SonicOS 7.1

SSL VPN

Administration Guide

SONICWALL®

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About SonicOS

This guide is a part of the SonicOS collection of administrative guides that describes how to administer and monitor the SonicWall family of firewalls. SonicOS provides network administrators the management interface, API (Application Program Interface), and the Command Line Interface (CLI) for firewall configuration by setting objects to secure and protect the network services, to manage traffic, and to provide the desired level of network service. This guide focuses on providing information on how to configure the SSL VPN features on the SonicWall network security appliance. SonicWall SSL VPN features provide secure remote access to the network using the NetExtender client.

Topics:

- Working with SonicOS
- SonicOS Workflow
- How to Use the SonicOS Administration Guides
- Guide Conventions

Working with SonicOS

SonicOS provides a web management interface for configuring, managing, and monitoring the features, policies, security services, connected devices, and threats to your network. SonicOS runs on top of SonicCore, SonicWall's secure underlying operating system.

The SonicOS management interface facilitates:

- Setting up and configuring your firewall
- Configuring external devices like access points or switches
- Configuring networks and external system options that connect to your firewall
- Defining objects and policies for protection
- Monitoring the health and status of the security appliance, network, users, and connections
- Monitoring traffic, users, and threats
- Investigating events

SonicWall offers two different modes of operation in SonicOS; the modes differ mainly in the areas of policy, object configuration and diagnostics.

- *Policy Mode* provides a unified policy configuration work flow. It combines Layer 3 to Layer 7 policy enforcement for security policies and optimizes the work flow for other policy types. This unified policy work flow gathers many security settings into one place, which were previously configured on different pages of the management interface.
- *Classic Mode* is more consistent with earlier releases of SonicOS; you need to develop individual policies and actions for specific security services. The Classic Mode has a redesigned interface.

This table identifies which modes can be used on the different SonicWall firewalls:

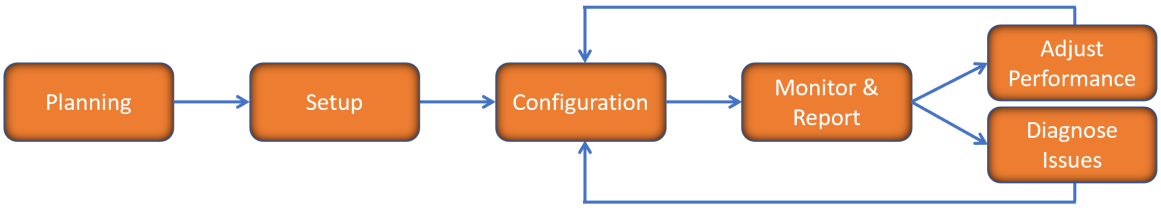
Firewall Type	Classic Mode	Policy Mode	Comments
TZ Series	yes	no	The entry level TZ Series, also known as desktop firewalls, deliver revamped features such as 5G readiness, better connectivity options, improved threat, SSL and decryption performance that address HTPPS bandwidth issues; built-in SD-WAN, and lawful TLS 1.3 decryption support.
NSa Series	yes	no	NSa firewalls provide your mid sized network with enhanced security . They are designed specifically for businesses with 250 and up. it can provide cloud-based and on-box capabilities like TLS/SSL decryption and inspection, application intelligence and control, SD-WAN, real-time visualization, and WLAN management.
NSsp 10700, NSsp 11700, NSsp 13700	yes	no	The NSsp platforms high-end firewalls that deliver the advanced threat protection and fast speeds that large enterprises, data centers, and service providers need.
NSsp 15700	no	yes	The NSsp 15700 is designed for large distributed enterprises, data centers, government agencies and services providers. It provides advanced threat protection like Real-Time Deep Memory Inspection, multi-instance firewall configuration, and unified policy creation and modification, with scalability and availability.
NSv Series	yes	yes	The NSv series firewalls offers all the security advantages of a physical firewall with the operational and economic benefits of virtualization. The NSv firewalls can operate in either Policy Mode or Classic Mode. You can switch between modes, but some configuration information from extra interfaces is removed.

In addition to the management interface, SonicOS also has a full-featured API and a CLI to manage the firewalls. For more information, refer to:

- SonicOS 7.1 API Reference Guide
- *SonicOS Command Line Interface Reference Guide*

SonicOS Workflow

When working with SonicWall products, you can use the following workflow as a guide for setting up your security solution.

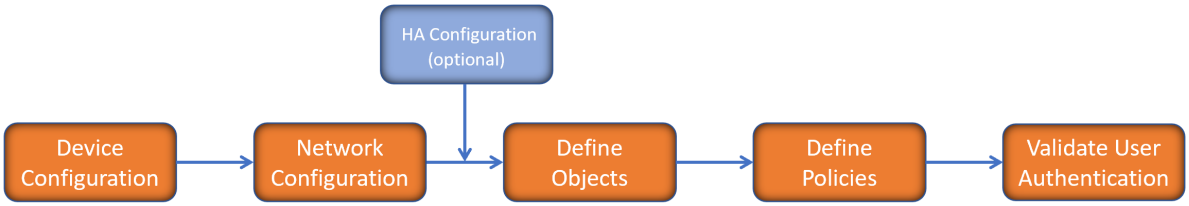


You begin your planning as you start making your purchasing decisions. Your sales partners can help you assess your network and make recommendations based on the kinds of security services you need. You can learn more about SonicWall products by reviewing product information and solutions. After selecting the solution, you can schedule your implementation.

After planning and scheduling your solution, you begin setting up the firewalls. The Getting Started Guides for your products can help you begin setting up the pieces to your solution. The getting started guides are designed to help you install the firewall to a minimal level of operation. Before performing any detailed configuration tasks described in the SonicOS Administration Guides, you should have your firewall set up and basic operation validated.

The configuration block of the workflow refers to the many tasks that combine to define how your firewall is integrated into your security solution and how it behaves when protecting your environment. Depending on the features of your security solution, this task can be quite complex. The System Administration Guides are broken into the key command sets and features. Some documents may be used for all solutions, but others may be used use only if you integrated that feature into your solution. For example, High Availability or Wireless Access Points are not necessarily used by all customers. More information about a feature's workflow is presented in the feature administration guide. Refer to the specific Administration Guide for a SonicOS feature for more information.

Configuration tends to be a one-time activity, although you might make minor adjustments after monitoring performance or after diagnosing an issue. The configuration activity can be broken down into the more detailed flow as the following figure shows. This also mirrors the key functions that are listed across the top of the management interface.

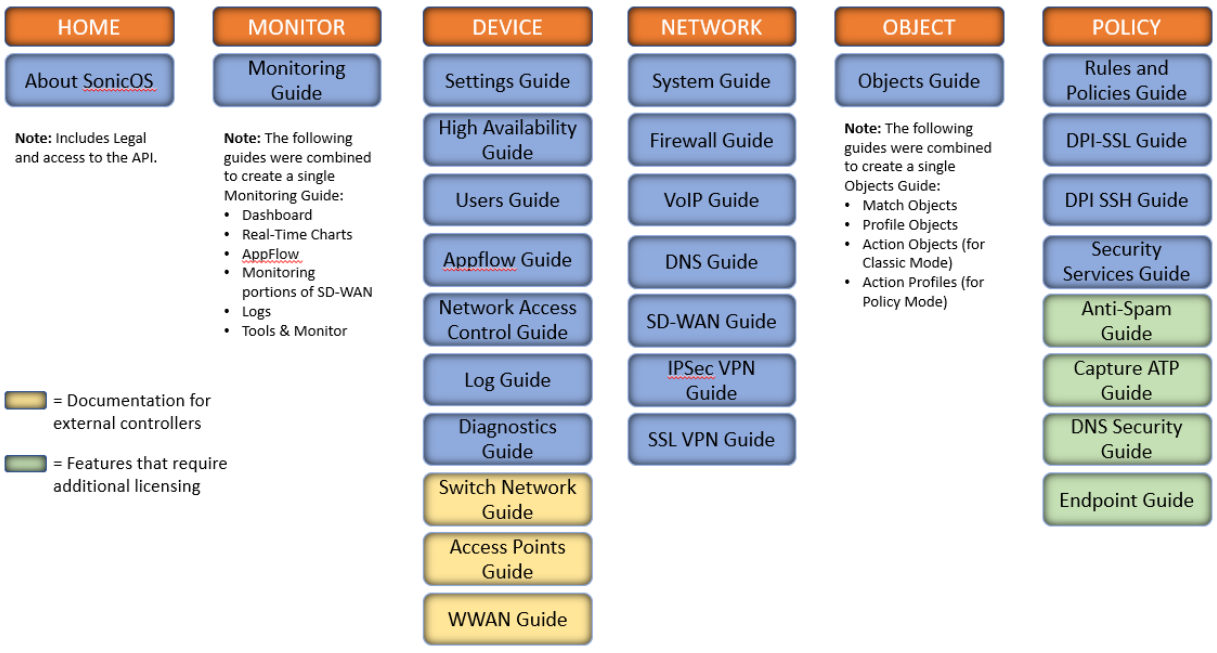


There is some flexibility in the order in which you do things, but this is the general work-flow you would follow when configuring your firewall. Start by defining the settings on the firewall. Next you set up the system and other devices that your firewall is connected to, and you can choose to implement High Availability when done. After your device, network, and system is configured, you should define the objects that you want to monitor. Then you use those objects to define the policies that protect your network. The final step to preparing your setup is to validate the user authentication.

How to Use the SonicOS Administration Guides

The *SonicOS Administration Guide* is a collection of guides that detail the features represented by each of the main menu items in the management interface. Within each guide, you can find topics covering commands in that menu group, along with procedures and in-depth information. The exceptions are the SonicOS 7.1 Monitor Guide and the SonicOS 7.1 Objects Guide which combine the topics for each of those functions into a single book.

To help you understand how the books align with the features and commands, the following figure shows the books organized like the SonicWall management interface.



The SonicOS Administration Guides, along with related documentation, such as the getting started guides, are available on the https://www.sonicwall.com/support/technical-documentation/.

Guide Conventions

These text conventions are used in this guide:

ⓘ | **NOTE:** A NOTE icon indicates supporting information.

ⓘ | **IMPORTANT:** An IMPORTANT icon indicates supporting information.

ⓘ | **TIP:** A TIP icon indicates helpful information.

△ | **CAUTION: A CAUTION icon indicates potential damage to hardware or loss of data if instructions are not followed.**

⚠ | **WARNING: A WARNING icon indicates a potential for property damage, personal injury, or death.**

Convention	Description
Bold text	Used in procedures to identify elements in the management interface like dialog boxes, windows, screen names, messages, and buttons. Also used for file names and text or values you are being instructed to select or type into the interface.
Function | Menu group > Menu item	Indicates a multiple step menu choice on the user interface. For example, **NETWORK | System > Interfaces** means to select the **NETWORK** functions at the top of the window, then click on **System** in the left navigation menu to open the menu group (if needed) and select **Interfaces** to display the page.
`Code`	Indicates sample computer programming code. If bold, it represents text to be typed in the command line interface.
<Variable>	Represents a variable name. The variable name and angle brackets need to be replaced with an actual value. For example in the segment **serialnumber=***<your serial number>*, replace the variable and brackets with the serial number from your device, such as serialnumber=2CB8ED000004.
Italics	Indicates the name of a technical manual. Also indicates emphasis on certain words in a sentence, such as the first instance of a significant term or concept.

2

About SSL VPN

ⓘ | **NOTE:** Remove this note.

This section provides information on how to configure the SSL VPN features on the SonicWall network security appliance. SonicWall's SSL VPN features provide secure remote access to the network using the NetExtender client.

NetExtender is an SSL VPN client for Windows, or Linux users that is downloaded transparently. It allows you to run any application securely on the network and uses Point-to-Point Protocol (PPP). NetExtender allows remote clients seamless access to resources on your local network. Users can access NetExtender two ways:

- Logging in to the Virtual Office web portal provided by the SonicWall network security appliance
- Launching the standalone NetExtender client

Each SonicWall appliance supports a maximum number of concurrent remote users. Refer to the the Maximum number of concurrent SSL VPN users for details.

MAXIMUM CONCURRENT USERS (HARDWARE FIREWALLS)

SonicWall appliance model	Maximum concurrent SSL VPN connections
NSa 9650	3000
NSa 9450	3000
NSa 9250	3000
NSa 6650	2000
NSa 5650	1500
NSa 4650	1000
NSa 3650	500
NSa 2650	350
SM 9600	3000
SM 9400	3000
SM 9200	3000
NSA 6600	1500

SonicWall appliance model	Maximum concurrent SSL VPN connections
NSA 5600	1000
NSA 4600	500
NSA 3600	350
NSA 2600	250
TZ600/TZ600P	200
TZ500/TZ500 W	150
TZ400/TZ400 W	100
TZ350/TZ350 W	75
TZ300/TZ300 W/TZ300P	50
SOHO 250/SOHO 250W	25

MAXIMUM CONCURRENT USERS (VMWARE)

VMware ESXi appliance model	Maximum concurrent SSL VPN connections
10	10
25	25
50	25
100	25
200	50
300	50
400	50
800	50
1600	50

MAXIMUM CONCURRENT USERS (AZURE)

Azure appliance model	Maximum concurrent SSL VPN connections
10	10
25	25
50	25
100	25
200	100
400	100
800	100
1600	100

MAXIMUM CONCURRENT USERS (AWS)

AWS appliance model	Maximum concurrent SSL VPN connections
10	10
25	25
50	25
100	25
200	50
400	50
800	50
1600	50

MAXIMUM CONCURRENT USERS (AWS - PAYG)

AWS - PAYG appliance model	Maximum concurrent SSL VPN connections
200	50
400	50
800	50
1600	50

MAXIMUM CONCURRENT USERS (LINUX KVM)

Linux KVM appliance model	Maximum concurrent SSL VPN connections
10	10
25	25
50	25
100	25
200	50
300	50
400	50
800	50
1600	50

MAXIMUM CONCURRENT USERS (MICROSOFT HYPER-V)

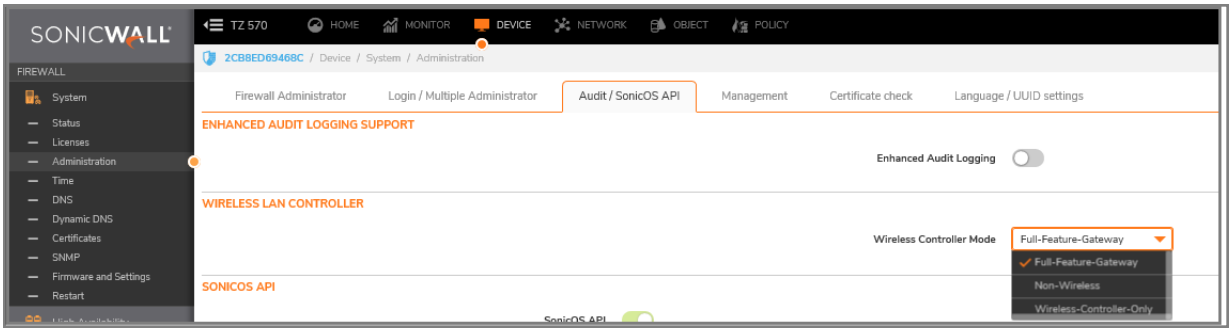
Microsoft Hyper-V appliance model	Maximum concurrent SSL VPN connections
10	10

Microsoft Hyper-V appliance model	Maximum concurrent SSL VPN connections
25	25
50	25
100	25
200	50
300	50
400	50
800	50
1600	50

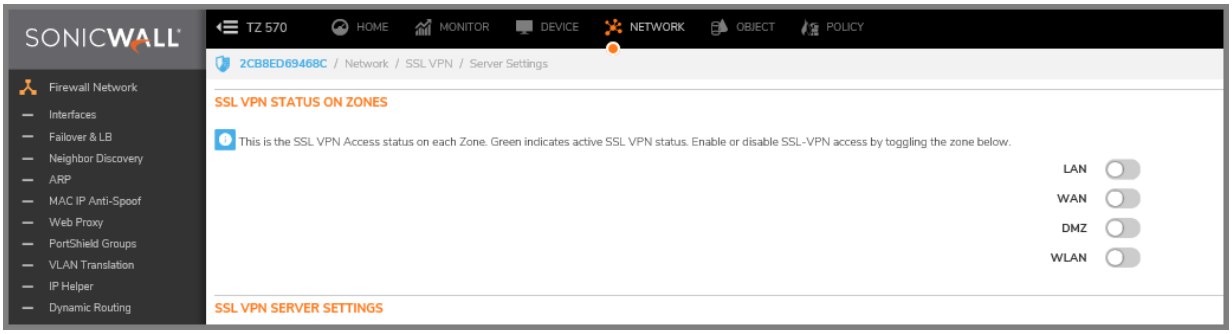
SonicOS supports NetExtender connections for users with IPv6 addresses. The address objects drop-down menu includes all the predefined IPv6 address objects.

NOTE: IPv6 Wins Server is not supported. IPv6 FQDN is supported.

NOTE: SSL VPN connectivity is available when Wireless Controller Mode on the **DEVICE | System > Administraton** page in **Wireless Controller**, and is set to either Full-Feature-Gateway or Non-Wireless. If Wireless-Controller-Only is enabled for Wireless Controller Mode, SSL VPN interfaces are not available.



NETWORK|SSL VPN > Server Settings > SSL VPN SSL VPN Status on Zones displays inactive status for all zones, and SSL VPN zones are not editable.



Topics:

- About NetExtender
- Configuring Users for SSL VPN Access
- Biometric Authentication

About NetExtender

SonicWall SSL VPN NetExtender is a transparent software application for Windows, and Linux users that enables remote users to securely connect to the company network. With NetExtender, remote users can securely run any application on the company network. Users can upload and download files, mount network drives, and access resources as if they were on the local network.

NetExtender provides remote users with full access to your protected internal network. The experience is virtually identical to that of using a traditional IPsec VPN client. Linux systems can also install and use the NetExtender client. Windows users need to download the client from the portal, and those with mobile devices need to download Mobile Connect from the application store.

The NetExtender standalone client can be installed the first time the user launches NetExtender from the portal. Thereafter, it can be accessed directly from the Start menu on Windows systems, or by he path name or from the shortcut bar on Linux systems.

After installation, NetExtender automatically launches and connects a virtual adapter for secure SSL VPN, point-to-point access to permitted hosts and subnets on the internal network.

Topics:

- Creating an Address Object for the NetExtender Range
- Setting Up Access
- Configuring Proxies
- Installing the Stand-Alone Client

Creating an Address Object for the NetExtender Range

As a part of the NetExtender configuration, you need to create an address object for the NetExtender IP address range. This address object is then used when configuring the Device Profiles.

You can create address objects for both an IPv4 address range and an IPv6 address range to be used in the **SSL VPN > Client Settings** configuration. The address range configured in the address object defines the IP address pool from which addresses are assigned to remote users during NetExtender sessions. The range needs to be large enough to accommodate the maximum number of concurrent NetExtender users you intend to support. You might want to allow for a few extra addresses for growth, but it is not required.

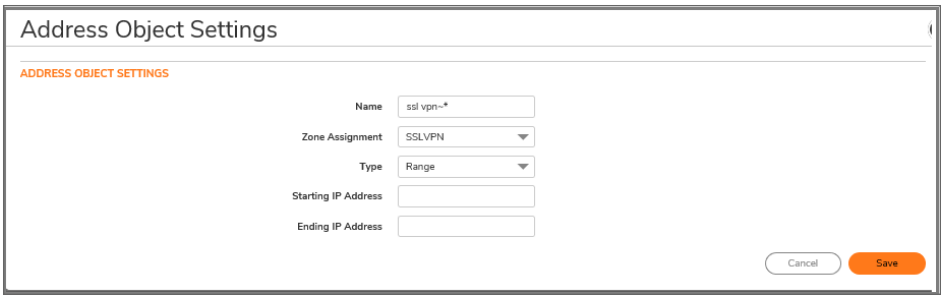
NOTE: In cases where other hosts are on the same segment as the appliance, the address range must not overlap or collide with any assigned addresses.

To create an address object for the NetExtender IP address range:

1. Navigate to **OBJECTS > Address Objects**.
2. Click Add.

3. Type a descriptive name in the Name field.
4. For Zone Assignment, select **SSLVPN**.
5. For Type, select **Range**.
6. In the Starting IP Address field, type in the lowest IP address in the range you want to use.

   NOTE: The IP address range must be on the same subnet as the interface used for SSL VPN services. Ensure that IP address range does not collide with other assigned ranges.
7. In the Ending IP Address field, type in the highest IP address in the range you want to use.



8. Click **ADD**.
9. Click **CLOSE**.

Setting Up Access

NetExtender client routes are used to allow and deny access for SSL VPN users to various network resources. Address objects are used to easily and dynamically configure access to network resources. Tunnel All mode routes all traffic to and from the remote user over the SSL VPN NetExtender tunnel—including traffic destined for the remote user's local network. This is done by adding the following routes to the remote client's route table:

ROUTES TO BE ADDED TO REMOTE CLIENT'S ROUTE TABLE

IP Address	Subnet mask
0.0.0.0	0.0.0.0
0.0.0.0	128.0.0.0
128.0.0.0	128.0.0.0

NetExtender also adds routes for the local networks of all connected Network Connections. These routes are configured with higher metrics than any existing routes to force traffic destined for the local network over the SSL VPN tunnel instead. For example, if a remote user is has the IP address 10.0.67.64 on the 10.0.*.* network, the route 10.0.0.0/255.255.0.0 is added to route traffic through the SSL VPN tunnel.

NOTE: To configure Tunnel All mode, you must also configure an address object for 0.0.0.0, and assign SSL VPN NetExtender users and groups to have access to this address object.

Administrators also have the ability to run batch file scripts when NetExtender connects and disconnects. The scripts can be used to map or disconnect network drives and printers, launch applications, or open files or Web sites. NetExtender Connection Scripts can support any valid batch file commands.

Configuring Proxies

SonicWall SSL VPN supports NetExtender sessions using proxy configurations. Currently, only HTTPS proxy is supported. The proxy settings can also be manually configured in the NetExtender client preferences. NetExtender can automatically detect proxy settings for proxy servers that support the Web Proxy Auto Discovery (WPAD) Protocol.

NetExtender provides three options for configuring proxy settings:

- Automatically detect settings - To use this setting, the proxy server must support Web Proxy Auto Discovery Protocol), which can push the proxy settings script to the client automatically.
- Use automatic configuration script - If you know the location of the proxy settings script, you can select this option and provide the URL of the script.
- Use proxy server - You can use this option to specify the IP address and port of the proxy server. Optionally, you can enter an IP address or domain in the BypassProxy field to allow direct connections to those addresses and bypass the proxy server. If required, you can enter a user name and password for the proxy server. If the proxy server requires a username and password, but you do not specify them, a NetExtender pop-up window prompts you to enter them when you first connect.

When NetExtender connects using proxy settings, it establishes an HTTPS connection to the proxy server instead of connecting to the firewall server directly. The proxy server then forwards traffic to the SSL VPN server. All traffic is encrypted by SSL with the certificate negotiated by NetExtender, of which the proxy server has no knowledge. The connecting process is identical for proxy and non-proxy users.

Installing the Stand-Alone Client

The first time a user launches NetExtender, the installer can be downloaded and run on the user's system. The installer creates a profile based on the user's login information. The installer window then closes and automatically launches NetExtender. If the user has a legacy version of NetExtender installed, the installer uninstalls or requests the user to uninstall the old NetExtender first and then can install the new version.

After the NetExtender stand-alone client has been installed, Windows users can launch NetExtender from their PC's Start > Programs menu or system tray and can configure NetExtender to launch when Windows boots. Mac users can launch NetExtender from their system Applications folder, or drag the icon to the dock for quick access. On Linux systems, the installer creates a desktop shortcut in /usr/share/NetExtender. This can be dragged to the shortcut bar in environments like Gnome and KDE.

ⓘ | **NOTE:** Complete instructions for installing NetExtender on a SonicWall appliance can be found in *How to setup SSL-VPN feature (NetExtender Access) on SonicOS 5.9 & above (SW10657)* in the Knowledge Base.

ⓘ | **VIDEO:** The video, *How to configure SSL VPN*, also explains the procedure for configuring NetExtender.

Configuring Users for SSL VPN Access

For users to be able to access SSL VPN services, they must be assigned to the SSLVPN Services group. Users attempting to login through the Virtual Office and who do not belong to the SSLVPN Services group are denied access.

Topics:

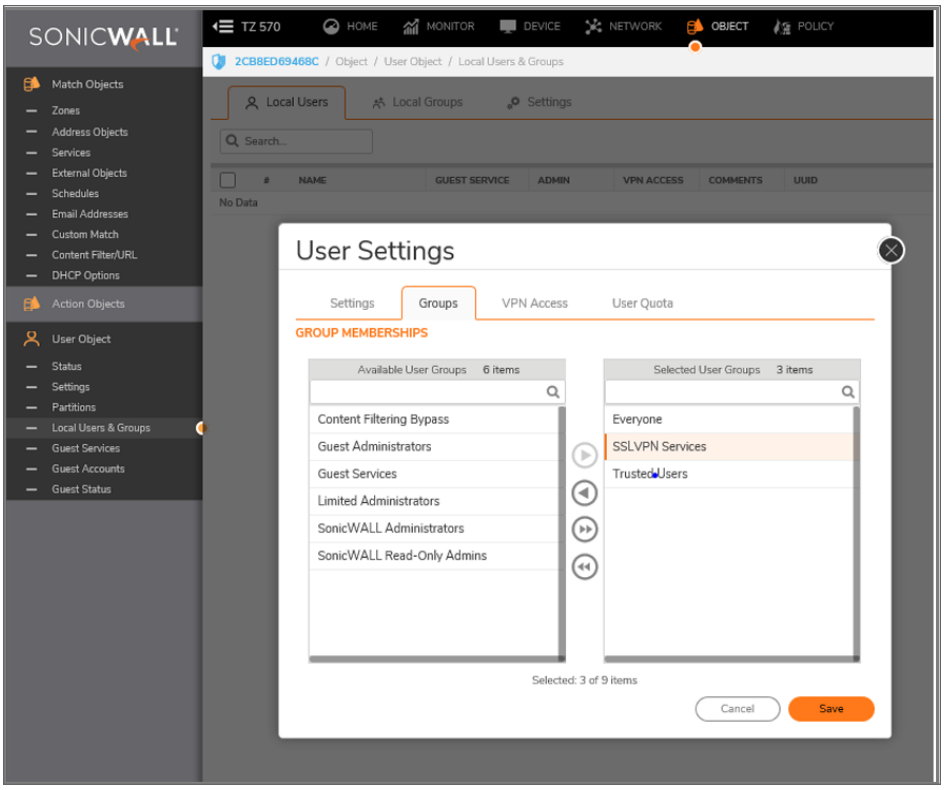
- For Local Users
- For RADIUS and LDAP Users
- For Tunnel All Mode Access

For Local Users

The following is a quick reference, listing the User settings needed to enable SSLVPN Services.

To configure SSL VPN access for local users:

1. Navigate to **MANAGE | System Setup | Users > Local Users & Groups**.



2. Click the Edit icon for the user you want to set up, or click Add User to create a new user.
3. Select **Groups**.
4. In the **User Groups** column, select **SSLVPN Services** and click the Right Arrow to move it to the **Member Of** column.
5. Select **VPN Access** and move the appropriate network resources VPN users (GVC, NetExtender, or Virtual Office bookmarks) to the **Access List**.

   ⓘ **NOTE:** The VPN Access settings affect the ability of remote clients using GVC, NetExtender, or SSL VPN Virtual Office bookmarks to access network resources. To allow GVC, NetExtender, or Virtual Office users to access a network resource, the network address objects or groups must be added to the Access List on VPN Access.

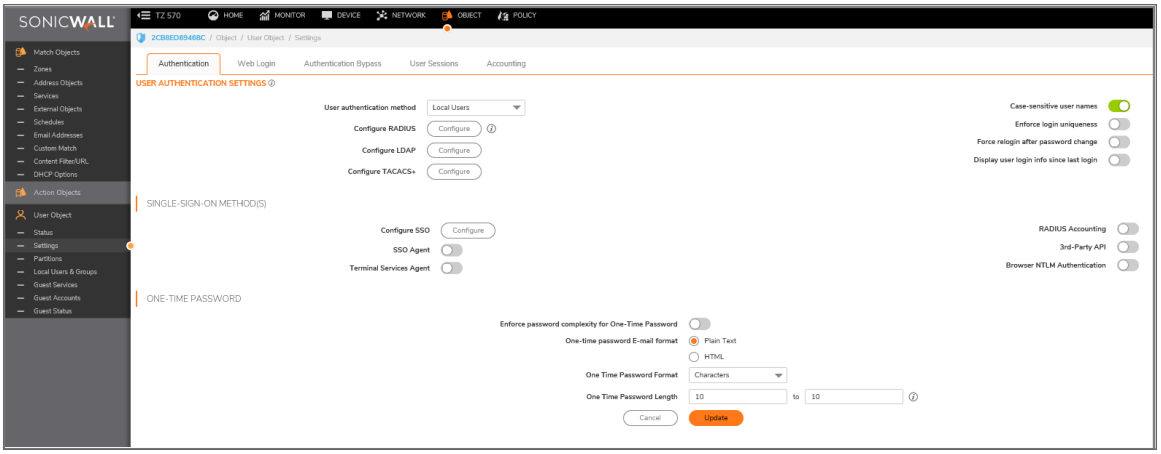
6. Click OK.

For RADIUS, LDAP and TACACS+ Users

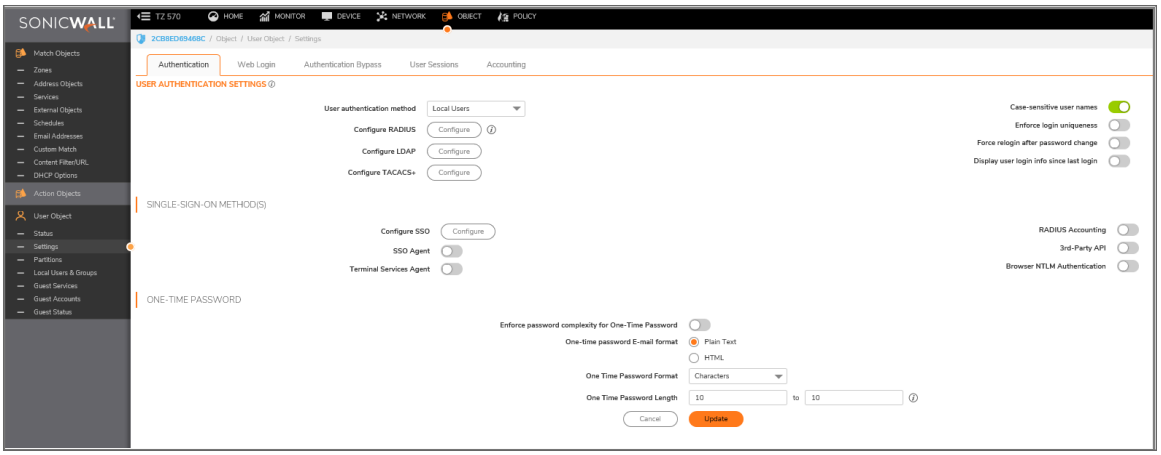
The procedure for configuring RADIUS, LDAP and TACACS+ users is similar. You need to add the users to the SSL VPN Services user group.

To configure SSL VPN access for RADIUS, LDAP and TACACS+ users:

1. Select the **OBJECT|User Object > Settings** view and click on the **Authentication** tab.



2. In the User authentication method field: Select **RADIUS** or **RADIUS** + **Local Users**. Select **LDAP** or **LDAP** + **Local Users**.
3. Select: **CONFIGURE RADIUS CONFIGURE LDAP**
4. Select: **RADIUS Users > Users & Groups**.
5. Select **SSLVPN Services** in the appropriate field: Default user group to which all RADIUS users belong Default LDAP User Group



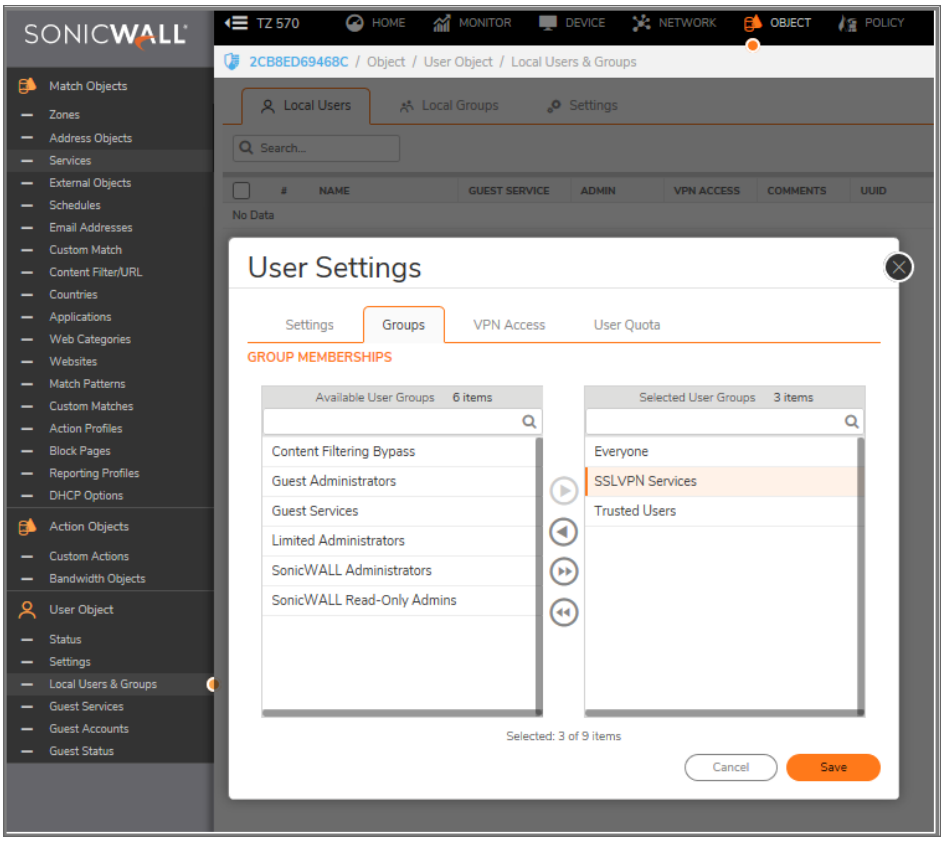
6. Click OK.

For Tunnel All Mode Access

The detailed process for adding and configuring local users and groups is described in *SonicOS Users*. The following is a quick reference, listing the User settings needed to set up users and groups for **Tunnel All** mode.

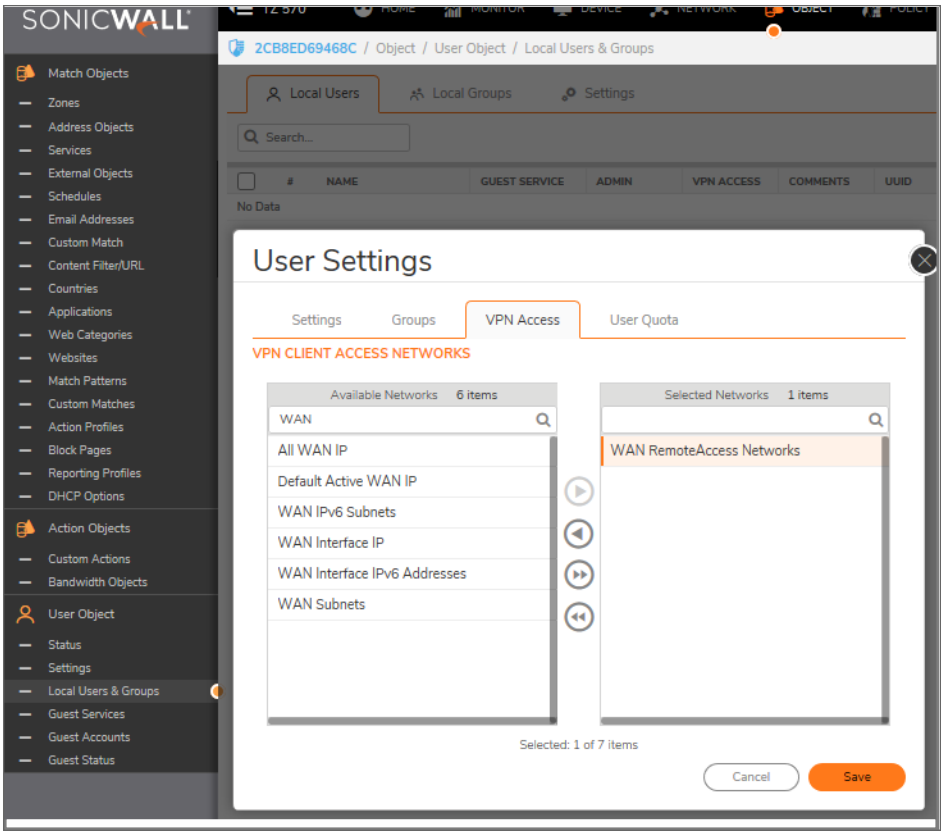
To configure SSL VPN NetExtender users and groups for Tunnel All Mode:

1. Navigate to **OBJECTS | User Objects | Users > Local Users & Groups**.



2. Click on Add icon and define SSLVPN as a selected group.
3. Select VPN Access.

4. Select the WAN RemoteAccess Networks address object and click Right Arrow to move it to the Access List.



5. 5 Repeat the processes for all local users and groups that use SSL VPN NetExtender.

Biometric Authentication

ⓘ **IMPORTANT:** To use biometric authentication, Mobile Connect 4.0 or higher must be installed on the mobile device and configured to connect with the firewall.

SonicOS supports biometric authentication in conjunction with SonicWall Mobile Connect. Mobile Connect is an application that allows users to securely access private networks from a mobile device. With Mobile Connect 4.0 you can use finger-touch for authentication as a substitute for username and password.

The configuration settings to allow this method of authentication are on the **NETWORKS | SSL VPN > Client Settings** page. These options only show when Mobile Connect is used to connect to the firewall.

After configuring biometric authentication on the **SSL VPN > Client Settings** page, Touch ID (iOS) or Fingerprint Authentication (Android) need to be enabled on the user's smart phone or other mobile device.

3

Configuring SSL VPN Server Behavior

The **SSL VPN > Server Settings** page configures firewall to act as an SSL VPN server.

Server Settings page

Topics:

- SSL VPN Status on Zones
- SSL VPN Server Settings
- RADIUS User Settings
- SSL VPN Client Download URL

SSL VPN Status on Zones

This section displays the SSL VPN Access status on each zone:

- Green indicates active SSL VPN status.
- Red indicates inactive SSL VPN status.

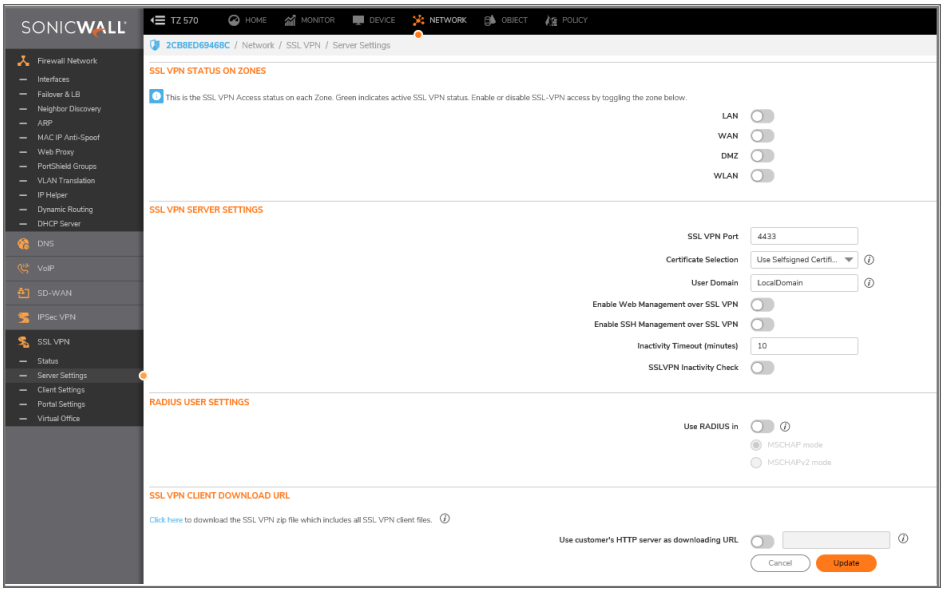
Enable or disable SSL VPN access by clicking the zone name.

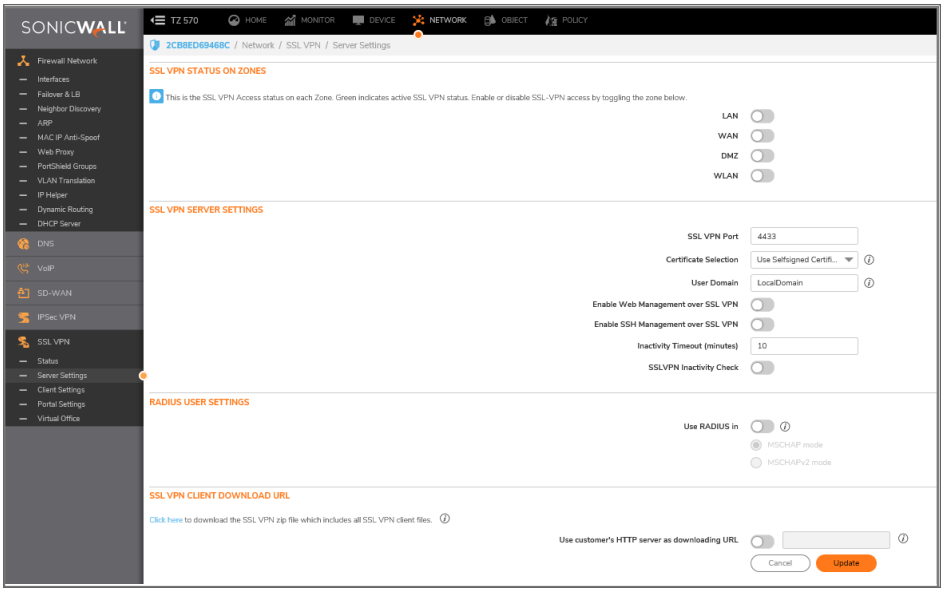
SSL VPN Server Settings

To configure the SSL VPN server settings:

1. In the **SSL VPN Port field**, enter the SSL VPN port number. The default is 4433.
2. From **the Certificate Selection** drop-down menu, select the certificate that used to authenticate SSL VPN users. The default method is **Use Self-signed Certificate**.
3. In the **User Domain** field, enter the user's domain, which must match the domain field in the NetExtender client. The default is **LocalDomain**.

- If authentication partitioning is not being used, this field has to match with the domain field in the NetExtender Client.
- If authentication partitioning is being used, then in NetExtender, the user can enter any of the domain names configured with the partitions, for this reason, selecting the partition for authenticating their name/password externally through RADIUS or LDAP. In this case, the name set here is a default for the user to enter for local authentication, or if they have no local account, for authentication in the default partition.
- Note that in either case, when used with external authentication, this user domain name is not passed to the RADIUS/LDAP server, sending just the simple user name without it.





4. To enable web management over SSL VPN, select Enabled from the **Enable Web Management over SSL VPN** drop-down menu. The default is Disabled.
5. To enable SSH management over SSL VPN, select Enabled from the **Enable SSH Management over SSL VPN** drop-down menu. The default is Disabled.
6. In the **Inactivity Timeout (minutes)** field, enter the number of minutes of inactivity before logging out the user. The default is 10 minutes.

RADIUS User Settings

This section is available only when either RADIUS or LDAP is configured to authenticate SSL VPN users on the **OBJECTS | User Objects > Settings** page. Enabling MSCHAP mode for RADIUS allows users to change expired passwords when they log in.

To configure MSCHAP or MSCHAPv2 mode:

1. Select **Use RADIUS in**.
2. Select one of these two modes:
   - **MSCHAP**
   - **MSCHAPV2**

   ⓘ **NOTE:** In LDAP, passwords can only be changed when using either Active Directory with TLS and binding to it using an administrative account or when using Novell eDirectory.

   If this option is set when LDAP is selected as the authentication method of login on the Users > Settings page, but LDAP is not configured in a way that allows password updates, then password updates for SSL VPN users are performed using MSCHAP-mode RADIUS after using LDAP to authenticate the user.
3. Click **ACCEPT** at the bottom of the page.

SSL VPN Client Download URL

In this section of the page, you set up where the client system downloads the SSL VPN client from. You can download the files from the appliance and put them on your web server to provide your own server to host this client package. Otherwise, clients can download the SSL VPN files from the firewall.

To configure your own web server for SSL VPN client file downloads:

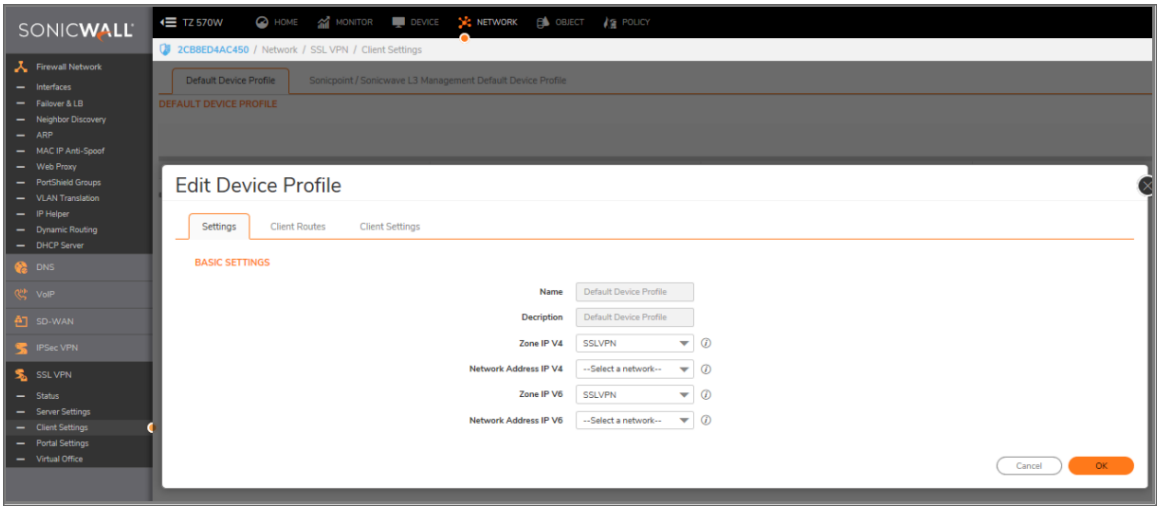
1. Select the link in **Click here to download** the SSL VPN zip file which includes all SSL VPN client files to download all the client SSL VPN files from the appliance. Open and unzip the file, and then put the folder on your HTTP server.
2. Select **Use customer's HTTP server as downloading URL: (http://)** to enter your SSL VPN client download URL in the supplied field.
3. Click **ACCEPT**.

4

Configuring SSL VPN Client

On the **SSL VPN > Client Settings** page, you can edit the Default Device Profile. The Default Device Profile enables SSL VPN access on zones, configures client routes, and configures the client DNS and NetExtender settings.

The **SSL VPN > Client Settings** page also displays the configured IPv4 and IPv6 network addresses and zones that have SSL VPN access enabled.



Edit the Default Device Profile to select the zones and NetExtender address objects, configure client routes, and configure the client DNS and NetExtender settings.

SSL VPN access must be enabled on a zone before users can access the Virtual Office web portal. SSL VPN Access can be configured on the **NETWORK | SSL VPN| Server Settings** page.

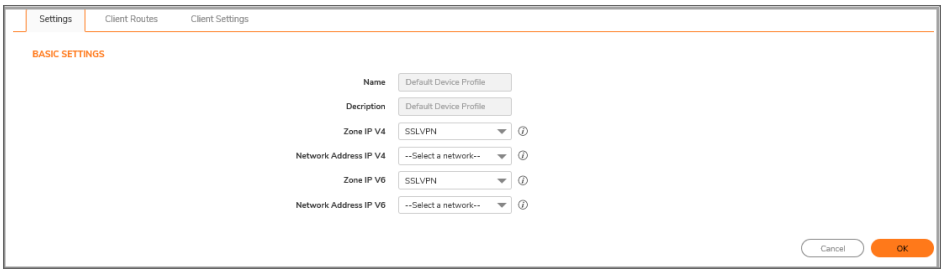
Topics:

- Configuring the Settings Option
- Configuring the Client Routes
- Configuring Client Settings

Configuring the Settings Options

To configure Default Device Profile:

1. Navigate to the **Network | SSL VPN > Client Settings** page.
2. Click the Edit icon for the Default Device Profile. Select the Basic tab.



   The **Name** and **Description** of the Default Device Profile cannot be changed.
3. In the **Zone IP V4** drop-down menu, choose **SSLVPN** or a custom zone to set the zone binding for this profile.
4. From the **Network Address IP V4** drop-down menu, select the IPv4 NetExtender address object that you created for this profile. Refer to Creating an Address Object for the NetExtender Range for instructions. This setting selects the IP Pool and zone binding for this profile. The NetExtender client gets the IP address from this address object if it matches this profile.
5. In the **Zone IP V6** drop-down menu, choose SSLVPN or a custom zone to set the zone binding for this profile.
6. From the **Network Address IP V6** drop-down menu, select the IPv6 NetExtender address object that you created.
7. Click **OK** to save settings and close the window or proceed to Configuring the Client Routes.

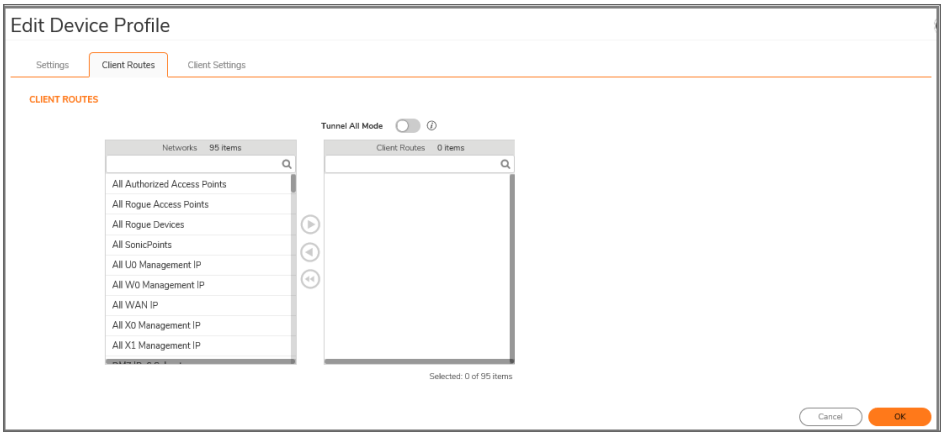
Configuring the Client Routes

In Client Routes, you can control the network access allowed for SSL VPN users. The NetExtender client routes are passed to all NetExtender clients and are used to govern which private networks and resources remote users can access third-party the SSL VPN connection.

To configure the client routes:

1. Navigate to the **Network | SSL VPN > Client Settings** page.
2. Click the Edit icon for the Default Device Profile.

3. Select **Client Routes**.



4. To force all traffic for NetExtender users over the SSL VPN NetExtender tunnel—including traffic destined for the remote user's local network, select Enabled from the Tunnel All Mode drop-down menu.
5. Under **Networks**, select the address object to which you want to allow SSL VPN access.
6. Click the Right Arrow to move the address object to the Client Routes list.
7. Repeat until you have moved all the address objects you want to use for Client Routes.

   Creating client routes also creates access rules automatically. You can also manually configure access rules for the SSL VPN zone. Refer to *SonicOS 7.1 Access Rules* for details about access rules.
8. Click **OK** to save the settings and close the window or proceed to Configuring Client Settings.

Configuring Client Settings

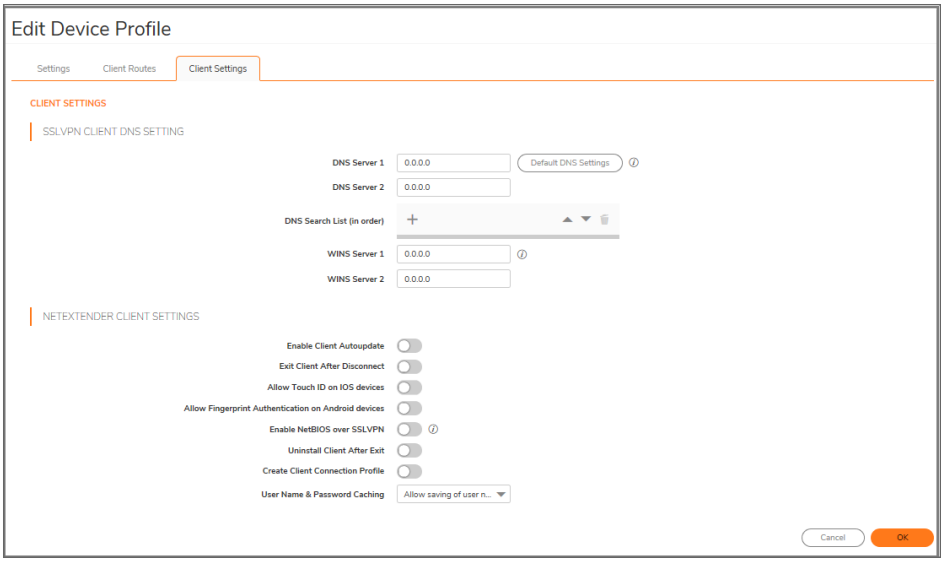
The Client Settings screen has two sections containing options:

- SSLVPN Client DNS Setting
- NetExtender Client Settings

To configure SSLVPN Client DNS Settings:

1. Navigate to the **NETWORKS | SSL VPN > Client Settings** page.
2. Click the Edit icon for the Default Device Profile.

3. Select **Client Settings**. The screen displays the SSLVPN Client and DNS Setting sections.



5

Configuring the SSL VPN Web Portal

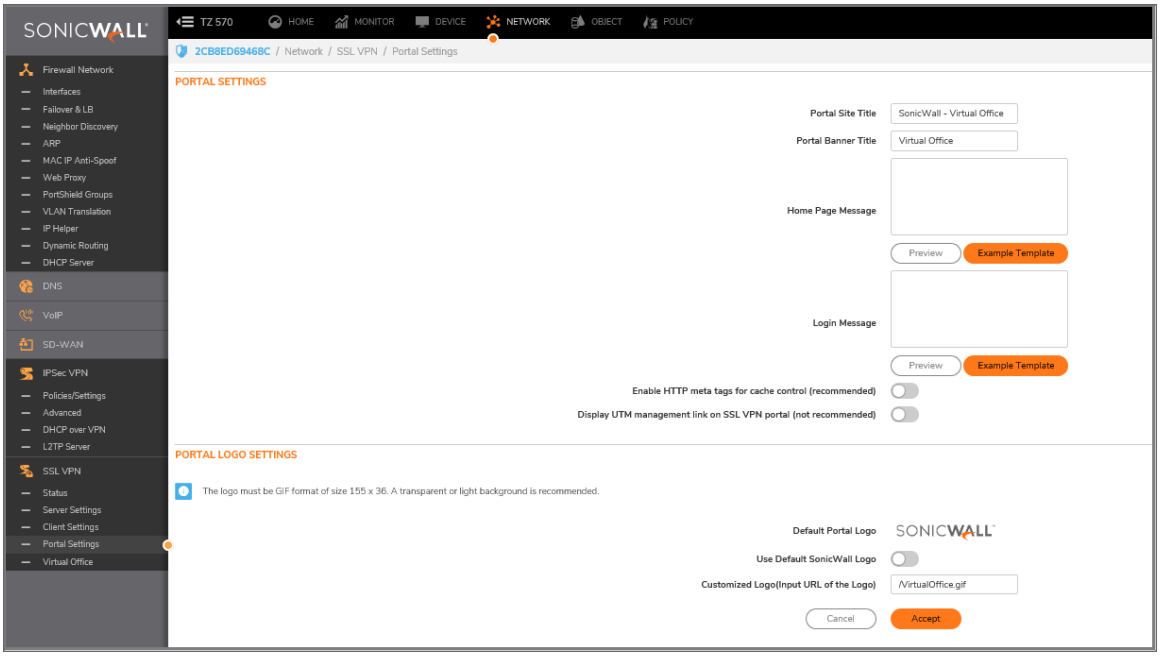
On the **SSL VPN > Portal Settings** page, you configure the appearance and functionality of the SSL VPN Virtual Office web portal. The Virtual Office portal is the website where users log in to launch NetExtender or access internal resources by clicking Bookmarks. It can be customized to match any existing company website or design style.

Topics:

- Portal Settings
- Portal Logo Settings

Portal Settings

The portal settings customize what the user sees when attempting to log in. Configure the options as needed to match your company's requirements. Go to **NETWORKS | SSL VPN > Portal Settings**.



Option Definitions

- Portal Site Title: Enter the text to display as the top title of the portal page in this field. The default is SonicWall - Virtual Office.
- Portal Banner Title: Enter the text to display next to the logo at the top of the page in this field. The default is Virtual Office.
- Home Page Message: Enter the HTML code for the message to display above the NetExtender icon. Type your own text or click EXAMPLE TEMPLATE to populate the field with a default template that you can keep or edit. Click PREVIEW to see what the Home Page Message looks like.
- Login Message: Enter the HTML code for the message to display when users are prompted to log into the Virtual Office. Type your own text or click EXAMPLE TEMPLATE to populate the field with a default template that you can keep or edit. Click PREVIEW to see what the Login Message looks like.

The following options customize the functionality of the Virtual Office portal:

- Enable HTTP meta tags for cache control recommended) - Select to insert into the browser HTTP tags that instruct the web browser not to
- Launch NetExtender after login - Select to launch NetExtender automatically after a user logs in. This option is not selected by default.
- Display Import Certificate Button - Select to display an Import Certificate button on the Virtual Office page. This initiates the process of importing the firewall's self-signed certificate onto the web browser. This option is not selected by default.
- Disable Virtual Office on Non-LAN Interfaces - Select to disable access to virtual office portal through WAN, DMZ, WLAN interfaces. you can access virtual office portal using NetExtender or Mobile Connect from non-LAN interface even with option **Disable Virtual Office on Non-LAN interfaces** enabled.

ⓘ **NOTE:** This option only applies to the Internet Explorer browser on PCs running Windows when Use Selfsigned Certificate is selected from the Certificate Selection drop-down menu on the SSL VPN > Server Settings page.

Portal Logo Settings

This section describes the settings for configuring the logo displayed at the top of the Virtual Office portal.

- **Default Portal Logo** – Displays the default portal logo which is the SonicWall logo.
- **Use Default SonicWall Logo** – Select this checkbox to use the SonicWall logo supplied with the appliance. This option is not selected by default.
- **Customized Logo (Input URL of the Logo)** — Enter the URL for the logo you want to display.

ⓘ **TIP:** The logo must be in GIF format of size 155 x 36; a transparent or light background is recommended.

6

Viewing SSL VPN Sessions

In the NETWORK view, the **SSL VPN > Status** page displays a summary of active NetExtender sessions on the Status page, and bookmarks on the Bookmark page.

Status Page

The Status page displays the user name, virtual IP address, WAN IP address, length of time logged in, inactivity time, and login time. You can also view traffic statistics for each user session.

The SSL VPN Sessions Status Information table describes the status information displayed for each user session, or the available action.

SSL VPN SESSIONS STATUS INFORMATION

Status	Description
User Name	Displays the user name.
Client Virtual IP	Displays the IP address assigned to the user from the NetExtender client IP address pool.
Client WAN IP	Displays the IP address of the WAN interface to which NetExtender is connected.
Logged In	Displays the length of time that the user has been logged in.
Inactivity Time	Displays the length of time that the user has been inactive.
Login Time	Displays the date and time that the user initially logged in.
Traffic	Click the Statistics icon to view traffic statistics for the user session.
Comments	Click the icon to view comments about the user session.

Bookmark Page

The Bookmark page displays the server name, type of bookmark, logged in information, service time, and last active time.

7

Configuring Virtual Office

The **SSL VPN > Virtual Office** page displays the Virtual Office web portal inside of the SonicOS management interface.

Topics:

- Accessing the Virtual Office Portal
- Using NetExtender
- Configuring SSL VPN Bookmarks

Accessing the Virtual Office Portal

You can access the Virtual Office Portal two different ways. System administrators can access it through the appliance interface and have rights to make changes applicable to the entire site. Users access it differently through different process and can only make changes that affect their particular profile.

For system administrators to access the SSL VPN Virtual Office portal:

1. Select the **NETWORK** view.
2. Look under **SSL VPN > Virtual Office.**

For users to view the SSL VPN Virtual Office web portal:

1. Navigate to the IP address of the firewall.
2. Click the link at the bottom of the **Login** page that says **Click here for sslvpn login**.

Using NetExtender

SonicWall NetExtender is a transparent software application that enables remote users to securely connect to the remote network. With NetExtender, remote users can securely run any application on the remote network. Users can upload and download files, mount network drives, and access resources as if they were on the local network.

The NetExtender connection uses a Point-to-Point Protocol (PPP) connection. The Virtual Office portal displays a link to download the NetExtender client.

Users can access NetExtender in these ways:

- Logging in to the Virtual Office portal provided by the SonicWall security appliance and clicking on the NetExtender download link, then installing and launching NetExtender.
- Launching the standalone NetExtender client. After downloading NetExtender from the Virtual Office portal and installing it the first time, it can thereafter be accessed directly from the user's PC as you would with any other client application.

NetExtender displays a popup window when launched. The SonicWall server is prepopulated with the server used for the initial NetExtender launch and client download. The domain is also populated with the corresponding domain. The user enters username and password and then clicks Connect.

After the connection is established, the NetExtender window provides three screens: Status, Routes, and DNS. The Status screen displays the server, client IP address, the number of kilobytes sent and received, and the throughput in bytes per second. The Routes screen displays the destination subnet IP addresses and corresponding netmasks. The DNS screen displays the DNS servers, DNS suffix, and WINS servers. The routes and DNS settings are controlled by the SonicOS administrator on the SonicWall appliance.

Users can close the NetExtender window after the connection is established. The connection stays open, while window is minimized and can be reopened from the system tray (on Windows).

See *About NetExtender* for additional information about NetExtender.

Configuring SSL VPN Bookmarks

User bookmarks can be defined to appear on the Virtual Office home page. Individual users cannot modify or delete bookmarks created by the administrator.

NOTE: When creating bookmarks, remember that some services can run on non-standard ports, and some expect a path when connecting. When you configure a portal bookmark, you need to match the Service type with the right format for the **Name** or **IP Address**. Refer to the following table when setting those options.

NOTE: Service types for ActiveX and Java do not exist in SonicOS 7.1. Preferences from older versions convert to HTML5 during an upgrade.

BOOKMARK NAME OR IP ADDRESS FORMATS BY SERVICE TYPE

Service Type	Format	Example for Name or IP Address Field
RDP - ActiveX	IP:Port (non-standard)	10.20.30.4
RDP - Java IP	FQDN	10.20.30.4:6818
Address	Host name	JBJONES-PC.sv.us.sonicwall.com
		JBJONES-PC

Service Type	Format	Example for Name or IP Address Field
VNC IP Address	IP: Port (mapped to session) FQDN Host name ⓘ **NOTE:** Do not use session or display number instead of port. 10.20.30.4	10.20.30.4:5901 (mapped to session 1) JBJONES-PC.sv.us.sonicwall.com JBJONES-PC ⓘ **NOTE:** Do not use 10.20.30.4:1 ⓘ **TIP:** For a bookmark to a Linux server, see the Tip below this table.
Telnet	IP Address IP:Port (non-standard) FQDN Host name	10.20.30.4:6818 JBJONES-PC.sv.us.sonicwall.com JBJONES-PC 10.20.30.4
SSHv1 SSHv2	IP Address IP:Port (non-standard) FQDN Host name	10.20.30.4 10.20.30.4:6818 JBJONES-PC.sv.us.sonicwall.com JBJONES-PC

ⓘ **IMPORTANT:** When creating a Virtual Network Computing (VNC) bookmark to a Linux server, you must specify the port number and server number in addition to the Linux server IP the Name or IP Address field in the form of ipaddress:port:server. For example, if the Linux server IP address is 192.168.2.2, the port number is 5901, and the server number is 1, the value for the Name or IP Address field would be 192.168.2.2:5901:1.

To add a portal bookmark:

1. Navigate to the **NETWORK | SSL VPN > Virtual Office** page.
2. Click **ADD**.

3. Type a descriptive name for the bookmark in the Bookmark Name field.
4. In the Name or IP Address field, enter the fully qualified domain name (FQDN) or the IPv4 address of a host machine on the LAN. Refer to the Bookmark Name or IP Address Formats by Service Type table for examples of the Name or IP Address expected for a given Service type.

5. In the Service drop-down menu, chose the appropriate service type:
    - RDP (HTML5-RDP)
    - SSHv2 (HTML5-SSHv2)
    - TELNET (HTML5-TELNET)
    - VNC (HTML5-VNC)

    Different options display, depending on what you selected.

6. Complete the remaining fields for the service you selected. For the options and definitions, refer to the following table:

If Service is set to RDP (HTML5-RDP), configure the following:	
Screen Size	From the drop-down menu, choose the default terminal services screen size to be used when users execute this bookmark.
	From the drop-down menu, choose the default terminal services screen size to be used when users execute this bookmark.
Colors	In the drop-down menu, select the default color depth for the terminal service screen when users select this bookmark.
Application and Path (optional)	If you want, enter the local path to where your application resides on your remote computer.
Start in the following folder	If you want, enter the local folder from which to execute application commands.
Show windows advanced options	Click the arrow to expand this and see all the Windows advanced options. Check the box to enable those that you want: • Redirect clipboard • Auto reconnection • Window drag • Redirect audio • Desktop background • Menu/window animation
Automatically log in	Check the box to enable automatic login. If selected, choose which credentials to use: • Use SSL-VPN account credentials • Use custom credentials If you choose custom credentials, enter the username, password and domain for the credentials. ⓘ **NOTE:** You can use dynamic variables for the username and domain. Refer to the Dynamic Variables table below.
Display Bookmark to Mobile Connect Clients	Check the box to display the bookmarks to Mobile Connect users.
If Service is set to SSHv2 (HTML5-SSHv2), configure the following:	
Automatically accept host key	Check the box to enable.
Display Bookmark to Mobile Connect clients	Check the box to display the bookmarks to Mobile Connect users.
If Service is set to TELNET (HTML5-TELNET), configure the following:	
Display Bookmark to Mobile Connect clients	Check the box to display the bookmarks to Mobile Connect users.
If Service is set to VNC (HTML5-VNC), configure the following::	

View Only	Check the box to set the bookmark to view only mode
Share Desktop	Enables the shared desktop feature.
Display Bookmark to Mobile Connect clients	Check the box to display the bookmarks to Mobile Connect users.

7 Click **OK** to save the configuration.

DYNAMIC VARIABLES

Text Usage	Variable	Example Usage
Login Name	`%USERNAME%`	`US\%USERNAME%`
Domain Name	`%USERDOMAIN%`	`%USERDOMAIN\%USERNAME%`

Configuring Device Profile Settings for IPv6

SonicOS supports NetExtender connections for users with IPv6 addresses. On the **SSL VPN > Client Settings** page, first configure the traditional IPv6 IP address pool, and then configure an IPv6 IP Pool. Clients will be assigned two internal addresses: one IPv4 and one IPv6.

ⓘ | **NOTE:** IPv6 Wins Server is not supported.

On the **SSL VPN > Client Routes** page, user can select a client routes from the drop-down list of all address objects including all the pre-defined IPv6 address objects.

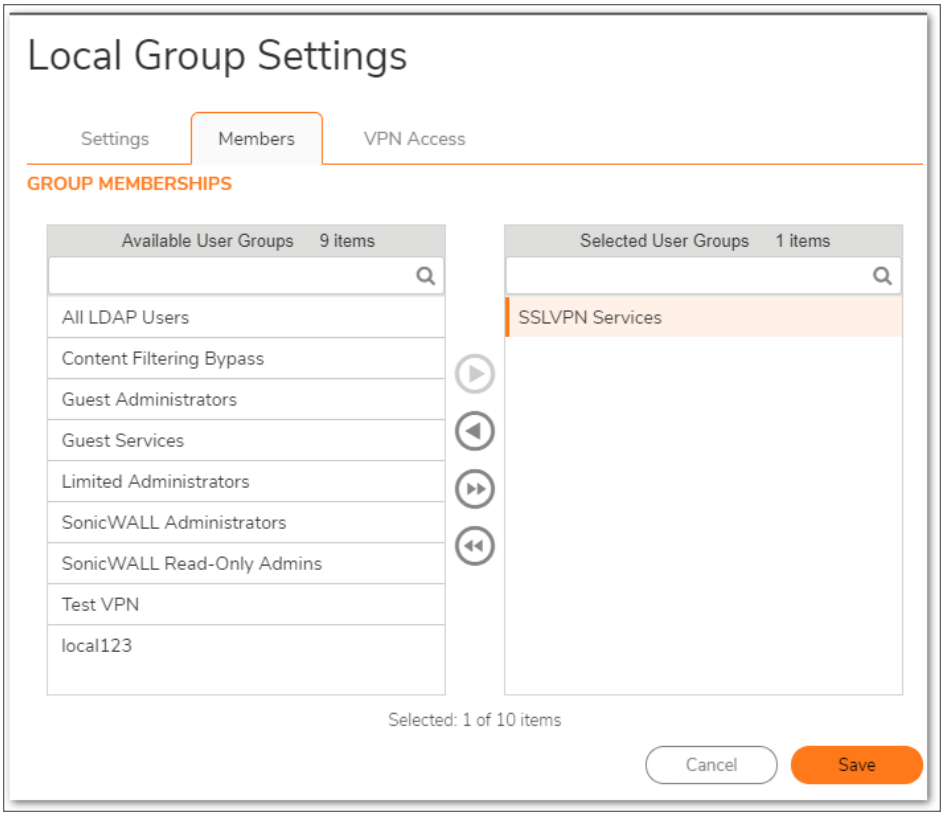
ⓘ | **NOTE:** IPv6 FQDN is supported.

8

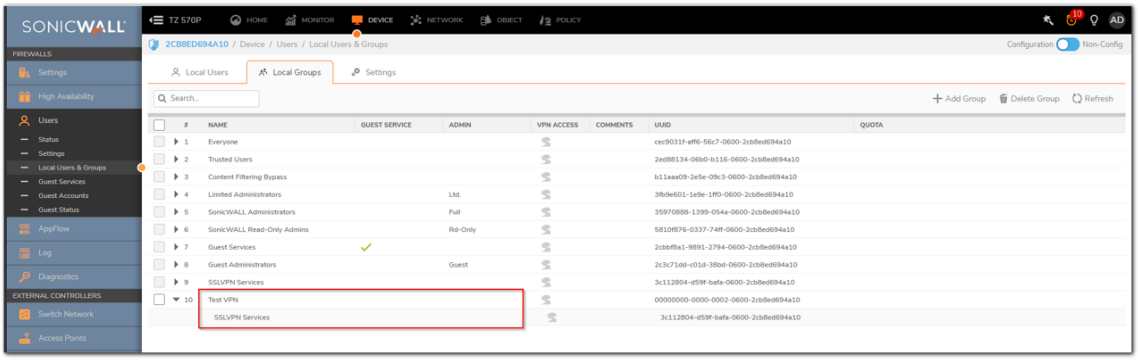
LAN configuration through SSL VPN client

To access internal LAN resources through SSL VPN client:

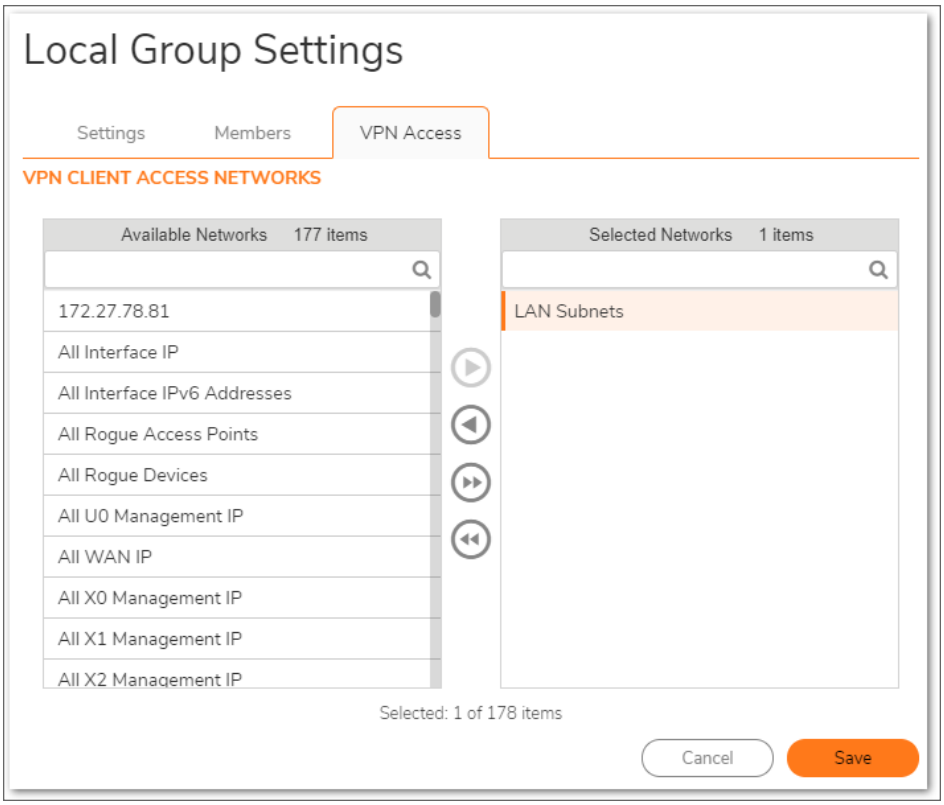
1. Login to your SonicWall management page and click **Device** tab on top of the page.
2. Navigate to **Users**>**Local Users & Groups** page, click on **Local Groups** tab.
3. Click on **Members** tab and ensure **SSLVPN Services** group is added under **Member Users and Groups**.



4. If it is not part of that group, add **SSLVPN Services** group under **Member Users and Groups** as shown.



5. Click **VPN Access** tab and make sure LAN Subnets is added under Access list.



6. Check if the packets sent to or from the SSLVPN client are dropped as **IP Spoof check failed module network**.

9

SonicWall Support

Technical support is available to customers who have purchased SonicWall products with a valid maintenance contract.

The Support Portal provides self-help tools you can use to solve problems quickly and independently, 24 hours a day, 365 days a year. To access the Support Portal, go to https://www.sonicwall.com/support.

The Support Portal enables you to:

- View knowledge base articles and technical documentation
- View and participate in the Community forum discussions at https://community.sonicwall.com/technology-and-support.
- View video tutorials
- Access https://mysonicwall.com
- Learn about SonicWall Professional Services at https://sonicwall.com/pes.
- Review SonicWall Support services and warranty information
- Register for training and certification
- Request technical support or customer service

To contact SonicWall Support, visit https://www.sonicwall.com/support/contact-support.

About This Document

SonicOS SSL VPN Administration Guide
Updated - December 2023
Software Version - 7.1
232-005876-00 Rev A

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End User Product Agreement

To view the SonicWall End User Product Agreement, go to: https://www.sonicwall.com/legal/end-user-product-agreements/.

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