VPNremote for the 4600 Series IP Telephones

Version 1.0

Administrator Guide

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An "outside party" is anyone who is not a corporate employee, agent, subcontractor, or person working on your company's behalf. Whereas, a "malicious party" is anyone (including someone who may be otherwise authorized) who accesses your telecommunications equipment with either malicious or mischievous intent.

Such intrusions may be either to/through synchronous (time-multiplexed and/or circuit-based) or asynchronous (character-, message-, or packet-based) equipment or interfaces for reasons of:

- Use (of capabilities special to the accessed equipment)
- Theft (such as, of intellectual property, financial assets, or toll-facility access)
- Eavesdropping (privacy invasions to humans)
- Mischief (troubling, but apparently innocuous, tampering)
- Harm (such as harmful tampering, data loss or alteration, regardless of motive or intent)

Be aware that there may be a risk of unauthorized intrusions associated with your system and/or its networked equipment. Also realize that, if such an intrusion should occur, it could result in a variety of losses to your company (including, but not limited to, human and data privacy, intellectual property, material assets, financial resources, labor costs, and legal costs).

Your responsibility for your company's telecommunications security

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- Installation documents
- System administration documents
- Security documents
- Hardware-/software-based security tools
- Shared information between you and your peers
- Telecommunications security experts

To prevent intrusions to your telecommunications equipment, you and your peers should carefully program and configure:

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- Your Avaya-provided software applications, as well as their underlying hardware/software platforms and interfaces
- Any other equipment networked to your Avaya products.

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About this book

The guide provides network administrator and end-user configuration information for the Avaya VPNremote for the 4600 Series IP Telephones. This document is to be used in conjunction with the *Avaya 4600 Series IP Telephone LAN Administrator Guide*.

In the following pages, information is provided describing configuration of the Avaya VPNremote for the 4600 Series IP Telephones (VPNremote Phone) from the Administrator's perspective, including items that should be noted as part of installation. For more information regarding Administrator configuration, see Chapter 2: Administrator configuration.

In addition, end-user configuration information is provided to assist the end user in installing and configuring the VPNremote Phone in their SOHO environment with minimal assistance from corporate IT or Telephony groups. For more information regarding end-user installation and configuration, see Chapter 3: User installation and configuration.

What products are covered

The following products is covered in this manual:

- Avaya VPNremote for the 4600 Series IP Telephones

  The Avaya 4600 Series IP Telephones that support the VPNremote Phone firmware includes the following devices:

  - Avaya 4610SW IP Telephone
  - Avaya 4620SW IP Telephone
  - Avaya 4621SW IP Telephone
  - Avaya 4622SW IP Telephone
  - Avaya 4625SW IP Telephone

Online Documentation

The online documentation for the Avaya VPNremote for the 4600 Series IP Telephones is located at the following URL:

http://www.avaya.com/support

Related Documentation

- Request For Comments (RFC)

  The following RFCs have been implemented: 2401, 2407, 2408, 2409, 3715, 3947, 3948, 2406, 2411.

  http://www.ietf.org/html.charters/OLD/ipsec-charter.html

The following documents are available on the Web site under Find Documentation and Downloads by Name:

- *Avaya Administrator Guide for Communication Manager* (03-300509)

  This document provides an overall reference for planning, operating, and administering your Communication Manager solution.

- *Avaya 4600 IP Series Telephone, Release 2.3, LAN Administrator Guide* (555-233-207)

  This document provides a description of Voice over IP and describes how to administer the DHCP, TFTP, and HTTP servers. This guide also covers how to troubleshoot operational problems with the 4600 Series IP Telephones and the servers.

- *Avaya 4620SW/4621SW SIP IP Telephone, Release 2.2, User Guide* (16-300474)

  This document provides detailed information about using the 4620SW/4621SW SIP IP Telephone.

- Avaya 4600 Series IP Telephone, Release 2.2.1, Installation Guide (555-223-128)

  This document provides detailed information on how to install the 4600 Series IP Telephone product line and troubleshoot problems with the telephones.

- *Avaya VPNremote Client 4.1 Administrator Guide* (June 2002)

  This document provides a description of the VPNremote Client software and describes how to administer the software.

- *Avaya Security Gateway Configuration Guide for VPNos 4.6* (670-100-602)

  This document provides configuration and administration information for the Avaya SG5, SG5X, SG200, SG203, and SG208 Security Gateway that are upgraded to VPNos 4.6 and Avaya VSU devices that are upgraded to VPNos 3.X.

Chapter 1: Introduction

The Avaya VPNremote for 4600 Series IP Telephones (VPNremote Phone) is an Avaya H.323 IP Telephone with an integrated virtual private network (VPN) client and an advanced web-enabled graphical display. The VPNremote Phone provides enterprise telephony service in a remote or small office home office (SOHO) location by connecting to an Avaya Communication Manager in the corporate network, over a secure VPN connection initiated by the IP telephone.

VPNremote Phone overview

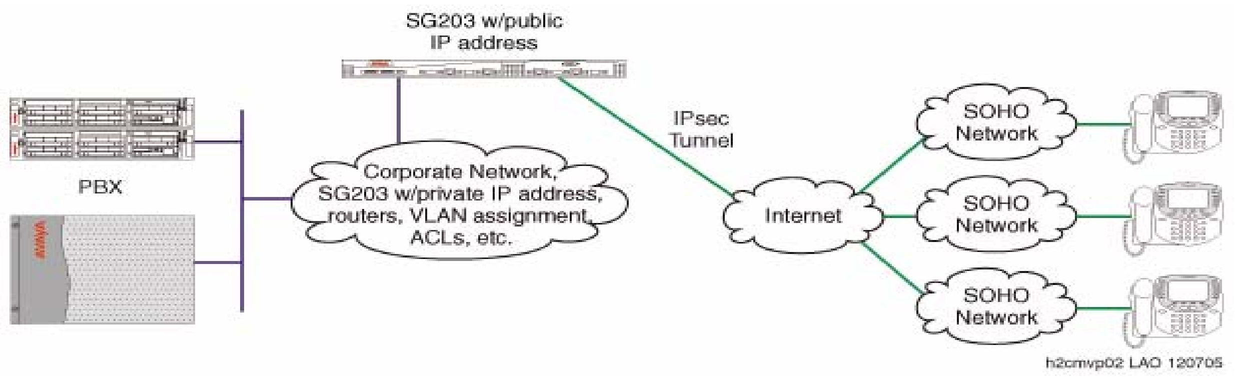
The VPNremote Phone provides enterprise telephony services at a remote or SOHO location through a secure VPN connection to the user's enterprise Communication Manager. The connection uses a high-speed connection to the Internet and to the Avaya Security Gateway VPN solution in the enterprise network.

The Avaya VPNremote for 4600 Series IP Telephones provides a significant improvement on communications capabilities of small office and home (SOHO) users. The VPNremote Phone provides users with an extension on an enterprise PBX over a secure VPN connection in a single-box solution.

For additional information regarding the 4600 Series IP Telephones, see the *Avaya 4600 Series IP Telephone, Release 2.3, LAN Administrator Guide*.

The VPNremote Phone is targeted to work with most SOHO network configurations. Figure 1 illustrates a possible corporate network configuration with an Avaya SG203 at the headend device with three VPNremote Phones connected through secure VPN connections.

Figure 1: VPNphone in a corporate network with an Avaya SG203 as the headend device


SG203 w/public IP address
PBX
Corporate Network, SG203 w/private IP address, routers, VLAN assignment, ACLs, etc.
IPsec Tunnel
Internet
SOHO Network
SOHO Network
SOHO Network
h2cmvp02 LAO 120705

VPNremote Phone features

The following summarizes a number of significant feature, performance, and usability enhancements provided by VPNremote Phone.

- **H.323 IP Telephone** – The VPNremote Phone is a fully featured Avaya H.323 IP Telephone. The H.323 IP Telephone includes the following features:
  - A large display area that allows up to 12 application-specific buttons to be presented and labeled at one time.
  - Twelve line/feature buttons
  - Four softkeys
  - Fixed buttons that provide access to powerful capabilities such as: local telephone and call server-based features, speed dialing, a Call Log, and a Wireless Markup Language (WML) browser.
- **Integrated IPSec Client** – The VPNremote Phone contains an integrated IPSec VPN Client that supports the following IPSec protocols:
  - Internet Protocol Security (IPSec)

    VPNremote Phone supports IPSec. VPNremote Phone supports IPSec when implemented under an existing implementation of an IP protocol. For additional information regarding IPSec protocol support, see the *Avaya Security Gateway Configuration Guide for VPNos 4.6*.
  - Internet Key Exchange (IKE)

    VPNremote Phone supports the standard IKE key management protocol for IPSec. For additional information regarding IKE protocol support, see the *Avaya Security Gateway Configuration Guide for VPNos 4.6.*
  - Internet Security Association and Key Management (ISAKMP)

    VPNremote Phone supports the standard IISAKMP protocol for IPSec. For additional information regarding IS AK MP protocol support, see the *Avaya Security Gateway Configuration Guide for VPNos 4.6.*

Chapter 2: Administrator configuration

This section provides administrators with information on how to configure the Avaya VPNremote for 4600 Series IP Telephone as a VPNremote Phone.

It is recommended that administrators configure the Avaya VPNremote for 4600 Series IP Telephone (VPNremote Phone) for the end user. Administrators should load the VPNremote Phone with the latest software, configure the VPNremote Phone to connect to the corporate communications system, and provide the end users with information for configuration in their small office home office (SOHO) environment.

The enterprise network must be configured with an Avaya SG security gateway. Corporate firewalls and routers must be configured to allow tunnels from remote phones to the security gateway through the internet, and must allow telephony traffic between the security gateway and Communication Manager.

Note:

> For additional information regarding configuring a security gateway see, the *Avaya Security Gateway Configuration Guide for VPNos 4.6*.

Configuration preparation

To insure that the end user is able to configure VPNremote Phone in their SOHO environment and to connect to the enterprise network, administrators must preconfigure the IP telephone prior to deployment.

The initial configuration is to be completed by the administrator while the IP telephone is connected to the enterprise network, and prior to deployment to the end user. By using this method, the administrator maximizes their configuration time; and minimizes end user configuration requirements that are entered using the telephone keypad. This preconfiguration method also protects the end user's login ID and password.

Following is the recommended preconfiguration method, including the sequence and procedures:

1. Prepare Communication Manager

   Create and administer a new extension with Communication Manager. For additional information see Preparing Communication Manager for the VPNremote Phone.

2. Install the Avaya 4600 Series IP Telephone

   Install and test the IP telephone on the enterprise network. For additional information, see the *Avaya 4600 Series IP Telephone Installation Guide*.

3. Prepare the Security Gateway

   Allow access into and out of the corporate firewall through VPN tunnels, see Preparing the Avaya Security Gateway for the VPNremote Phone.

4. Convert the Avaya 4600 Series IP Telephone to an Avaya VPNremote for 4600 Series IP Telephone

   Convert the 4600 Series IP Telephone, see Converting an IP Telephone to VPN IP Telephone.

5. Download VPN firmware

   Download the VPN firmware from the TFTP server, see Downloading the VPN firmware.

6. Configure the VPN Settings

   Configure the VPN settings to meet the configuration parameters for each VPNremote Phone site, see Configuring the VPN Settings.

7. Deployment

   Ship preconfigured device to the end user.

Preparing Communication Manager for the VPNremote Phone

A VPNremote Phone is configured the same as other IP telephones on the Avaya Media Server running Avaya Communication Manager. Even though the VPNremote Phone is physically located outside of the corporate network, the VPNremote Phone will behave the same as other Avaya IP telephones located on the LAN once the VPN tunnel has been established.

VPNremote Phone as a single extension on Communication Manager

The VPNremote Phone user can have a single extension on the Avaya Media Server running Avaya Communication Manager. A single extension allows the user to be connected to the Communication Manager from one location at a time - either the office or the SOHO.

If the desired configuration is to connect to Communication Manager from both the office and the SOHO, you must configure VPNremote Phone as a separate extension that has a bridged appearance of the office extension. For more information on a bridged appearance on Communication Manager, see VPNremote Phone as a bridged appearance on Communication Manager.

For additional information regarding Communication Manager configuration, see the *Administrator Guide for Avaya Communication Manager*.

VPNremote Phone as a bridged appearance on Communication Manager

The VPNremote Phone user can have a bridged appearance of the office extension on the Avaya Media Server running Avaya Communication Manager. A bridged appearance allows the user to be connected to the Communication Manager from two locations at the same time. As a call comes in, both telephones ring. If a voicemail message is received and the message indicator light is configured, the light appears on both telephones.

The bridged appearance configuration is the most common configuration for VPNremote Phone users.

For additional information regarding Communication Manager configuration, see the *Administrator Guide for Avaya Communication Manager*.

Installing the VPNremote Phone in the enterprise network

The Avaya VPNremote for 4600 Series IP Telephone is a standard Avaya 4600 Series IP Telephone with an additional VPNremote Client capability. The installation of the VPNremote Phone in the enterprise network is the same as the installation of any Avaya 4600 Series IP Telephones.

For detailed instructions on how to install the VPNremote Phone into the enterprise network, see the *Avaya 4600 Series IP Telephone Installation Guide*.

Preparing the Avaya Security Gateway for the VPNremote Phone

VPNremote Phone users who login to the VPN through the Avaya security gateway must have their user authentication configured on that security gateway. The user authentication configuration allows VPN traffic to flow through the corporate firewalls to the security gateway. VPN traffic is remote traffic that has traversed the VPN tunnel.

As a minimum, you must configure a user name and the password for each remote user. User names can be up to 128 characters long and can contain any character except a comma (,). Note that once you add a user name, you cannot change the name.

For additional information regarding configuring the security gateway for the VPNremote Phone, see the *Avaya Security Gateway Configuration Guide for VPNos 4.6*.

Configuring VPNremote Phone users on the security gateway

From the security gateway, you can add, modify and delete remote users. From Advanced settings, you can make changes to the default IKE identity, the split tunneling option, and the security option.

To add a VPNremote Phone user

1. Select the **Configure>Users>Remote Users** property. Click **Add**. The Add Remote User screen is displayed.
2. Enter the user name and password.

   The user name can be up to 255 characters long and can contain any character except a comma (,).
3. (Optional) To change the default settings for IKE, split tunneling, or security, click **Advanced**. The Remote User Advanced Settings dialog is displayed.
4. Change the advanced settings as required, including:
   - From the list select either IP address, DNS name, directory name, or e-mail ID.
   - Note that Enable Split Tunneling is checked.
   - Select a security option.
5. Click **OK** to close the Advanced Settings screen and return to Add Remote User.
6. Click **Save** to add the remote user.

Converting an IP Telephone to VPN IP Telephone

Use the following procedure and the telephone key pad to convert a non-VPNremote IP telephone into a VPNremote telephone:

1. Allow the telephone to boot and register with Communication Manager.
2. After the phone is registered, set the GROUP for each phone you want to upgrade to a VPN IP telephone to 876. To initiate the GROUP command from the telephone key pad, press:

   ```
   Mute 4-7-6-8-7 #
   ```
3. After the GROUP command is initiated, enter `8-7-6 #` (V-P-N #) for the New value. Use Page LEFT key to erase any errors.
4. Press `#` to save the new value.

   ```
   Save new value?
   
   * = no #=yes
   ```

Downloading the VPN firmware

Prior to configuring the VPNremote Phone, you must first install the VPNremote Phone firmware on an existing internal TFTP server. Install the VPNremote Phone firmware files on the same TFTP server that the existing IP telephones 2.3 firmware.

Note:

The TFTP server should not be accessible from outside the enterprise network without a VPN connection.

Upon download, the VPN firmware will replace the existing 46XXupgrade.scr file on the TFTP server and add additional files for the VPNremote Phone firmware upgrades. The replacement 46XXupgrade.scr file preserves the existing IP Telephone 2.3 binaries and adds the VPNremote Phone binaries, and upgrade and downgrade scripts. The script files also contains a 46XXvpnsettings.txt file that is used to set the VPN parameters for each VPNremote Phone, and a 46vpnupgrade.scr file for telephones that have already been upgraded to VPNremote telephones.

Upon completion of the download, the telephone will restart. Upon restart, the telephone will attempt to establish a VPN connection. To complete the configuration, you must configure the user VPN settings.

Configuring the VPN Settings

Once the firmware has successfully downloaded to the IP Telephone, you are now ready to configure the VPN settings. The 46XXvpnsettings.txt file is populated with the settings that are used by the VPNremote Phone to create the VPN tunnels. It is recommended that the administrator edit the VPN settings files to set the configuration parameters for VPNremote Phone users.

Note:

For a detailed list of VPN settings in the 46XXvpnsetting.txt file, see Appendix C: System Parameters Customization.

At startup, the phone will attempt to establish a VPN connection using the configured VPN parameters. The user is given the option to change the VPN parameters. To change the VPN parameters, the user can press the Edit button indicated on the VPN startup screen. The Edit button gives the user a screen that can be used to change the VPN parameters.

If the phone is up and registered with Communication Manager, the user may also edit the VPN parameters by entering the VPNMOD command as detailed below.

Use the following procedure and the telephone key pad to configure or edit the VPN Settings:

1. To initiate the VPNMOD command from the telephone key pad, press:

   `Mute V-P-N-M-O-D #` or **`Mute 8-7-6-6-6-3 #`**

   `VPN Start Mode: BOOT`

   `* = Modify # = OK`

2. Press `*` to modify your VPN settings.
3. Select the VPN option to change by using the gray buttons on the left of the display. Press the **Server** button, or the first gray button, to change the VPN server IP address.
4. Enter the IP address of your SOHO network. Press the **Done** button at the lower left corner of the display to return to the configuration options.
5. Select the VPN option to change by using the gray buttons on the left of the display. Press the **User Name** button, or second gray button, to change the VPN user name.

   The user name is the same name used to login to the enterprise network using remote client software.

6. Enter your user name using the telephone key pad. Press the alpha-numeric keys until the desired letter appears. Use the Case button, or fifth gray button, to switch between upper-case letters and lower-case letters. Use the left and right arrow keys at the bottom of the display to move left or right in the user name. Press the **Done** button at the lower left corner of the display to return to the configuration options.
7. Select the VPN option to change by using the gray buttons on the left of the display. Press the **Password** button, or third gray button, to change the VPN password.

   The password is the same password used to login to the enterprise network using VPNremote Client.

8. Enter your password using the telephone key pad. Press the alpha-numeric keys until the desired letter appears. Use the Case button, or fifth gray button, to switch between upper-case letters and lower-case letters. Use the left and right arrow keys at the bottom of the display to move left or right in the user name. Press the **Done** button at the lower left corner of the display to return to the configuration options.
9. Select the VPN option to change by using the gray buttons on the left of the display. Press the **Authentication mode** button, or forth gray button, to change the authentication mode.
10. Select the VPN option to change by using the gray buttons on the left of the display. Press the **Password Type** button, or fifth gray button, to change the password type.
11. Press the fifth button on the right side of the display to scroll through the password type options.
12. Select the VPN option to change by using the gray buttons on the left of the display. Press the **VPN Start Mode** button, or sixth gray button, to change the VPN start mode.
13. Press the sixth button on the right side of the display to scroll through the VPN start mode options. Select **Boot** and press **#**.

14. Press the right arrow key to move to the next display.
15. Select the VPN option to change by using the gray buttons on the left of the display. Press the **Encapsulation** button, or the first gray button, to change the encapsulation option.
16. Press the first button on the right side of the display to scroll through the encapsulation options. Select **Disable** and press **#**.
17. The Syslog Server option is not configured.
18. Press **Done** to complete the configuration.

Deployment

Upon configuration completion, deploy the VPNremote Phone to the end user. When the end user installs the VPNremote Phone in their home network, the telephone will boot and indicate a user ID and password error. The end user must enter their user name and password that they use to login to their enterprise network using remote client software.

Chapter 3: User installation and configuration

This chapter provides instruction for installing and configuring the Avaya VPNremote for 4600 Series IP Telephone (VPNremote Phone) in the SOHO environment.

Avaya VPNremote for 4600 Series IP Telephone installation

The VPNremote Phone is intended for use in a normal small office home office (SOHO) environment.

Site power considerations

Check the power at your site to ensure that you are receiving “clean” power (free of spikes and noise).

Equipment requirements

You will need the following equipment:

- 1 Avaya VPNremote for 4600 Series IP Telephone
- 1 Cat5e cable to connect the telephone to power source
- 1 Avaya power brick or PoE switch
- 1 Ethernet cable, if necessary, to connect power brick to SOHO router or IP connection

To install and use the security gateway in a typical network, the customer must supply the following:

- DSL or cable modem providing connectivity to the Internet.

It is strongly recommended that the SOHO office use a LAN router with NAT and firewall capability that provides DHCP addresses for all SOHO devices. It is recommended that the customer-supplied router provide QoS guarantees for the telephony tunnel.

Connecting the VPNremote Phone to the SOHO

Use the following procedure to connect the VPNremote Phone to the SOHO:

1. Connect the Ethernet cable to the right port on the back of the telephone.
2. Connect the other end of the Ethernet cable to the Avaya power brick phone jack or PoE switch. The phone jack on the Avaya power brick is on the left side and is labeled *Phone*.
3. Connect the Ethernet cable to the Avaya power brick or PoE switch line in jack. The line in jack on the Avaya power brick is on the right side and is labeled *Line In*.
4. Connect the other end of the straight through Ethernet cable to your SOHO.
5. Connect the Avaya power brick or PoE switch power cord to an AC outlet to power-up the telephone.

Entering your User Name and Password

At startup, the phone will attempt to establish a VPN connection using the configured VPN parameters. The user is given the option to change the VPN parameters. To change the VPN parameters, press the Edit button indicated on the VPN startup screen to enter the user name and password.

Use the following procedure and the telephone key pad to enter the user name and password:

1. Select the VPN option to change by using the gray buttons on the left of the display. Press the **User Name** button, or second gray button, to change the VPN user name.

   The user name is the same name used to login to the enterprise network using VPNremote Client.
2. Enter your user name using the telephone key pad. Press the alpha-numeric keys until the desired letter appears. Use the Case button, or fifth gray button, to switch between upper-case letters and lower-case letters. Use the left and right arrow keys at the bottom of the display to move left or right in the user name. Press the **Done** button at the lower left corner of the display to return to the configuration options.
3. Select the VPN option to change by using the gray buttons on the left of the display. Press the **Password** button, or third gray button, to change the VPN password.

   The password is the same password used to login to the enterprise network using VPNremote Client.
4. Enter your password using the telephone key pad. Press the alpha-numeric keys until the desired letter appears. Use the Case button, or fifth gray button, to switch between upper-case letters and lower-case letters. Use the left and right arrow keys at the bottom of the display to move left or right in the user name. Press the **Done** button at the lower left corner of the display to return to the configuration options.
5. Press **Done** to complete the configuration.

Appendix A: Avaya VPNremote for 4600 Series IP Telephones Installation Checklist

The checklist on the following page is provided for your convenience for supplying your users with essential installation information.

Table 1: VPNremote Phone Installation Checklist

Item	Value	Description
VPNremote Phone IP Address	The default value is 0.0.0.0 when using DHCP.	In the SOHO network uses DHCP, set this value to 0.0.0.0 # (default value). Otherwise, enter the IP address used by the VPNremote Phone in the SOHO network.
Call Server Port Address	The default value is 1719 unless otherwise stated by your administrator.	This IP address is the IP address of the CLAN inside the enterprise.
Gateway IP Address	If DHCP is being used, press # to accept the default values. Otherwise end user will confirm address.	This IP address is the IP address of the SOHO router.
Mask IP Address	If DHCP is being used, press # to accept the default values. Otherwise end user will confirm address.	This IP address is the network mask for SOHO network.
TFTP File Server		This IP address is the TFTP file server inside the enterprise that contains the configuration and update files.
Extension of your VPNremote Phone		Depending on the telephony configuration, this extension may or may not be the same extension as your office telephone. Check with you telephony administrator to confirm your extension.
		1 of 2

Table 1: VPNremote Phone Installation Checklist (continued)

Item	Value	Description
VPNremote Phone password		Depending on the telephony configuration, this password may or may not be the same password as your office telephone. Check with you telephony administrator to confirm your password.
VPN server		This is the public IP address of the security gateway.
VPN user name		End user will enter.
VPN password		End user will enter.
		2 of 2

Appendix B: Troubleshooting

This chapter describes problems that might occur during installation and configuration of the Avaya VPNremote for 4600 Series IP Telephones and possible ways of resolving these problems.

This chapter contains the following sections:

- Descriptions of error conditions and methods for resolving them.
- Error and status messages, and methods for resolving them.
- Syslog

Error Conditions

The following information describes some of the most common issues that may be seen and how to trouble shoot them.

Authentication Failures

- Check User ID and password configured on phone
- Check Event log on Security gateway
- Check Configured User ID and password on Gateway
- If external authentication is used such as Radius, check connectivity between SG and Radius and Radius User configuration

TCP/IP Connection Failure

- Confirm VPN server address is correct.
- Confirm the Gateway is available
- Confirm VPNPhone has internet connectivity
- Confirm TCP port 1443 is not blocked by any external device between phone and the security gateway.

  The SOHO router may be configured to allow only outgoing TCP connection on port 80 for HTTP and port 443 for HTTPS. There may also be a firewall in front of security gateway that may not be configured to allow an incoming TCP connection on port 1443.

SSL Connection Failure

- Confirm Security Gateway is accepting SSL connections

  This requires access to the SG Web interface or SSH access.

General Phone Errors and Behaviors

- Contact DHCP/TFTP administrator, L2Q parms in option 43/176 or xxx.SCR script file.

  The VPNremote Phone is experiencing a looping condition. This condition is caused by the gateway IP address being set to DHCP or 0.0.0.0. Change the gateway IP address to the static security gateway IP address.

- Loading ……. is not seen during startup and mute light flashes

  Check the bootcode version. Older version such as 1.9x is not compatible with the latest 2.3 GA version.

IKE and IPSec Negotiation Failures

- Enable IKE Logging on the Security Gateway
- Perform TCPdumps from the Security gateway console/SSH connection.

Phone fails to register

- Confirm the VPN tunnel was built
  1. Check if SAs are built on Security gateway under Monitor/VPN from the Web interface.
  2. When the VPN Phone starts, does it access the TFTP server through the VPN tunnel. If it does then the tunnel is up to that network. Check to see if the call server is on the same subnet as the TFTP server. If configured IP group in SG covers both address, then access should be available.
- Perform a tcpdump on interfaces of the central Security Gateway. Check to see if the esp packets are arriving from the phone during the time it should be registering.
  1. If not Check the L3 Audio and Signaling values. If set to 46/34, change to zero and restart phone and check tcpdump.
  2. If TOS bits are being copied to esp packet on the Security Gateway side, CM configuration may need to be changed. The above may be require when ISPs block TOS marked packets.

Error and Status Messages

The 4600 Series IP Telephones issue messages in English only. The IP telephones also display messages from the switch, which can issue messages in the local language outside the United States.

Note:

The following error messages are for the VPNremote Phone only. For additional information on the 4600 Series IP Telephone error messages, see the 4600 Series IP Telephone, Release 2.2.1, Installation Guide.

Most of the messages in following tables display only for about 30 seconds, and then the telephone resets.

Table 2 describes the list of all error messages that pertain to the VPN tunnel setup failures that the VPNremote Phone might display.

Table 2: VPN Tunnel Setup Failures

Error Message	Possible Cause
TCP Connection timed out.	Security gateway not accessible or unresponsive to TCP connection.
SSL Handshake failed	SSL 1443 connection failed.
Invalid server certificate	Security gateway certificate issue.
Unknown certificate issuer	Attempting to connect to a non-Avaya VPN head-end device.
Server Auth mechanism failing	An externally configured authentication source (Radius Server) and Security Gateway cannot communicate.
IKE Phase 1 no response	Gateway busy.
IKE Phase 2 no response.	Gateway busy.
Failed to reach known host	VPNphone was unable to reach known host such as the TFTP server or Call Server address.

Table 3 describes the list of all error messages that pertain to the VPN tunnel setup failures that the VPNremote Phone might display.

Table 3: Authentication Errors

Error Message	Possible Cause
Authentication failure, User Blocked	User is blocked for “x” minutes from “x” number of incorrect logins.
Invalid password OR user name	Incorrect user name or password entered.
Phone brand rejected by SG	Incorrect phone brand configured on gateway.
VPN Topology not supported	Multiple central site devices configured which is not a supported configuration.
Empty Gate Keeper	No call server addresses configured.

Note:

All error messages will provide the option to display more information or edit the configuration.

Syslog

Adding the IP address of the SYSLOG server will enable Sysloging of VPN module. This SYSLOG server is meant to catch log messages while tunnel setup is in progress hence the syslog server must be accessible without the tunnel.

Appendix C: System Parameters Customization

For additional definitions and information on how to change IP telephone parameters, see the *Avaya 4600 Series IP Telephone, Release 2.3, LAN Administrator Guide*, *Server Administration* chapter, *Administering Options for the 4600 Series IP Telephones*.

The parameters in Table 4 are configurable to desired values in the Script File. For additional information on the Script File, see the *Avaya 4600 Series IP Telephone, Release 2.3, LAN Administrator Guide*, *Server Administration* chapter, *Contents of the Upgrade Script* section. We recommend that you administer options on the 4600 Series IP Telephones using script files.

Table 4: VPNremote for 4600 Series IP Telephones Customizable System Parameters

Parameter Name	Default Value	Description and Value Range
NVVPNMODE	0	Controls when VPN Mode is started. Valid value is one ASCII numeric digit, 0 to 3. Values are: 0 = VPN is disabled. 1 = VPN will start after address assignment and before downloading script. 2 = VPN will start after downloading of script. 3 = VPN will start on user request.
NVVPNAUTTYPE	2	Controls user authentication mode. Valid value is one ASCII numeric digit, 1 and 2. Values are: 1 = CHAP 2 = PAP The method chosen is dependent on the type of authentication used by the security gateway.
		1 of 4

Table 4: VPNremote for 4600 Series IP Telephones Customizable System Parameters (continued)

Parameter Name	Default Value	Description and Value Range
NVSGIP	“ ” (Null)	This is the primary IP address or the fully qualified domain name of the Avaya Security Gateway (SG). Valid values are zero or more IP Addresses in dotted-decimal or fully qualified domain name format, separated by commas without any intervening spaces (0 to 255 ASCII characters, including commas). Null (“”) is a valid value, but the value may not contain spaces. This value cannot be more than 24 characters.
NVSECSGIP	“ ” (Null)	This is the secondary IP address or the secondary fully qualified domain name of the Avaya Security Gateway (SG). Valid values are zero or more IP Addresses in dotted-decimal or fully qualified domain name format, separated by commas without any intervening spaces (0 to 255 ASCII characters, including commas). Null (“”) is a valid value, but the value may not contain spaces. The VPN server IP address cannot be more than 24 characters.
		2 of 4

Table 4: VPNremote for 4600 Series IP Telephones Customizable System Parameters (continued)

Parameter Name	Default Value	Description and Value Range
NVBACKUPSGIP	“ ” (Null)	This is the back up IP address or the back up fully qualified domain name of the Avaya Security Gateway (SG). A maximum of 4 back-up security gateways can be configured. Enter the value in dotted decimal format or DNS name format. Valid values are zero or more IP Addresses in dotted-decimal or DNS name format, separated by commas without any intervening spaces (0 to 255 ASCII characters, including commas). Null (“”) is a valid value, but the value may not contain spaces. This value cannot be more than 24 characters.
NVVPNUSER	“ ” (Null)	This is the user name to be used during authentication and VPN tunnel setup. Each VPNremote Phone should be configured with a unique user name. A unique user name can be configured during the initial VPN setup. This value range is up to 24 ASCII characters.
NVVPNPSWDTYPE	1	Controls the type of VPN passwords. Valid value is one ASCII numeric digit, 1 to 4. Values are: 1 = The password is saved in non-volatile memory. 2 = The password is erased when you turn off power to the telephone. 3 = The password is all numeric and is for one-time-use only. 4 = The password is alpha-numeric and is for one-time-use only.
		3 of 4

Table 4: VPNremote for 4600 Series IP Telephones Customizable System Parameters (continued)

Parameter Name	Default Value	Description and Value Range
DROPCLEAR	1	Controls the policy that defines the handling on incoming and outgoing clear packets. Valid value is one ASCII numeric digit, 0 and 1. Values are: 0 =All clear traffic is accepted. 1 = All clear traffic will be dropped except for traffic to and from the security gateway and the DHCP server.
VPNMONFRQ	0	This value contains the frequency of VPN monitoring syslog message in minutes.
ACTIVATEVPN	0	This value is ignored if NVVPNMode is set to 1 or 0. If the value is set to 1, the VPN tunnel setup procedure is invoked prior to starting the system specific procedures.
ALWSTOPVPN	0	This value contains the policy that defines if user is allowed to stop VPN while connected to the call server. If this value is 1, the user is allowed to stop the VPN connection.
VPNACTIVE	The VPNACTIVE value is 1 when the VPN tunnel is active and 0 when the VPN tunnel is not active.	This value is read-only.
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