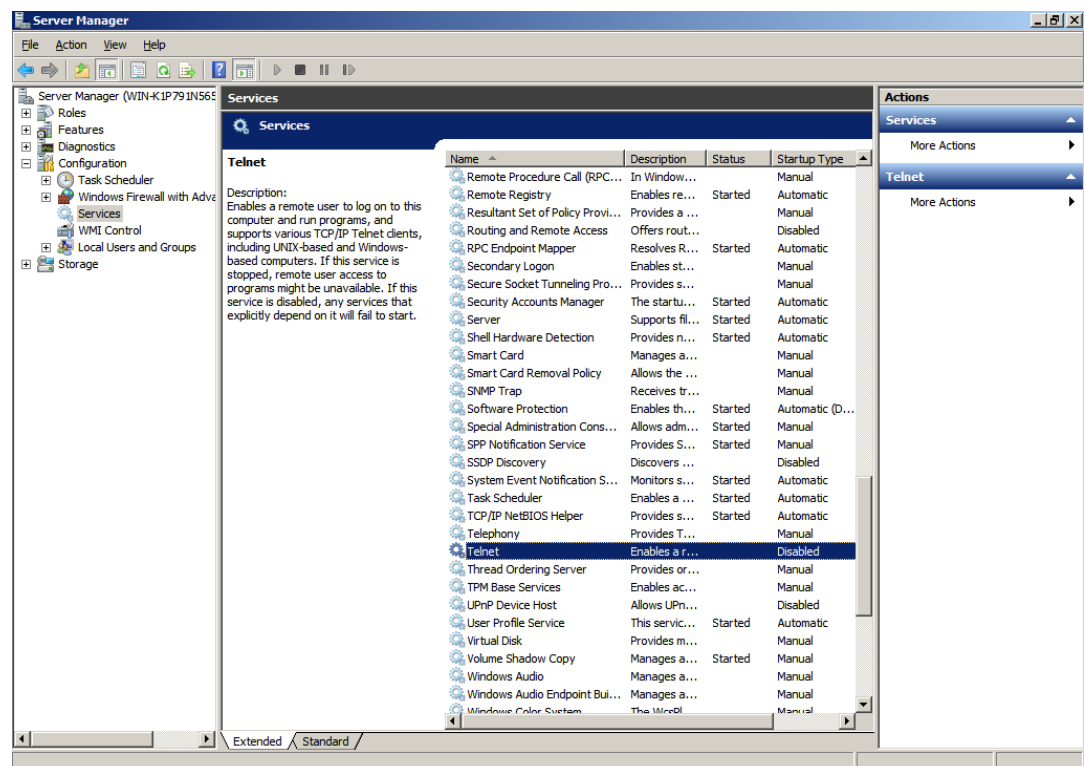
NOTE

By default, the Telnet service is not installed on Windows Server 2008 R2. To install the Telnet service, in **Server Manager > Features**, click **Add Features** and use **Add Features Wizard** to install **Telnet Server** and **Telnet Client**.

The **Telnet Server** rule in the inbound rule list of **Windows Firewall with Advanced Security** is automatically enabled when the Telnet server is installed.

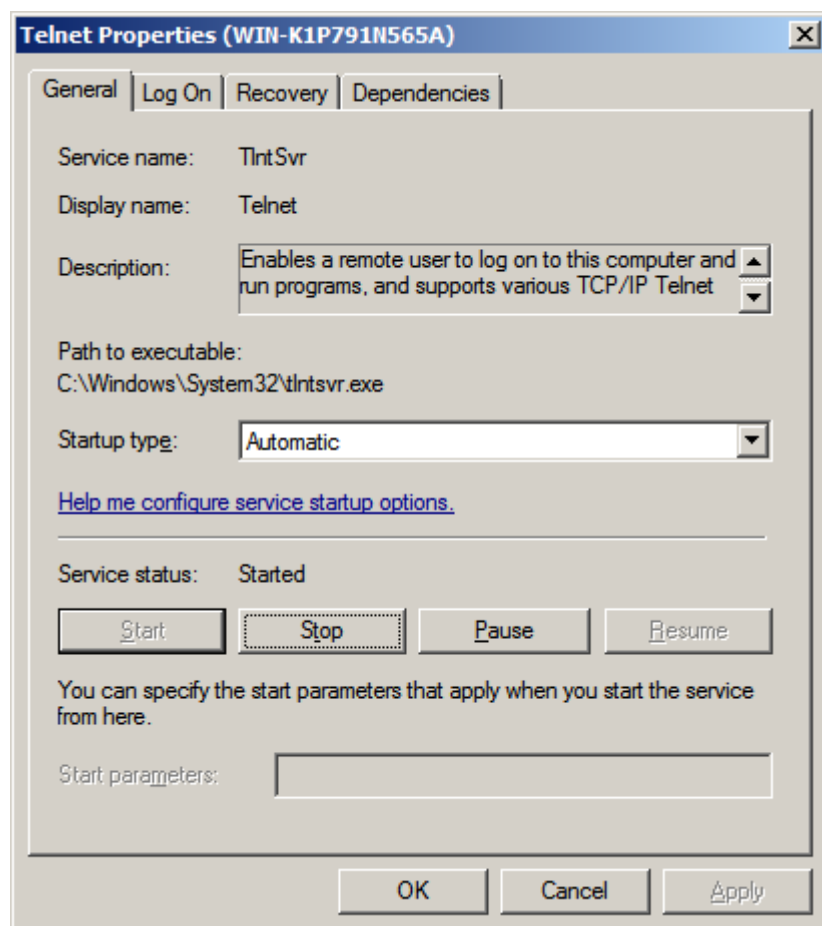
Choose **Start > Administrative > Server Manager**. In the left navigation tree that is displayed, choose **Configuration > Services**, and double-click **Telnet** in the right list.

Figure 9-11 Services



Set **Startup type** to **Automatic** and click **Start**.

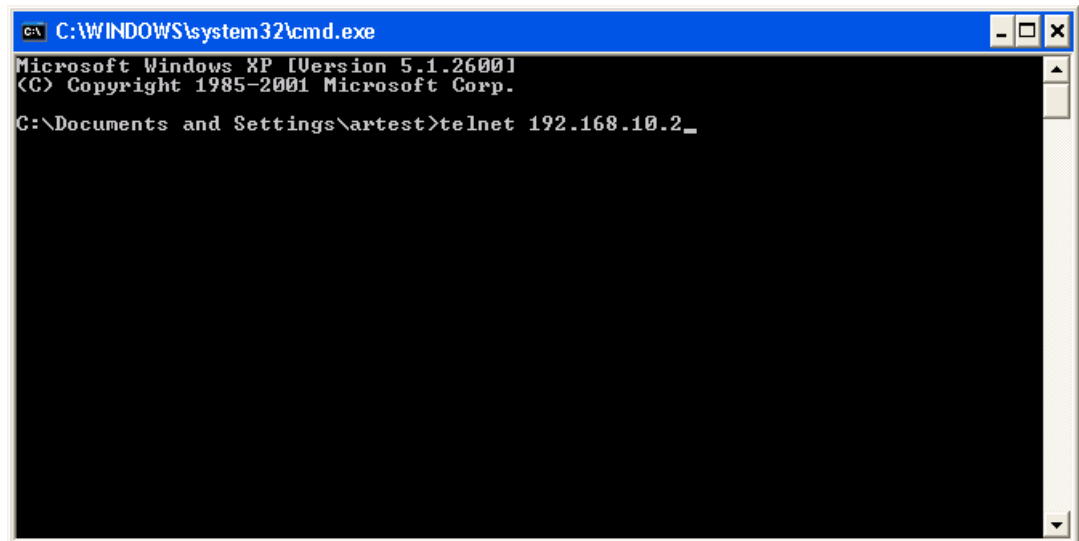
Figure 9-12 Telnet Properties



Step 4 Log in to the SAE board using the computer.

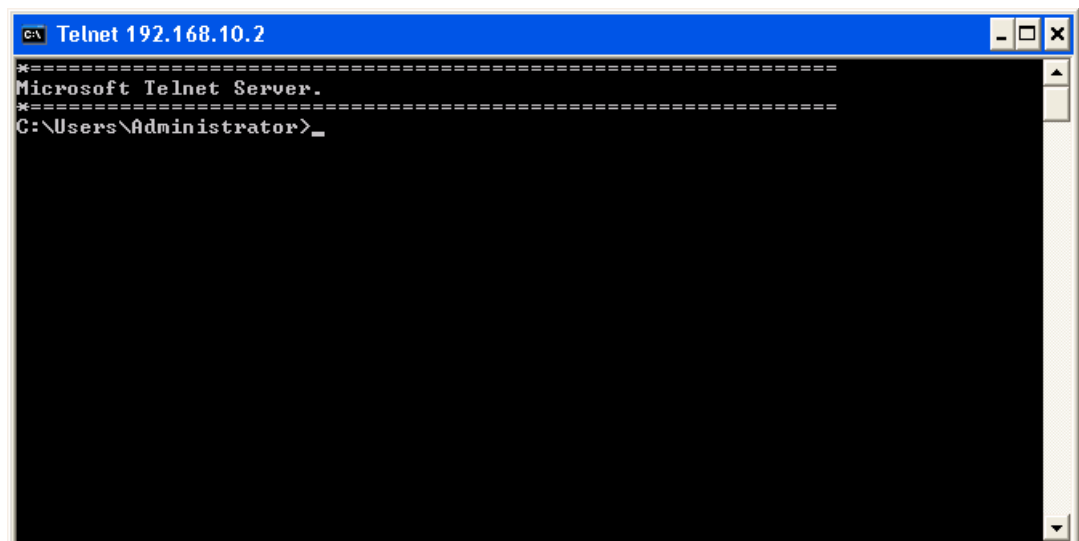
In a computer that runs Windows XP, choose **Start > Programs > Accessories > Command Prompt**. Run the **telnet ip-address** command to remotely log in to the SAE board.

Figure 9-13 Logging in to the SAE board remotely



Enter the user name and password of the SAE board.

Figure 9-14 Successful login



----End