

30.1 Overview

Use the system screens to configure general USG settings.

30.1.1 What You Can Do in this Chapter

- Use the **System > Host Name** screen (see [Section 30.2 on page 538](#)) to configure a unique name for the USG in your network.
- Use the **System > USB Storage** screen (see [Section 30.3 on page 538](#)) to configure the settings for the connected USB devices.
- Use the **System > Date/Time** screen (see [Section 30.4 on page 539](#)) to configure the date and time for the USG.
- Use the **System > Console Speed** screen (see [Section 30.5 on page 543](#)) to configure the console port speed when you connect to the USG via the console port using a terminal emulation program.
- Use the **System > DNS** screen (see [Section 30.6 on page 544](#)) to configure the DNS (Domain Name System) server used for mapping a domain name to its corresponding IP address and vice versa.
- Use the **System > WWW** screens (see [Section 30.7 on page 553](#)) to configure settings for HTTP or HTTPS access to the USG and how the login and access user screens look.
- Use the **System > SSH** screen (see [Section 30.8 on page 569](#)) to configure SSH (Secure Shell) used to securely access the USG's command line interface. You can specify which zones allow SSH access and from which IP address the access can come.
- Use the **System > TELNET** screen (see [Section 30.9 on page 573](#)) to configure Telnet to access the USG's command line interface. Specify which zones allow Telnet access and from which IP address the access can come.
- Use the **System > FTP** screen (see [Section 30.10 on page 575](#)) to specify from which zones FTP can be used to access the USG. You can also specify from which IP addresses the access can come. You can upload and download the USG's firmware and configuration files using FTP. .
- Your USG can act as an SNMP agent, which allows a manager station to manage and monitor the USG through the network. Use the **System > SNMP** screen (see [Section 30.11 on page 576](#)) to configure SNMP settings, including from which zones SNMP can be used to access the USG. You can also specify from which IP addresses the access can come.
- Use the **Auth. Server** screen ([Section 30.12 on page 580](#)) to configure the USG to operate as a RADIUS server.
- Use the **CloudCNM** screen ([Section 30.13 on page 582](#)) to enable and configure management of the USG by a Central Network Management system.
- Use the **System > Language** screen (see [Section 30.14 on page 585](#)) to set a language for the USG's Web Configurator screens.
- Use the **System > IPv6** screen (see [Section 30.15 on page 585](#)) to enable or disable IPv6 support on the USG.

- Use the **System > ZON** screen (see [Section 30.16 on page 586](#)) to enable or disable the ZyXEL One Network (ZON) utility that uses ZyXEL Discovery Protocol (ZDP) for discovering and configuring ZDP-aware ZyXEL devices in the same network as the computer on which ZON is installed.

Note: See each section for related background information and term definitions.

30.2 Host Name

A host name is the unique name by which a device is known on a network. Click **Configuration > System > Host Name** to open the **Host Name** screen.

Figure 367 Configuration > System > Host Name

The following table describes the labels in this screen.

Table 229 Configuration > System > Host Name

LABEL	DESCRIPTION
System Name	Enter a descriptive name to identify your USG device. This name can be up to 64 alphanumeric characters long. Spaces are not allowed, but dashes (-) underscores (_) and periods (.) are accepted.
Domain Name	Enter the domain name (if you know it) here. This name is propagated to DHCP clients connected to interfaces with the DHCP server enabled. This name can be up to 254 alphanumeric characters long. Spaces are not allowed, but dashes "-" are accepted.
Apply	Click Apply to save your changes back to the USG.
Reset	Click Reset to return the screen to its last-saved settings.

30.3 USB Storage

The USG can use a connected USB device to store the system log and other diagnostic information. Use this screen to turn on this feature and set a disk full warning limit.

Note: Only connect one USB device. It must allow writing (it cannot be read-only) and use the FAT16, FAT32, EXT2, or EXT3 file system.

Click **Configuration > System > USB Storage** to open the screen as shown next.

Figure 368 Configuration > System > USB Storage

The following table describes the labels in this screen.

Table 230 Configuration > System > USB Storage

LABEL	DESCRIPTION
Activate USB storage service	Select this if you want to use the connected USB device(s).
Disk full warning when remaining space is less than	Set a number and select a unit (MB or %) to have the USG send a warning message when the remaining USB storage space is less than the value you set here.
Apply	Click Apply to save your changes back to the USG.
Reset	Click Reset to return the screen to its last-saved settings.

30.4 Date and Time

For effective scheduling and logging, the USG system time must be accurate. The USG's Real Time Chip (RTC) keeps track of the time and date. There is also a software mechanism to set the time manually or get the current time and date from an external server.

To change your USG's time based on your local time zone and date, click **Configuration > System > Date/Time**. The screen displays as shown. You can manually set the USG's time and date or have the USG get the date and time from a time server.

Figure 369 Configuration > System > Date and Time

The following table describes the labels in this screen.

Table 231 Configuration > System > Date and Time

LABEL	DESCRIPTION
Current Time and Date	
Current Time	This field displays the present time of your USG.
Current Date	This field displays the present date of your USG.
Time and Date Setup	
Manual	Select this radio button to enter the time and date manually. If you configure a new time and date, time zone and daylight saving at the same time, the time zone and daylight saving will affect the new time and date you entered. When you enter the time settings manually, the USG uses the new setting once you click Apply .
New Time (hh-mm-ss)	This field displays the last updated time from the time server or the last time configured manually. When you set Time and Date Setup to Manual , enter the new time in this field and then click Apply .
New Date (yyyy-mm-dd)	This field displays the last updated date from the time server or the last date configured manually. When you set Time and Date Setup to Manual , enter the new date in this field and then click Apply .

Table 231 Configuration > System > Date and Time (continued)

LABEL	DESCRIPTION
Get from Time Server	Select this radio button to have the USG get the time and date from the time server you specify below. The USG requests time and date settings from the time server under the following circumstances. <ul style="list-style-type: none"> • When the USG starts up. • When you click Apply or Synchronize Now in this screen. • 24-hour intervals after starting up.
Time Server Address	Enter the IP address or URL of your time server. Check with your ISP/network administrator if you are unsure of this information.
Sync. Now	Click this button to have the USG get the time and date from a time server (see the Time Server Address field). This also saves your changes (except the daylight saving settings).
Time Zone Setup	
Time Zone	Choose the time zone of your location. This will set the time difference between your time zone and Greenwich Mean Time (GMT).
Enable Daylight Saving	Daylight saving is a period from late spring to early fall when many countries set their clocks ahead of normal local time by one hour to give more daytime light in the evening. Select this option if you use Daylight Saving Time.
Start Date	Configure the day and time when Daylight Saving Time starts if you selected Enable Daylight Saving . The at field uses the 24 hour format. Here are a couple of examples: Daylight Saving Time starts in most parts of the United States on the second Sunday of March. Each time zone in the United States starts using Daylight Saving Time at 2 A.M. local time. So in the United States you would select Second, Sunday, March and type 2 in the at field. Daylight Saving Time starts in the European Union on the last Sunday of March. All of the time zones in the European Union start using Daylight Saving Time at the same moment (1 A.M. GMT or UTC). So in the European Union you would select Last, Sunday, March . The time you type in the at field depends on your time zone. In Germany for instance, you would type 2 because Germany's time zone is one hour ahead of GMT or UTC (GMT+1).
End Date	Configure the day and time when Daylight Saving Time ends if you selected Enable Daylight Saving . The at field uses the 24 hour format. Here are a couple of examples: Daylight Saving Time ends in the United States on the first Sunday of November. Each time zone in the United States stops using Daylight Saving Time at 2 A.M. local time. So in the United States you would select First, Sunday, November and type 2 in the at field. Daylight Saving Time ends in the European Union on the last Sunday of October. All of the time zones in the European Union stop using Daylight Saving Time at the same moment (1 A.M. GMT or UTC). So in the European Union you would select Last, Sunday, October . The time you type in the at field depends on your time zone. In Germany for instance, you would type 2 because Germany's time zone is one hour ahead of GMT or UTC (GMT+1).
Offset	Specify how much the clock changes when daylight saving begins and ends. Enter a number from 1 to 5.5 (by 0.5 increments). For example, if you set this field to 3.5, a log occurred at 6 P.M. in local official time will appear as if it had occurred at 10:30 P.M.
Apply	Click Apply to save your changes back to the USG.
Reset	Click Reset to return the screen to its last-saved settings.

30.4.1 Pre-defined NTP Time Servers List

When you turn on the USG for the first time, the date and time start at 2003-01-01 00:00:00. The USG then attempts to synchronize with one of the following pre-defined list of Network Time Protocol (NTP) time servers.

The USG continues to use the following pre-defined list of NTP time servers if you do not specify a time server or it cannot synchronize with the time server you specified.

Table 232 Default Time Servers

0.pool.ntp.org
1.pool.ntp.org
2.pool.ntp.org

When the USG uses the pre-defined list of NTP time servers, it randomly selects one server and tries to synchronize with it. If the synchronization fails, then the USG goes through the rest of the list in order from the first one tried until either it is successful or all the pre-defined NTP time servers have been tried.

30.4.2 Time Server Synchronization

Click the **Synchronize Now** button to get the time and date from the time server you specified in the **Time Server Address** field.

When the **Please Wait...** screen appears, you may have to wait up to one minute.

Figure 370 Synchronization in Process



The **Current Time** and **Current Date** fields will display the appropriate settings if the synchronization is successful.

If the synchronization was not successful, a log displays in the **View Log** screen. Try re-configuring the **Date/Time** screen.

To manually set the USG date and time.

- 1 Click **System > Date/Time**.
- 2 Select **Manual** under **Time and Date Setup**.
- 3 Enter the USG's time in the **New Time** field.
- 4 Enter the USG's date in the **New Date** field.
- 5 Under **Time Zone Setup**, select your **Time Zone** from the list.
- 6 As an option you can select the **Enable Daylight Saving** check box to adjust the USG clock for daylight savings.

7 Click **Apply**.

To get the USG date and time from a time server

1 Click **System > Date/Time**.2 Select **Get from Time Server** under **Time and Date Setup**.3 Under **Time Zone Setup**, select your **Time Zone** from the list.4 As an option you can select the **Enable Daylight Saving** check box to adjust the USG clock for daylight savings.5 Under **Time and Date Setup**, enter a **Time Server Address** (Table 232 on page 542).6 Click **Apply**.

30.5 Console Port Speed

This section shows you how to set the console port speed when you connect to the USG via the console port using a terminal emulation program.

Click **Configuration > System > Console Speed** to open the **Console Speed** screen.

Figure 371 Configuration > System > Console Speed



The following table describes the labels in this screen.

Table 233 Configuration > System > Console Speed

LABEL	DESCRIPTION
Console Port Speed	Use the drop-down list box to change the speed of the console port. Your USG supports 9600, 19200, 38400, 57600, and 115200 bps (default) for the console port. The Console Port Speed applies to a console port connection using terminal emulation software and NOT the Console in the USG Web Configurator Status screen.
Apply	Click Apply to save your changes back to the USG.
Reset	Click Reset to return the screen to its last-saved settings.

30.6 DNS Overview

DNS (Domain Name System) is for mapping a domain name to its corresponding IP address and vice versa. The DNS server is extremely important because without it, you must know the IP address of a machine before you can access it.

30.6.1 DNS Server Address Assignment

The USG can get the DNS server addresses in the following ways.

- The ISP tells you the DNS server addresses, usually in the form of an information sheet, when you sign up. If your ISP gives you DNS server addresses, manually enter them in the DNS server fields.
- If your ISP dynamically assigns the DNS server IP addresses (along with the USG's WAN IP address), set the DNS server fields to get the DNS server address from the ISP.
- You can manually enter the IP addresses of other DNS servers.

30.6.2 Configuring the DNS Screen

Click **Configuration > System > DNS** to change your USG's DNS settings. Use the **DNS** screen to configure the USG to use a DNS server to resolve domain names for USG system features like VPN, DDNS and the time server. You can also configure the USG to accept or discard DNS queries. Use the **Network > Interface** screens to configure the DNS server information that the USG sends to the specified DHCP client devices.

A name query begins at a client computer and is passed to a resolver, a DNS client service, for resolution. The USG can be a DNS client service. The USG can resolve a DNS query locally using cached Resource Records (RR) obtained from a previous query (and kept for a period of time). If the USG does not have the requested information, it can forward the request to DNS servers. This is known as recursion.

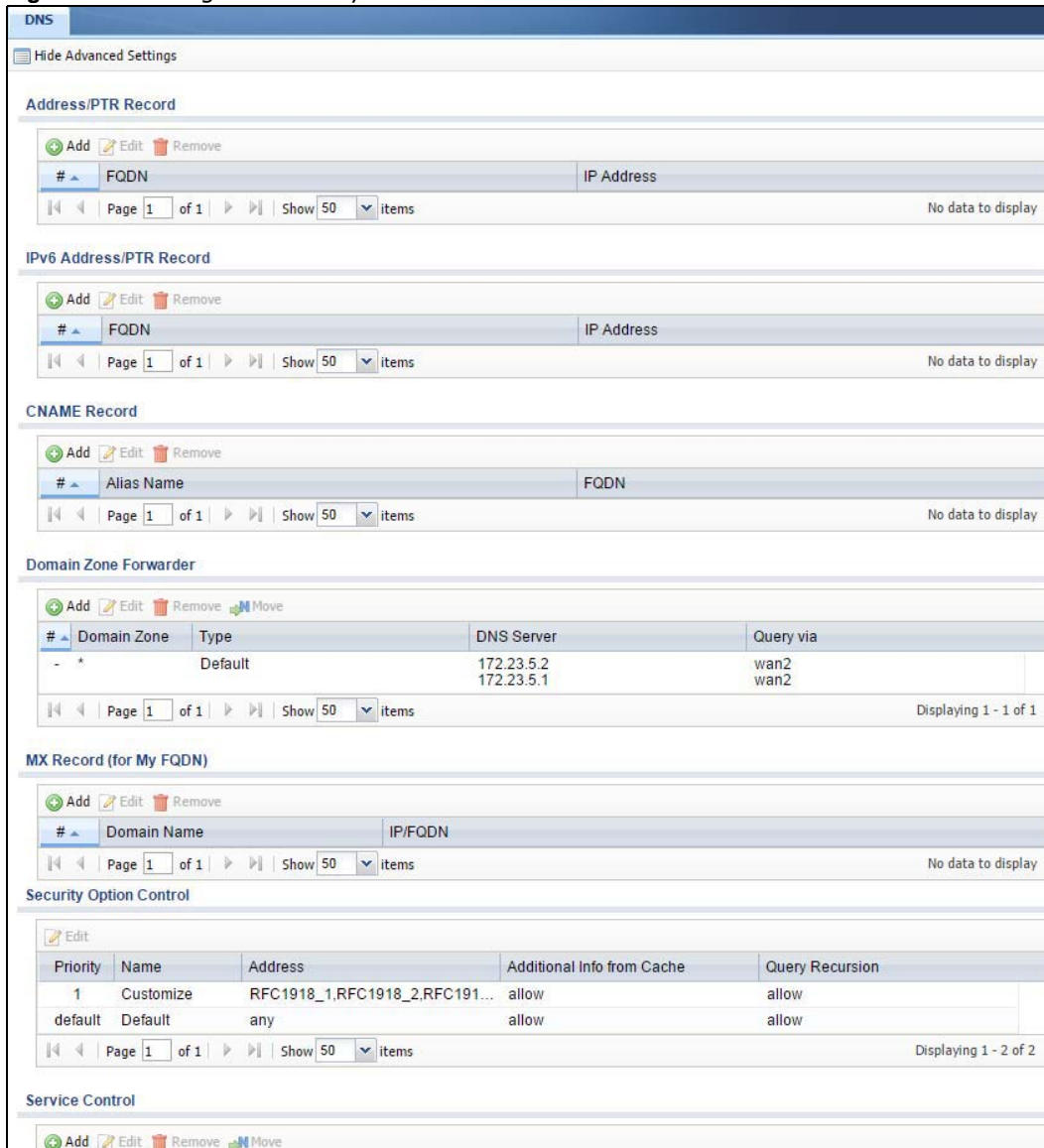
The USG can ask a DNS server to use recursion to resolve its DNS client requests. If recursion on the USG or a DNS server is disabled, they cannot forward DNS requests for resolution.

A Domain Name Server (DNS) amplification attack is a kind of Distributed Denial of Service (DDoS) attack that uses publicly accessible open DNS servers to flood a victim with DNS response traffic. An open DNS server is a DNS server which is willing to resolve recursive DNS queries from anyone on the Internet.

In a DNS amplification attack, an attacker sends a DNS name lookup request to an open DNS server with the source address spoofed as the victim's address. When the DNS server sends the DNS record response, it is sent to the victim. Attackers can request as much information as possible to maximize the amplification effect.

Configure the **Security Option Control** section in the **Configuration > System > DNS** screen (click **Show Advanced Settings** to display it) if you suspect the USG is being used (either by hackers or by a corrupted open DNS server) in a DNS amplification attack.

Figure 372 Configuration > System > DNS



The following table describes the labels in this screen.

Table 234 Configuration > System > DNS

LABEL	DESCRIPTION
Address/PTR Record	This record specifies the mapping of a Fully-Qualified Domain Name (FQDN) to an IP address. An FQDN consists of a host and domain name. For example, www.zyxel.com.tw is a fully qualified domain name, where "www" is the host, "zyxel" is the third-level domain, "com" is the second-level domain, and "tw" is the top level domain.
Add	Click this to create a new entry.
Edit	Double-click an entry or select it and click Edit to be able to modify the entry's settings.
Remove	To remove an entry, select it and click Remove . The USG confirms you want to remove it before doing so. Note that subsequent entries move up by one when you take this action.
#	This is the index number of the address/PTR record.
FQDN	This is a host's fully qualified domain name.

Table 234 Configuration > System > DNS (continued)

LABEL	DESCRIPTION
IP Address	This is the IP address of a host.
CNAME Record	This record specifies an alias for a FQDN. Use this record to bind all subdomains with the same IP address as the FQDN without having to update each one individually, which increases chance for errors. See CNAME Record (Section 30.6.6 on page 548) for more details.
Add	Click this to create a new entry.
Edit	Double-click an entry or select it and click Edit to be able to modify the entry's settings.
Remove	To remove an entry, select it and click Remove. The USG confirms you want to remove it before doing so. Note that subsequent entries move up by one when you take this action.
#	This is the index number of the domain zone forwarder record. The ordering of your rules is important as rules are applied in sequence. A hyphen (-) displays for the default domain zone forwarder record. The default record is not configurable. The USG uses this default record if the domain zone that needs to be resolved does not match any of the other domain zone forwarder records.
Alias Name	Enter an Alias name. Use "*" as prefix for a wildcard domain name. For example, *.example.com.
FQDN	Enter the Fully Qualified Domain Name (FQDN).
Domain Zone Forwarder	This specifies a DNS server's IP address. The USG can query the DNS server to resolve domain zones for features like VPN, DDNS and the time server. When the USG needs to resolve a domain zone, it checks it against the domain zone forwarder entries in the order that they appear in this list.
Add	Click this to create a new entry. Select an entry and click Add to create a new entry after the selected entry.
Edit	Double-click an entry or select it and click Edit to be able to modify the entry's settings.
Remove	To remove an entry, select it and click Remove . The USG confirms you want to remove it before doing so. Note that subsequent entries move up by one when you take this action.
Move	To change an entry's position in the numbered list, select the method and click Move to display a field to type a number for where you want to put it and press [ENTER] to move the rule to the number that you typed.
#	This is the index number of the domain zone forwarder record. The ordering of your rules is important as rules are applied in sequence. A hyphen (-) displays for the default domain zone forwarder record. The default record is not configurable. The USG uses this default record if the domain zone that needs to be resolved does not match any of the other domain zone forwarder records.
Domain Zone	A domain zone is a fully qualified domain name without the host. For example, zyxel.com.tw is the domain zone for the www.zyxel.com.tw fully qualified domain name. A "*" means all domain zones.
Type	This displays whether the DNS server IP address is assigned by the ISP dynamically through a specified interface or configured manually (User-Defined).
DNS Server	This is the IP address of a DNS server. This field displays N/A if you have the USG get a DNS server IP address from the ISP dynamically but the specified interface is not active.
Query Via	This is the interface through which the USG sends DNS queries to the entry's DNS server. If the USG connects through a VPN tunnel, tunnel displays.
MX Record (for My FQDN)	A MX (Mail eXchange) record identifies a mail server that handles the mail for a particular domain.
Add	Click this to create a new entry.
Edit	Double-click an entry or select it and click Edit to be able to modify the entry's settings.

Table 234 Configuration > System > DNS (continued)

LABEL	DESCRIPTION
Remove	To remove an entry, select it and click Remove . The USG confirms you want to remove it before doing so. Note that subsequent entries move up by one when you take this action.
#	This is the index number of the MX record.
Domain Name	This is the domain name where the mail is destined for.
IP/FQDN	This is the IP address or Fully-Qualified Domain Name (FQDN) of a mail server that handles the mail for the domain specified in the field above.
Security Option Control	Click Show Advanced Settings to display this part of the screen. There are two control policies: Default and Customize .
Edit	Click either control policy and then click this button to change allow or deny actions for Query Recursion and Additional Info from Cache .
Priority	The Customize control policy is checked first and if an address object match is not found, the Default control policy is checked.
Name	You may change the name of the Customize control policy.
Address	These are the object addresses used in the control policy. RFC1918 refers to private IP address ranges. It can be modified in Object > Address .
Additional Info from Cache	This displays if the USG is allowed or denied to cache Resource Records (RR) obtained from previous DNS queries.
Query Recursion	This displays if the USG is allowed or denied to forward DNS client requests to DNS servers for resolution.
Service Control	This specifies from which computers and zones you can send DNS queries to the USG.
Add	Click this to create a new entry. Select an entry and click Add to create a new entry after the selected entry.
Edit	Double-click an entry or select it and click Edit to be able to modify the entry's settings.
Remove	To remove an entry, select it and click Remove . The USG confirms you want to remove it before doing so. Note that subsequent entries move up by one when you take this action.
Move	To change an entry's position in the numbered list, select the method and click Move to display a field to type a number for where you want to put it and press [ENTER] to move the rule to the number that you typed.
#	This the index number of the service control rule. The ordering of your rules is important as rules are applied in sequence. The entry with a hyphen (-) instead of a number is the USG's (non-configurable) default policy. The USG applies this to traffic that does not match any other configured rule. It is not an editable rule. To apply other behavior, configure a rule that traffic will match so the USG will not have to use the default policy.
Zone	This is the zone on the USG the user is allowed or denied to access.
Address	This is the object name of the IP address(es) with which the computer is allowed or denied to send DNS queries.
Action	This displays whether the USG accepts DNS queries from the computer with the IP address specified above through the specified zone (Accept) or discards them (Deny).

30.6.3 Address Record

An address record contains the mapping of a Fully-Qualified Domain Name (FQDN) to an IP address. An FQDN consists of a host and domain name. For example, www.zyxel.com is a fully qualified domain name, where "www" is the host, "zyxel" is the second-level domain, and "com" is the top level domain. mail.myZyXEL.com.tw is also a FQDN, where "mail" is the host, "myZyXEL" is the third-level domain, "com" is the second-level domain, and "tw" is the top level domain.

The USG allows you to configure address records about the USG itself or another device. This way you can keep a record of DNS names and addresses that people on your network may use frequently. If the USG receives a DNS query for an FQDN for which the USG has an address record, the USG can send the IP address in a DNS response without having to query a DNS name server.

30.6.4 PTR Record

A PTR (pointer) record is also called a reverse record or a reverse lookup record. It is a mapping of an IP address to a domain name.

30.6.5 Adding an Address/PTR Record

Click the **Add** icon in the **Address/PTR Record** table to add an address/PTR record.

Figure 373 Configuration > System > DNS > Address/PTR Record Edit

The following table describes the labels in this screen.

Table 235 Configuration > System > DNS > Address/PTR Record Edit

LABEL	DESCRIPTION
FQDN	Type a Fully-Qualified Domain Name (FQDN) of a server. An FQDN starts with a host name and continues all the way up to the top-level domain name. For example, www.zyxel.com.tw is a fully qualified domain name, where "www" is the host, "zyxel" is the third-level domain, "com" is the second-level domain, and "tw" is the top level domain. Underscores are not allowed. Use ".*." as a prefix in the FQDN for a wildcard domain name (for example, *.example.com).
IP Address	Enter the IP address of the host in dotted decimal notation.
OK	Click OK to save your customized settings and exit this screen.
Cancel	Click Cancel to exit this screen without saving

30.6.6 CNAME Record

A Canonical Name Record or CNAME record is a type of resource record in the Domain Name System (DNS) that specifies that the domain name is an alias of another, canonical domain name. This allows users to set up a record for a domain name which translates to an IP address, in other words, the domain name is an alias of another. This record also binds all the subdomains to the same IP address without having to create a record for each, so when the IP address is changed, all subdomain's IP address is updated as well, with one edit to the record.

For example, the domain name `zyxel.com` is hooked up to a record named A which translates it to `11.22.33.44`. You also have several subdomains, like `mail.zyxel.com`, `ftp.zyxel.com` and you want this subdomain to point to your main domain `zyxel.com`. Edit the IP Address in record A and all subdomains will follow automatically. This eliminates chances for errors and increases efficiency in DNS management.

30.6.7 Adding a CNAME Record

Click the Add icon in the CNAME Record table to add a record. Use `*.*` as a prefix for a wildcard domain name. For example `*.zyxel.com`.

Figure 374 Configuration > System > DNS > CNAME Record > Add

The following table describes the labels in this screen.

Table 236 Configuration > System > DNS > CNAME Record > Add

LABEL	DESCRIPTION
Alias name	Enter an Alias Name. Use <code>*.*</code> as a prefix in the Alias name for a wildcard domain name (for example, <code>*.example.com</code>).
FQDN	Type a Fully-Qualified Domain Name (FQDN) of a server. An FQDN starts with a host name and continues all the way up to the top-level domain name. For example, <code>www.zyxel.com.tw</code> is a fully qualified domain name, where <code>www</code> is the host, <code>zyxel</code> is the third-level domain, <code>com</code> is the second-level domain, and <code>tw</code> is the top level domain. Underscores are not allowed. Use <code>*.*</code> as a prefix in the FQDN for a wildcard domain name (for example, <code>*.example.com</code>).
OK	Click OK to save your customized settings and exit this screen.
Cancel	Click Cancel to exit this screen without saving.

30.6.8 Domain Zone Forwarder

A domain zone forwarder contains a DNS server's IP address. The USG can query the DNS server to resolve domain zones for features like VPN, DDNS and the time server. A domain zone is a fully qualified domain name without the host. For example, `zyxel.com.tw` is the domain zone for the `www.zyxel.com.tw` fully qualified domain name.

30.6.9 Adding a Domain Zone Forwarder

Click the **Add** icon in the **Domain Zone Forwarder** table to add a domain zone forwarder record.

Figure 375 Configuration > System > DNS > Domain Zone Forwarder Add

The following table describes the labels in this screen.

Table 237 Configuration > System > DNS > Domain Zone Forwarder Add

LABEL	DESCRIPTION
Domain Zone	<p>A domain zone is a fully qualified domain name without the host. For example, zyxel.com.tw is the domain zone for the www.zyxel.com.tw fully qualified domain name. For example, whenever the USG receives needs to resolve a zyxel.com.tw domain name, it can send a query to the recorded name server IP address.</p> <p>Enter * if all domain zones are served by the specified DNS server(s).</p>
DNS Server	<p>Select DNS Server(s) from ISP if your ISP dynamically assigns DNS server information. You also need to select an interface through which the ISP provides the DNS server IP address(es). The interface should be activated and set to be a DHCP client. The fields below display the (read-only) DNS server IP address(es) that the ISP assigns. N/A displays for any DNS server IP address fields for which the ISP does not assign an IP address.</p> <p>Select Public DNS Server if you have the IP address of a DNS server. Enter the DNS server's IP address in the field to the right. The USG must be able to connect to the DNS server without using a VPN tunnel. The DNS server could be on the Internet or one of the USG's local networks. You cannot use 0.0.0.0. Use the Query via field to select the interface through which the USG sends DNS queries to a DNS server.</p> <p>Select Private DNS Server if you have the IP address of a DNS server to which the USG connects through a VPN tunnel. Enter the DNS server's IP address in the field to the right. You cannot use 0.0.0.0.</p>
OK	Click OK to save your customized settings and exit this screen.
Cancel	Click Cancel to exit this screen without saving

30.6.10 MX Record

A MX (Mail eXchange) record indicates which host is responsible for the mail for a particular domain, that is, controls where mail is sent for that domain. If you do not configure proper MX records for your domain or other domain, external e-mail from other mail servers will not be able to be delivered to your mail server and vice versa. Each host or domain can have only one MX record, that is, one domain is mapping to one host.

30.6.11 Adding a MX Record

Click the **Add** icon in the **MX Record** table to add a MX record.

Figure 376 Configuration > System > DNS > MX Record Add

The following table describes the labels in this screen.

Table 238 Configuration > System > DNS > MX Record Add

LABEL	DESCRIPTION
Domain Name	Enter the domain name where the mail is destined for.
IP Address/FQDN	Enter the IP address or Fully-Qualified Domain Name (FQDN) of a mail server that handles the mail for the domain specified in the field above.
OK	Click OK to save your customized settings and exit this screen.
Cancel	Click Cancel to exit this screen without saving

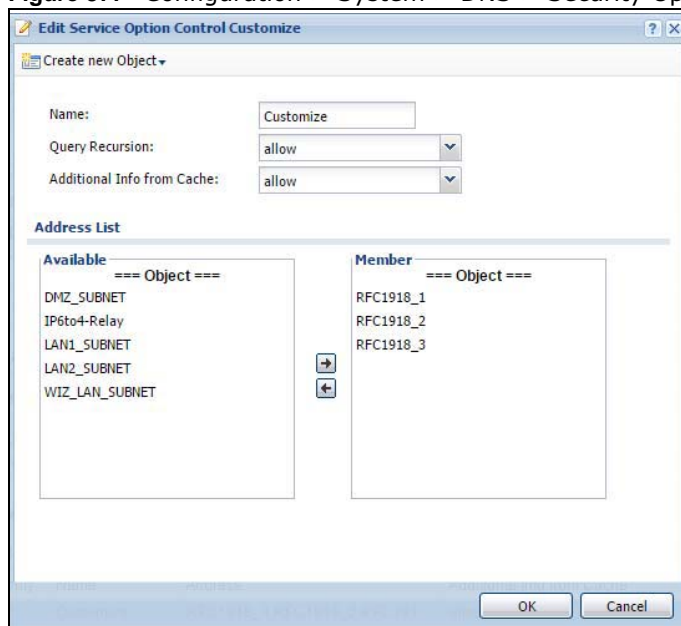
30.6.12 Security Option Control

Configure the **Security Option Control** section in the **Configuration > System > DNS** screen (click **Show Advanced Settings** to display it) if you suspect the USG is being used by hackers in a DNS amplification attack.

One possible strategy would be to deny **Query Recursion** and **Additional Info from Cache** in the default policy and allow **Query Recursion** and **Additional Info from Cache** only from trusted DNS servers identified by address objects and added as members in the customized policy.

30.6.13 Editing a Security Option Control

Click a control policy and then click **Edit** to change **allow** or **deny** actions for **Query Recursion** and **Additional Info from Cache**.

Figure 377 Configuration > System > DNS > Security Option Control Edit (Customize)

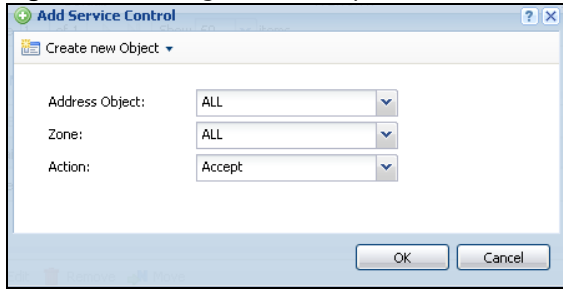
The following table describes the labels in this screen.

Table 239 Configuration > System > DNS > Security Option Control Edit (Customize)

LABEL	DESCRIPTION
Name	You may change the name for the customized security option control policy. The customized security option control policy is checked first and if an address object match is not found, the Default control policy is checked
Query Recursion	Choose if the USG is allowed or denied to forward DNS client requests to DNS servers for resolution. This can apply to specific open DNS servers using the address objects in a customized rule.
Additional Info from Cache	Choose if the USG is allowed or denied to cache Resource Records (RR) obtained from previous DNS queries.
Address List	Specifying address objects is not available in the default policy as all addresses are included.
Available	This box displays address objects created in Object > Address . Select one (or more), and click the > arrow to have it (them) join the Member list of address objects that will apply to this rule. For example, you could specify an open DNS server suspect of sending compromised resource records by adding an address object for that server to the member list.
Member	This box displays address objects that will apply to this rule.
OK	Click OK to save your customized settings and exit this screen.
Cancel	Click Cancel to exit this screen without saving

30.6.14 Adding a DNS Service Control Rule

Click the **Add** icon in the **Service Control** table to add a service control rule.

Figure 378 Configuration > System > DNS > Service Control Rule Add

The following table describes the labels in this screen.

Table 240 Configuration > System > DNS > Service Control Rule Add

LABEL	DESCRIPTION
Create new Object	Use this to configure any new settings objects that you need to use in this screen.
Address Object	Select ALL to allow or deny any computer to send DNS queries to the USG. Select a predefined address object to just allow or deny the computer with the IP address that you specified to send DNS queries to the USG.
Zone	Select ALL to allow or prevent DNS queries through any zones. Select a predefined zone on which a DNS query to the USG is allowed or denied.
Action	Select Accept to have the USG allow the DNS queries from the specified computer. Select Deny to have the USG reject the DNS queries from the specified computer.
OK	Click OK to save your customized settings and exit this screen.
Cancel	Click Cancel to exit this screen without saving

30.7 WWW Overview

The following figure shows secure and insecure management of the USG coming in from the WAN. HTTPS and SSH access are secure. HTTP and Telnet access are not secure.

Note: To allow the USG to be accessed from a specified computer using a service, make sure you do not have a service control rule or to-USG security policy rule to block that traffic.

To stop a service from accessing the USG, clear **Enable** in the corresponding service screen.

30.7.1 Service Access Limitations

A service cannot be used to access the USG when:

- 1 You have disabled that service in the corresponding screen.
- 2 The allowed IP address (address object) in the **Service Control** table does not match the client IP address (the USG disallows the session).

- 3 The IP address (address object) in the **Service Control** table is not in the allowed zone or the action is set to **Deny**.
- 4 There is a security policy rule that blocks it.

30.7.2 System Timeout

There is a lease timeout for administrators. The USG automatically logs you out if the management session remains idle for longer than this timeout period. The management session does not time out when a statistics screen is polling.

Each user is also forced to log in the USG for authentication again when the reauthentication time expires.

You can change the timeout settings in the **User/Group** screens.

30.7.3 HTTPS

You can set the USG to use HTTP or HTTPS (HTTPS adds security) for Web Configurator sessions. Specify which zones allow Web Configurator access and from which IP address the access can come.

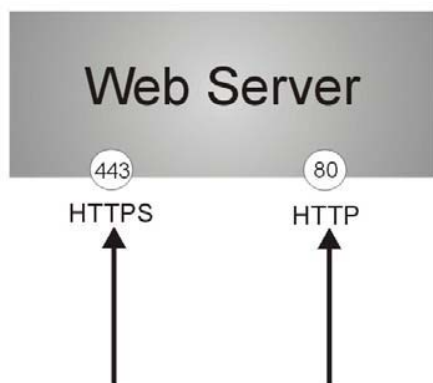
HTTPS (HyperText Transfer Protocol over Secure Socket Layer, or HTTP over SSL) is a web protocol that encrypts and decrypts web pages. Secure Socket Layer (SSL) is an application-level protocol that enables secure transactions of data by ensuring confidentiality (an unauthorized party cannot read the transferred data), authentication (one party can identify the other party) and data integrity (you know if data has been changed).

It relies upon certificates, public keys, and private keys.

HTTPS on the USG is used so that you can securely access the USG using the Web Configurator. The SSL protocol specifies that the HTTPS server (the USG) must always authenticate itself to the HTTPS client (the computer which requests the HTTPS connection with the USG), whereas the HTTPS client only should authenticate itself when the HTTPS server requires it to do so (select **Authenticate Client Certificates** in the **WWW** screen). **Authenticate Client Certificates** is optional and if selected means the HTTPS client must send the USG a certificate. You must apply for a certificate for the browser from a CA that is a trusted CA on the USG.

Please refer to the following figure.

- 1 HTTPS connection requests from an SSL-aware web browser go to port 443 (by default) on the USG's web server.
- 2 HTTP connection requests from a web browser go to port 80 (by default) on the USG's web server.

Figure 379 HTTP/HTTPS Implementation

Note: If you disable **HTTP** in the **WWW** screen, then the USG blocks all HTTP connection attempts.

30.7.4 Configuring WWW Service Control

Click **Configuration > System > WWW** to open the **WWW** screen. Use this screen to specify from which zones you can access the USG using HTTP or HTTPS. You can also specify which IP addresses the access can come from.

Note: **Admin Service Control** deals with management access (to the Web Configurator). **User Service Control** deals with user access to the USG (logging into SSL VPN for example).

Figure 380 Configuration > System > WWW > Service Control

The screenshot shows the 'Service Control' configuration page for the 'Login Page' under 'WWW'. It is divided into sections for 'HTTPS' and 'HTTP'.

HTTPS Section:

- Enable
- Server Port: 443
- Authenticate Client Certificates (See [Trusted CAs](#))
- Server Certificate: default
- Redirect HTTP to HTTPS

Admin Service Control (HTTPS):

#	Zone	Address	Action
-	ALL	ALL	accept

Page 1 of 1 | Show 50 items | Displaying 1 - 1 of 1

User Service Control (HTTPS):

#	Zone	Address	Action
-	ALL	ALL	accept

Page 1 of 1 | Show 50 items | Displaying 1 - 1 of 1

HTTP Section:

- Enable
- Server Port: 80

Admin Service Control (HTTP):

#	Zone	Address	Action
-	ALL	ALL	accept

Page 1 of 1 | Show 50 items | Displaying 1 - 1 of 1

User Service Control (HTTP):

#	Zone	Address	Action
-	ALL	ALL	accept

Page 1 of 1 | Show 50 items | Displaying 1 - 1 of 1

Authentication:

Client Authentication Method: default

Buttons: Apply, Reset

The following table describes the labels in this screen.

Table 241 Configuration > System > WWW > Service Control

LABEL	DESCRIPTION
HTTPS	
Enable	Select the check box to allow or disallow the computer with the IP address that matches the IP address(es) in the Service Control table to access the USG Web Configurator using secure HTTPs connections.
Server Port	The HTTPS server listens on port 443 by default. If you change the HTTPS server port to a different number on the USG, for example 8443, then you must notify people who need to access the USG Web Configurator to use "https://USG IP Address: 8443 " as the URL.

Table 241 Configuration > System > WWW > Service Control (continued)

LABEL	DESCRIPTION
Authenticate Client Certificates	Select Authenticate Client Certificates (optional) to require the SSL client to authenticate itself to the USG by sending the USG a certificate. To do that the SSL client must have a CA-signed certificate from a CA that has been imported as a trusted CA on the USG (see Section 30.7.7.5 on page 564 on importing certificates for details).
Server Certificate	Select a certificate the HTTPS server (the USG) uses to authenticate itself to the HTTPS client. You must have certificates already configured in the My Certificates screen.
Redirect HTTP to HTTPS	To allow only secure Web Configurator access, select this to redirect all HTTP connection requests to the HTTPS server.
Admin/User Service Control	Admin Service Control specifies from which zones an administrator can use HTTPS to manage the USG (using the Web Configurator). You can also specify the IP addresses from which the administrators can manage the USG. User Service Control specifies from which zones a user can use HTTPS to log into the USG (to log into SSL VPN for example). You can also specify the IP addresses from which the users can access the USG.
Add	Click this to create a new entry. Select an entry and click Add to create a new entry after the selected entry.
Edit	Double-click an entry or select it and click Edit to be able to modify the entry's settings.
Remove	To remove an entry, select it and click Remove . The USG confirms you want to remove it before doing so. Note that subsequent entries move up by one when you take this action.
Move	To change an entry's position in the numbered list, select the method and click Move to display a field to type a number for where you want to put it and press [ENTER] to move the rule to the number that you typed.
#	This is the index number of the service control rule. The entry with a hyphen (-) instead of a number is the USG's (non-configurable) default policy. The USG applies this to traffic that does not match any other configured rule. It is not an editable rule. To apply other behavior, configure a rule that traffic will match so the USG will not have to use the default policy.
Zone	This is the zone on the USG the user is allowed or denied to access.
Address	This is the object name of the IP address(es) with which the computer is allowed or denied to access.
Action	This displays whether the computer with the IP address specified above can access the USG zone(s) configured in the Zone field (Accept) or not (Deny).
HTTP	
Enable	Select the check box to allow or disallow the computer with the IP address that matches the IP address(es) in the Service Control table to access the USG Web Configurator using HTTP connections.
Server Port	You may change the server port number for a service if needed, however you must use the same port number in order to use that service to access the USG.
Admin/User Service Control	Admin Service Control specifies from which zones an administrator can use HTTP to manage the USG (using the Web Configurator). You can also specify the IP addresses from which the administrators can manage the USG. User Service Control specifies from which zones a user can use HTTP to log into the USG (to log into SSL VPN for example). You can also specify the IP addresses from which the users can access the USG.
Add	Click this to create a new entry. Select an entry and click Add to create a new entry after the selected entry.

Table 241 Configuration > System > WWW > Service Control (continued)

LABEL	DESCRIPTION
Edit	Double-click an entry or select it and click Edit to be able to modify the entry's settings.
Remove	To remove an entry, select it and click Remove . The USG confirms you want to remove it before doing so. Note that subsequent entries move up by one when you take this action.
Move	To change an entry's position in the numbered list, select the method and click Move to display a field to type a number for where you want to put it and press [ENTER] to move the rule to the number that you typed.
#	This is the index number of the service control rule. The entry with a hyphen (-) instead of a number is the USG's (non-configurable) default policy. The USG applies this to traffic that does not match any other configured rule. It is not an editable rule. To apply other behavior, configure a rule that traffic will match so the USG will not have to use the default policy.
Zone	This is the zone on the USG the user is allowed or denied to access.
Address	This is the object name of the IP address(es) with which the computer is allowed or denied to access.
Action	This displays whether the computer with the IP address specified above can access the USG zone(s) configured in the Zone field (Accept) or not (Deny).
Authentication	
Client Authentication Method	Select a method the HTTPS or HTTP server uses to authenticate a client. You must have configured the authentication methods in the Auth. method screen.
Apply	Click Apply to save your changes back to the USG.
Reset	Click Reset to return the screen to its last-saved settings.

30.7.5 Service Control Rules

Click **Add** or **Edit** in the **Service Control** table in a **WWW, SSH, Telnet, FTP** or **SNMP** screen to add a service control rule.

Figure 381 Configuration > System > Service Control Rule > Edit

The following table describes the labels in this screen.

Table 242 Configuration > System > Service Control Rule > Edit

LABEL	DESCRIPTION
Create new Object	Use this to configure any new settings objects that you need to use in this screen.
Address Object	Select ALL to allow or deny any computer to communicate with the USG using this service. Select a predefined address object to just allow or deny the computer with the IP address that you specified to access the USG using this service.

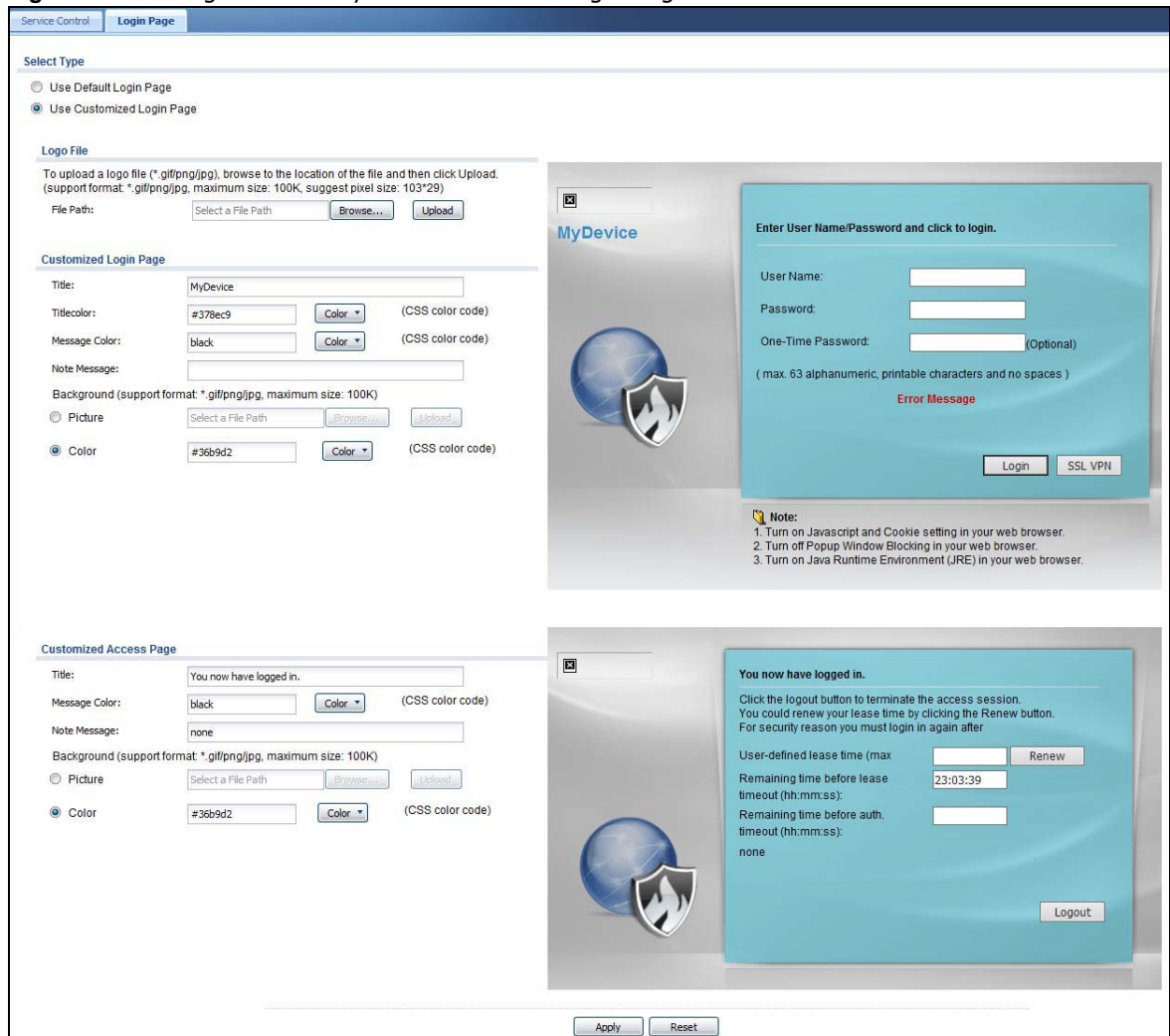
Table 242 Configuration > System > Service Control Rule > Edit

LABEL	DESCRIPTION
Zone	Select ALL to allow or prevent any USG zones from being accessed using this service. Select a predefined USG zone on which a incoming service is allowed or denied.
Action	Select Accept to allow the user to access the USG from the specified computers. Select Deny to block the user’s access to the USG from the specified computers.
OK	Click OK to save your customized settings and exit this screen.
Cancel	Click Cancel to exit this screen without saving

30.7.6 Customizing the WWW Login Page

Click **Configuration > System > WWW > Login Page** to open the **Login Page** screen. Use this screen to customize the Web Configurator login screen. You can also customize the page that displays after an access user logs into the Web Configurator to access network services like the Internet.

Figure 382 Configuration > System > WWW > Login Page



The following figures identify the parts you can customize in the login and access pages.

Figure 383 Login Page Customization

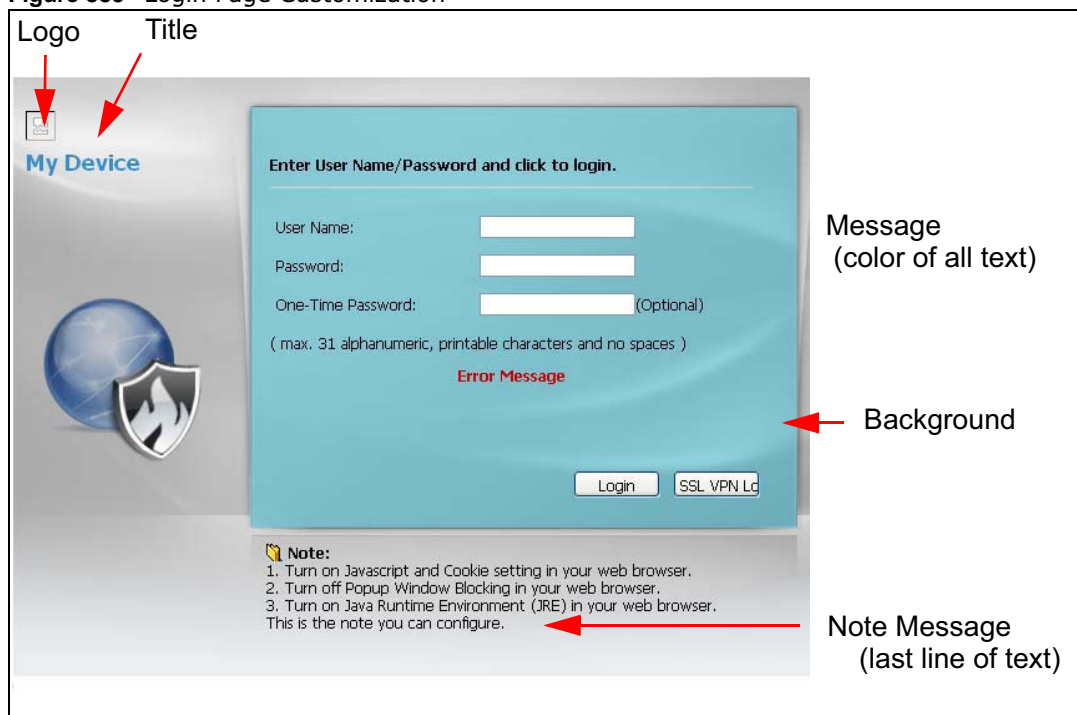
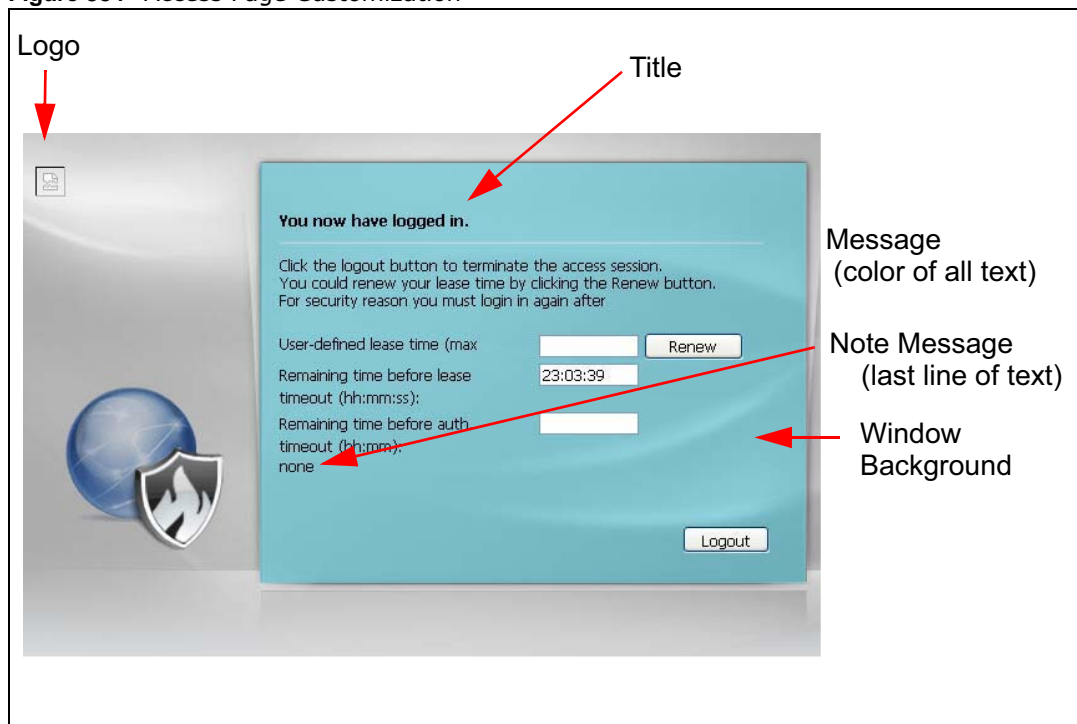


Figure 384 Access Page Customization



You can specify colors in one of the following ways:

- Click **Color** to display a screen of web-safe colors from which to choose.

- Enter the name of the desired color.
- Enter a pound sign (#) followed by the six-digit hexadecimal number that represents the desired color. For example, use "#000000" for black.
- Enter "rgb" followed by red, green, and blue values in parenthesis and separate by commas. For example, use "rgb(0,0,0)" for black.

Your desired color should display in the preview screen on the right after you click in another field, click **Apply**, or press [ENTER]. If your desired color does not display, your browser may not support it. Try selecting another color.

The following table describes the labels in the screen.

Table 243 Configuration > System > WWW > Login Page

LABEL	DESCRIPTION
Select Type	Select whether the Web Configurator uses the default login screen or one that you customize in the rest of this screen.
Logo File	You can upload a graphic logo to be displayed on the upper left corner of the Web Configurator login screen and access page. Specify the location and file name of the logo graphic or click Browse to locate it. Note: Use a GIF, JPG, or PNG of 100 kilobytes or less. Click Upload to transfer the specified graphic file from your computer to the USG.
Customized Login Page	Use this section to set how the Web Configurator login screen looks.
Title	Enter the title for the top of the screen. Use up to 64 printable ASCII characters. Spaces are allowed.
Title Color	Specify the color of the screen's title text.
Message Color	Specify the color of the screen's text.
Note Message	Enter a note to display at the bottom of the screen. Use up to 64 printable ASCII characters. Spaces are allowed.
Background	Set how the screen background looks. To use a graphic, select Picture and upload a graphic. Specify the location and file name of the logo graphic or click Browse to locate it. The picture's size cannot be over 438 x 337 pixels. Note: Use a GIF, JPG, or PNG of 100 kilobytes or less. To use a color, select Color and specify the color.
Customized Access Page	Use this section to customize the page that displays after an access user logs into the Web Configurator to access network services like the Internet.
Title	Enter the title for the top of the screen. Use up to 64 printable ASCII characters. Spaces are allowed.
Message Color	Specify the color of the screen's text.
Note Message	Enter a note to display below the title. Use up to 64 printable ASCII characters. Spaces are allowed.

Table 243 Configuration > System > WWW > Login Page

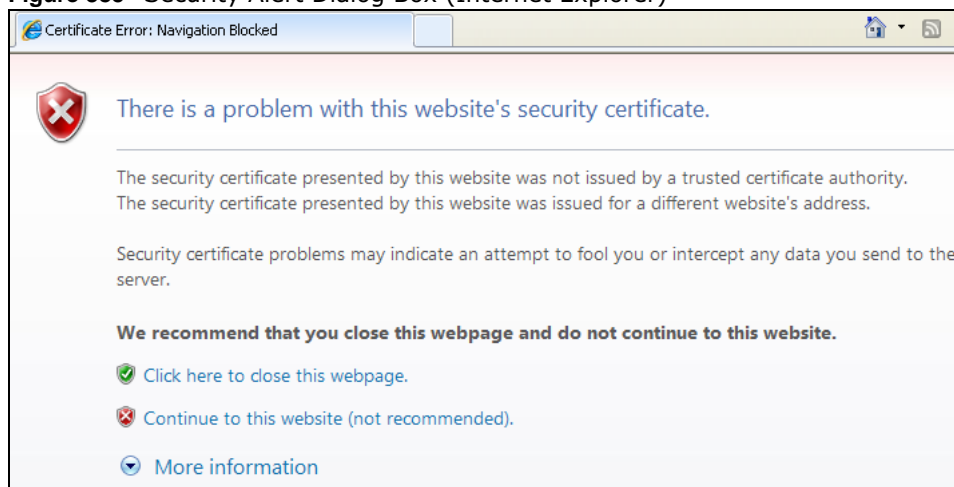
LABEL	DESCRIPTION
Background	<p>Set how the window's background looks.</p> <p>To use a graphic, select Picture and upload a graphic. Specify the location and file name of the logo graphic or click Browse to locate it. The picture's size cannot be over 438 x 337 pixels.</p> <p>Note: Use a GIF, JPG, or PNG of 100 kilobytes or less.</p> <p>To use a color, select Color and specify the color.</p>
Apply	Click Apply to save your changes back to the USG.
Reset	Click Reset to return the screen to its last-saved settings.

30.7.7 HTTPS Example

If you haven't changed the default HTTPS port on the USG, then in your browser enter "https://USG IP Address/" as the web site address where "USG IP Address" is the IP address or domain name of the USG you wish to access.

30.7.7.1 Internet Explorer Warning Messages

When you attempt to access the USG HTTPS server, you will see the error message shown in the following screen.

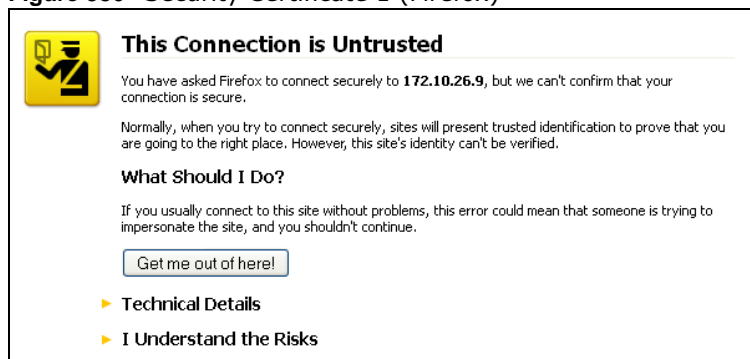
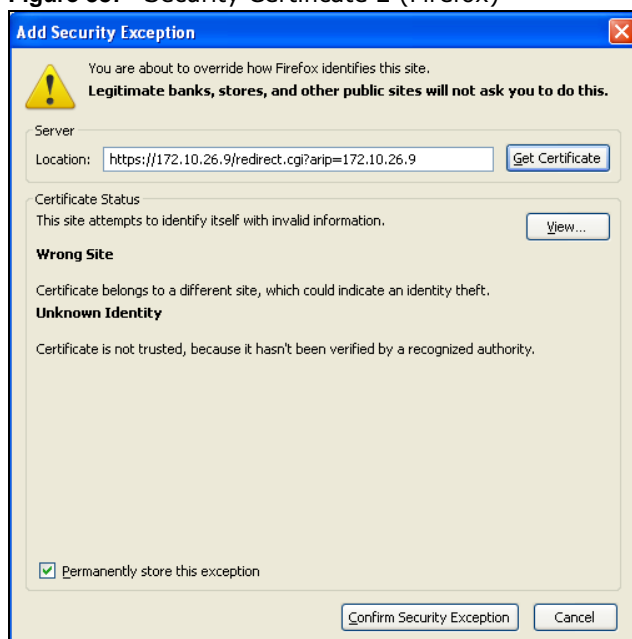
Figure 385 Security Alert Dialog Box (Internet Explorer)

Select **Continue to this website** to proceed to the Web Configurator login screen. Otherwise, select **Click here to close this webpage** to block the access.

30.7.7.2 Mozilla Firefox Warning Messages

When you attempt to access the USG HTTPS server, a **The Connection is Untrusted** screen appears as shown in the following screen. Click **Technical Details** if you want to verify more information about the certificate from the USG.

Select **I Understand the Risks** and then click **Add Exception** to add the USG to the security exception list. Click **Confirm Security Exception**.

Figure 386 Security Certificate 1 (Firefox)**Figure 387** Security Certificate 2 (Firefox)

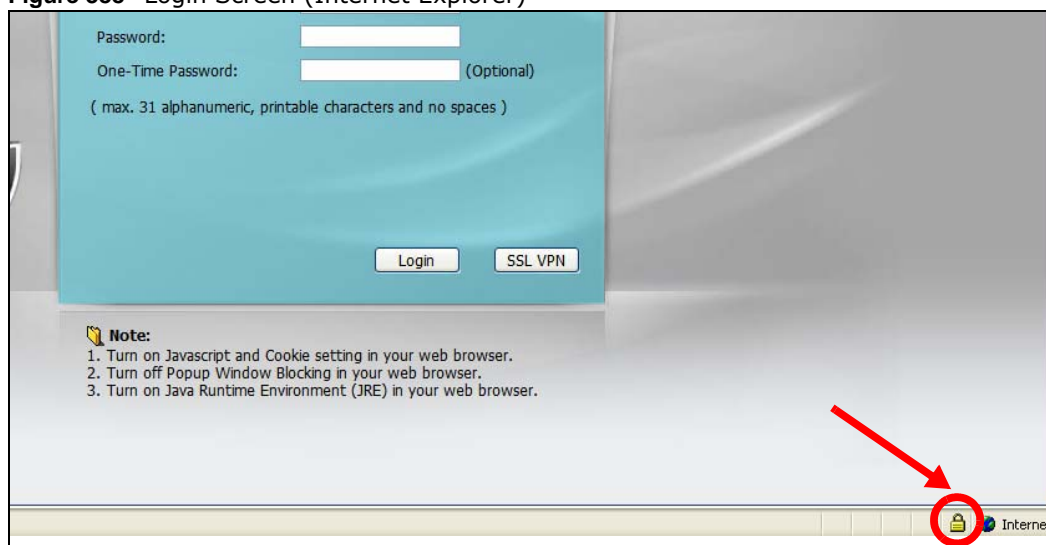
30.7.7.3 Avoiding Browser Warning Messages

Here are the main reasons your browser displays warnings about the USG's HTTPS server certificate and what you can do to avoid seeing the warnings:

- The issuing certificate authority of the USG's HTTPS server certificate is not one of the browser's trusted certificate authorities. The issuing certificate authority of the USG's factory default certificate is the USG itself since the certificate is a self-signed certificate.
- For the browser to trust a self-signed certificate, import the self-signed certificate into your operating system as a trusted certificate.
- To have the browser trust the certificates issued by a certificate authority, import the certificate authority's certificate into your operating system as a trusted certificate.

30.7.7.4 Login Screen

After you accept the certificate, the USG login screen appears. The lock displayed in the bottom of the browser status bar denotes a secure connection.

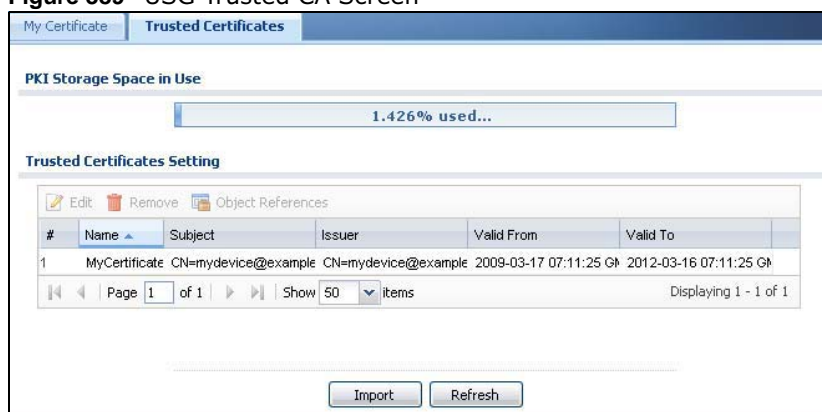
Figure 388 Login Screen (Internet Explorer)

30.7.7.5 Enrolling and Importing SSL Client Certificates

The SSL client needs a certificate if **Authenticate Client Certificates** is selected on the USG.

You must have imported at least one trusted CA to the USG in order for the **Authenticate Client Certificates** to be active (see the Certificates chapter for details).

Apply for a certificate from a Certification Authority (CA) that is trusted by the USG (see the USG's **Trusted CA** Web Configurator screen).

Figure 389 USG Trusted CA Screen

The CA sends you a package containing the CA's trusted certificate(s), your personal certificate(s) and a password to install the personal certificate(s).

30.7.7.5.1 Installing the CA's Certificate

- 1 Double click the CA's trusted certificate to produce a screen similar to the one shown next.

Figure 390 CA Certificate Example

- 2 Click **Install Certificate** and follow the wizard as shown earlier in this appendix.

30.7.7.5.2 Installing Your Personal Certificate(s)

You need a password in advance. The CA may issue the password or you may have to specify it during the enrollment. Double-click the personal certificate given to you by the CA to produce a screen similar to the one shown next

- 1 Click **Next** to begin the wizard.

Figure 391 Personal Certificate Import Wizard 1

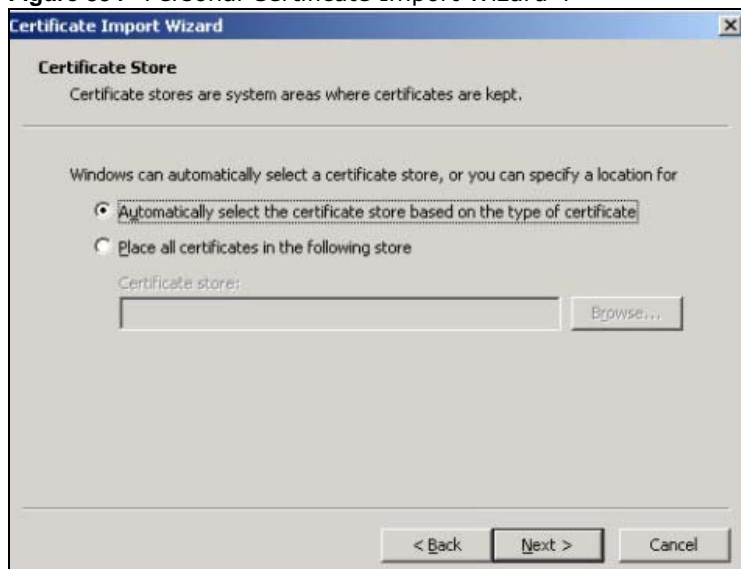
- 2 The file name and path of the certificate you double-clicked should automatically appear in the **File name** text box. Click **Browse** if you wish to import a different certificate.

Figure 392 Personal Certificate Import Wizard 2

- 3 Enter the password given to you by the CA.

Figure 393 Personal Certificate Import Wizard 3

- 4 Have the wizard determine where the certificate should be saved on your computer or select **Place all certificates in the following store** and choose a different location.

Figure 394 Personal Certificate Import Wizard 4

- 5 Click **Finish** to complete the wizard and begin the import process.

Figure 395 Personal Certificate Import Wizard 5

- 6 You should see the following screen when the certificate is correctly installed on your computer.

Figure 396 Personal Certificate Import Wizard 6

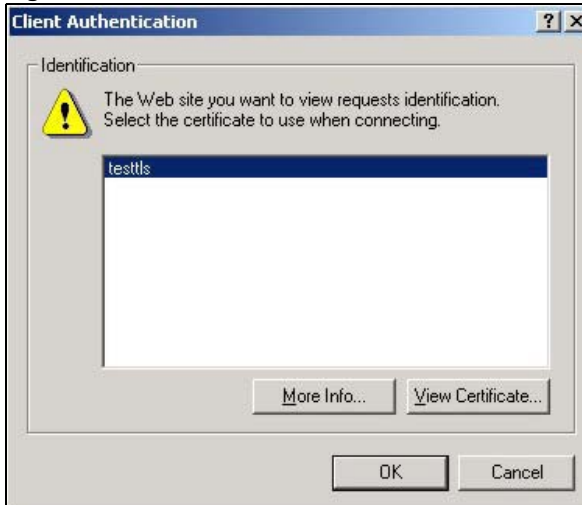
30.7.7.6 Using a Certificate When Accessing the USG Example

Use the following procedure to access the USG via HTTPS.

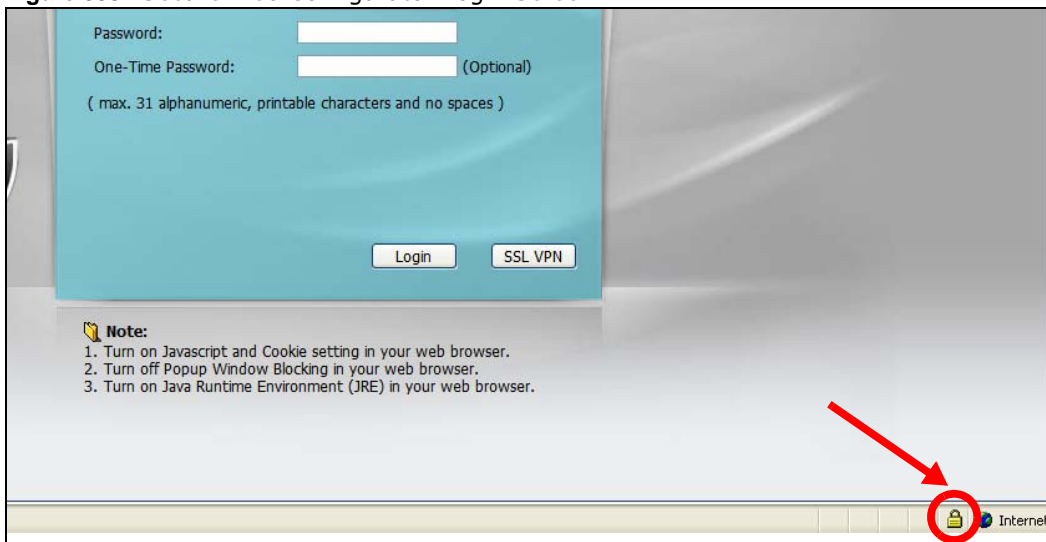
- 1 Enter 'https://USG IP Address/' in your browser's web address field.

Figure 397 Access the USG Via HTTPS

- 2 When **Authenticate Client Certificates** is selected on the USG, the following screen asks you to select a personal certificate to send to the USG. This screen displays even if you only have a single certificate as in the example.

Figure 398 SSL Client Authentication

- 3 You next see the Web Configurator login screen.

Figure 399 Secure Web Configurator Login Screen

30.8 SSH

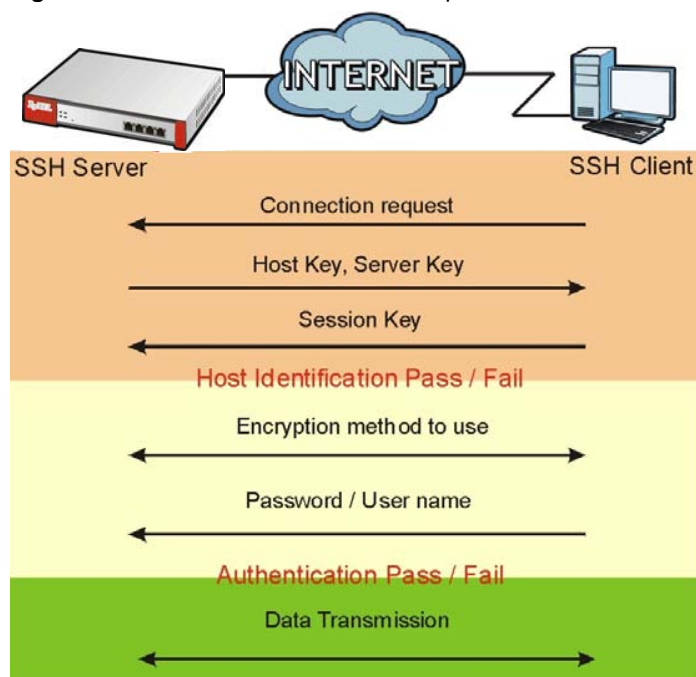
You can use SSH (Secure SHell) to securely access the USG's command line interface. Specify which zones allow SSH access and from which IP address the access can come.

SSH is a secure communication protocol that combines authentication and data encryption to provide secure encrypted communication between two hosts over an unsecured network. In the following figure, computer A on the Internet uses SSH to securely connect to the WAN port of the USG for a management session.

Figure 400 SSH Communication Over the WAN Example

30.8.1 How SSH Works

The following figure is an example of how a secure connection is established between two remote hosts using SSH v1.

Figure 401 How SSH v1 Works Example

1 Host Identification

The SSH client sends a connection request to the SSH server. The server identifies itself with a host key. The client encrypts a randomly generated session key with the host key and server key and sends the result back to the server.

The client automatically saves any new server public keys. In subsequent connections, the server public key is checked against the saved version on the client computer.

2 Encryption Method

Once the identification is verified, both the client and server must agree on the type of encryption method to use.

3 Authentication and Data Transmission

After the identification is verified and data encryption activated, a secure tunnel is established between the client and the server. The client then sends its authentication information (user name and password) to the server to log in to the server.

30.8.2 SSH Implementation on the USG

Your USG supports SSH versions 1 and 2 using RSA authentication and four encryption methods (AES, 3DES, Archfour, and Blowfish). The SSH server is implemented on the USG for management using port 22 (by default).

30.8.3 Requirements for Using SSH

You must install an SSH client program on a client computer (Windows or Linux operating system) that is used to connect to the USG over SSH.

30.8.4 Configuring SSH

Click **Configuration > System > SSH** to change your USG's Secure Shell settings. Use this screen to specify from which zones SSH can be used to manage the USG. You can also specify from which IP addresses the access can come.

Figure 402 Configuration > System > SSH

The following table describes the labels in this screen.

Table 244 Configuration > System > SSH

LABEL	DESCRIPTION
Enable	Select the check box to allow or disallow the computer with the IP address that matches the IP address(es) in the Service Control table to access the USG CLI using this service.
Version 1	Select the check box to have the USG use both SSH version 1 and version 2 protocols. If you clear the check box, the USG uses only SSH version 2 protocol.
Server Port	You may change the server port number for a service if needed, however you must use the same port number in order to use that service for remote management.
Server Certificate	Select the certificate whose corresponding private key is to be used to identify the USG for SSH connections. You must have certificates already configured in the My Certificates screen.
Service Control	This specifies from which computers you can access which USG zones.

Table 244 Configuration > System > SSH (continued)

LABEL	DESCRIPTION
Add	Click this to create a new entry. Select an entry and click Add to create a new entry after the selected entry. Refer to Table 242 on page 558 for details on the screen that opens.
Edit	Double-click an entry or select it and click Edit to be able to modify the entry's settings.
Remove	To remove an entry, select it and click Remove . The USG confirms you want to remove it before doing so. Note that subsequent entries move up by one when you take this action.
Move	To change an entry's position in the numbered list, select the method and click Move to display a field to type a number for where you want to put it and press [ENTER] to move the rule to the number that you typed.
#	This the index number of the service control rule.
Zone	This is the zone on the USG the user is allowed or denied to access.
Address	This is the object name of the IP address(es) with which the computer is allowed or denied to access.
Action	This displays whether the computer with the IP address specified above can access the USG zone(s) configured in the Zone field (Accept) or not (Deny).
Apply	Click Apply to save your changes back to the USG.
Reset	Click Reset to return the screen to its last-saved settings.

30.8.5 Secure Telnet Using SSH Examples

This section shows two examples using a command interface and a graphical interface SSH client program to remotely access the USG. The configuration and connection steps are similar for most SSH client programs. Refer to your SSH client program user's guide.

30.8.5.1 Example 1: Microsoft Windows

This section describes how to access the USG using the Secure Shell Client program.

- 1 Launch the SSH client and specify the connection information (IP address, port number) for the USG.
- 2 Configure the SSH client to accept connection using SSH version 1.
- 3 A window displays prompting you to store the host key in you computer. Click **Yes** to continue.

Figure 403 SSH Example 1: Store Host Key

Enter the password to log in to the USG. The CLI screen displays next.

30.8.5.2 Example 2: Linux

This section describes how to access the USG using the OpenSSH client program that comes with most Linux distributions.

- 1 Test whether the SSH service is available on the USG.

Enter `telnet 192.168.1.1 22` at a terminal prompt and press [ENTER]. The computer attempts to connect to port 22 on the USG (using the default IP address of 192.168.1.1).

A message displays indicating the SSH protocol version supported by the USG.

Figure 404 SSH Example 2: Test

```
$ telnet 192.168.1.1 22
Trying 192.168.1.1...
Connected to 192.168.1.1.
Escape character is '^]'.
SSH-1.5-1.0.0
```

- 2 Enter `ssh -1 192.168.1.1`. This command forces your computer to connect to the USG using SSH version 1. If this is the first time you are connecting to the USG using SSH, a message displays prompting you to save the host information of the USG. Type `yes` and press [ENTER].

Then enter the password to log in to the USG.

Figure 405 SSH Example 2: Log in

```
$ ssh -1 192.168.1.1
The authenticity of host '192.168.1.1 (192.168.1.1)' can't be established.
RSA1 key fingerprint is 21:6c:07:25:7e:f4:75:80:ec:af:bd:d4:3d:80:53:d1.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '192.168.1.1' (RSA1) to the list of known hosts.
Administrator@192.168.1.1's password:
```

- 3 The CLI screen displays next.

30.9 Telnet

You can use Telnet to access the USG's command line interface. Specify which zones allow Telnet access and from which IP address the access can come.

30.9.1 Configuring Telnet

Click **Configuration > System > TELNET** to configure your USG for remote Telnet access. Use this screen to specify from which zones Telnet can be used to manage the USG. You can also specify from which IP addresses the access can come.

Figure 406 Configuration > System > TELNET

The following table describes the labels in this screen.

Table 245 Configuration > System > TELNET

LABEL	DESCRIPTION
Enable	Select the check box to allow or disallow the computer with the IP address that matches the IP address(es) in the Service Control table to access the USG CLI using this service.
Server Port	You may change the server port number for a service if needed, however you must use the same port number in order to use that service for remote management.
Service Control	This specifies from which computers you can access which USG zones.
Add	Click this to create a new entry. Select an entry and click Add to create a new entry after the selected entry. Refer to Table 242 on page 558 for details on the screen that opens.
Edit	Double-click an entry or select it and click Edit to be able to modify the entry's settings.
Remove	To remove an entry, select it and click Remove . The USG confirms you want to remove it before doing so. Note that subsequent entries move up by one when you take this action.
Move	To change an entry's position in the numbered list, select the method and click Move to display a field to type a number for where you want to put it and press [ENTER] to move the rule to the number that you typed.
#	This is the index number of the service control rule. The entry with a hyphen (-) instead of a number is the USG's (non-configurable) default policy. The USG applies this to traffic that does not match any other configured rule. It is not an editable rule. To apply other behavior, configure a rule that traffic will match so the USG will not have to use the default policy.
Zone	This is the zone on the USG the user is allowed or denied to access.
Address	This is the object name of the IP address(es) with which the computer is allowed or denied to access.
Action	This displays whether the computer with the IP address specified above can access the USG zone(s) configured in the Zone field (Accept) or not (Deny).
Apply	Click Apply to save your changes back to the USG.
Reset	Click Reset to return the screen to its last-saved settings.

30.10 FTP

You can upload and download the USG's firmware and configuration files using FTP. To use this feature, your computer must have an FTP client.

30.10.1 Configuring FTP

To change your USG's FTP settings, click **Configuration > System > FTP** tab. The screen appears as shown. Use this screen to specify from which zones FTP can be used to access the USG. You can also specify from which IP addresses the access can come.

Figure 407 Configuration > System > FTP

The screenshot shows the 'FTP' configuration page. Under 'General Settings', 'Enable' is checked, 'TLS required' is unchecked, 'Server Port' is set to 21, and 'Server Certificate' is set to 'default'. The 'Service Control' section contains a table with one entry: Zone: ALL, Address: ALL, Action: Accept. The table has columns for #, Zone, Address, and Action. Below the table are 'Apply' and 'Reset' buttons.

The following table describes the labels in this screen.

Table 246 Configuration > System > FTP

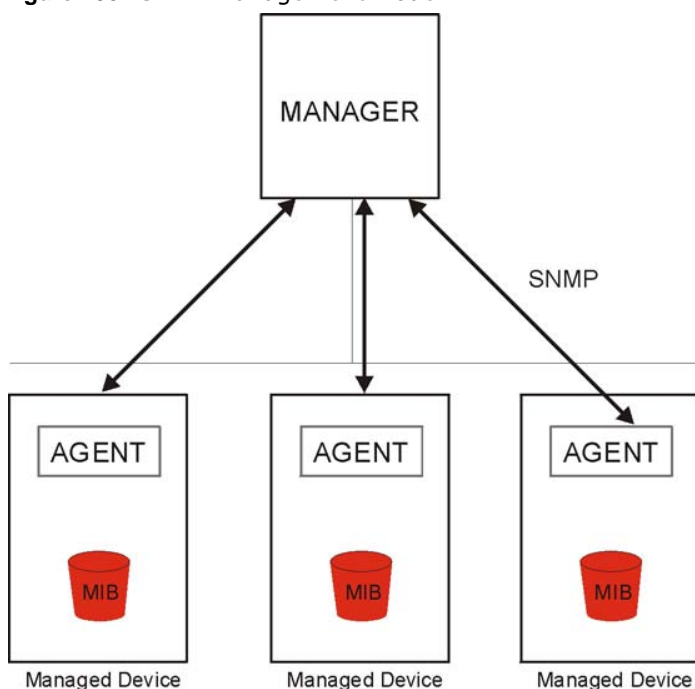
LABEL	DESCRIPTION
Enable	Select the check box to allow or disallow the computer with the IP address that matches the IP address(es) in the Service Control table to access the USG using this service.
TLS required	Select the check box to use FTP over TLS (Transport Layer Security) to encrypt communication. This implements TLS as a security mechanism to secure FTP clients and/or servers.
Server Port	You may change the server port number for a service if needed, however you must use the same port number in order to use that service for remote management.
Server Certificate	Select the certificate whose corresponding private key is to be used to identify the USG for FTP connections. You must have certificates already configured in the My Certificates screen.
Service Control	This specifies from which computers you can access which USG zones.
Add	Click this to create a new entry. Select an entry and click Add to create a new entry after the selected entry. Refer to Table 242 on page 558 for details on the screen that opens.
Edit	Double-click an entry or select it and click Edit to be able to modify the entry's settings.
Remove	To remove an entry, select it and click Remove . The USG confirms you want to remove it before doing so. Note that subsequent entries move up by one when you take this action.

Table 246 Configuration > System > FTP (continued)

LABEL	DESCRIPTION
Move	To change an entry's position in the numbered list, select the method and click Move to display a field to type a number for where you want to put it and press [ENTER] to move the rule to the number that you typed.
#	This the index number of the service control rule. The entry with a hyphen (-) instead of a number is the USG's (non-configurable) default policy. The USG applies this to traffic that does not match any other configured rule. It is not an editable rule. To apply other behavior, configure a rule that traffic will match so the USG will not have to use the default policy.
Zone	This is the zone on the USG the user is allowed or denied to access.
Address	This is the object name of the IP address(es) with which the computer is allowed or denied to access.
Action	This displays whether the computer with the IP address specified above can access the USG zone(s) configured in the Zone field (Accept) or not (Deny).
Apply	Click Apply to save your changes back to the USG.
Reset	Click Reset to return the screen to its last-saved settings.

30.11 SNMP

Simple Network Management Protocol is a protocol used for exchanging management information between network devices. Your USG supports SNMP agent functionality, which allows a manager station to manage and monitor the USG through the network. The USG supports SNMP version one (SNMPv1), version two (SNMPv2c) and version 3 (SNMPv3). The next figure illustrates an SNMP management operation.

Figure 408 SNMP Management Model

An SNMP managed network consists of two main types of component: agents and a manager.

An agent is a management software module that resides in a managed device (the USG). An agent translates the local management information from the managed device into a form compatible with SNMP. The manager is the console through which network administrators perform network management functions. It executes applications that control and monitor managed devices.

The managed devices contain object variables/managed objects that define each piece of information to be collected about a device. Examples of variables include such as number of packets received, node port status etc. A Management Information Base (MIB) is a collection of managed objects. SNMP allows a manager and agents to communicate for the purpose of accessing these objects.

SNMP itself is a simple request/response protocol based on the manager/agent model. The manager issues a request and the agent returns responses using the following protocol operations:

- Get - Allows the manager to retrieve an object variable from the agent.
- GetNext - Allows the manager to retrieve the next object variable from a table or list within an agent. In SNMPv1, when a manager wants to retrieve all elements of a table from an agent, it initiates a Get operation, followed by a series of GetNext operations.
- Set - Allows the manager to set values for object variables within an agent.
- Trap - Used by the agent to inform the manager of some events.

30.11.1 SNMPv3 and Security

SNMPv3 enhances security for SNMP management using authentication and encryption. SNMP managers can be required to authenticate with agents before conducting SNMP management sessions.

Security can be further enhanced by encrypting the SNMP messages sent from the managers. Encryption protects the contents of the SNMP messages. When the contents of the SNMP messages are encrypted, only the intended recipients can read them.

30.11.2 Supported MIBs

The USG supports MIB II that is defined in RFC-1213 and RFC-1215. The USG also supports private MIBs (zywall.mib and zyxel-zywall-ZLD-Common.mib) to collect information about CPU and memory usage and VPN total throughput. The focus of the MIBs is to let administrators collect statistical data and monitor status and performance. You can download the USG's MIBs from www.zyxel.com.

30.11.3 SNMP Traps

The USG will send traps to the SNMP manager when any one of the following events occurs.

Table 247 SNMP Traps

OBJECT LABEL	OBJECT ID	DESCRIPTION
Cold Start	1.3.6.1.6.3.1.1.5.1	This trap is sent when the USG is turned on or an agent restarts.
linkDown	1.3.6.1.6.3.1.1.5.3	This trap is sent when the Ethernet link is down.

Table 247 SNMP Traps (continued)

OBJECT LABEL	OBJECT ID	DESCRIPTION
linkUp	1.3.6.1.6.3.1.1.5.4	This trap is sent when the Ethernet link is up.
authenticationFailure	1.3.6.1.6.3.1.1.5.5	This trap is sent when an SNMP request comes from non-authenticated hosts.
vpnTunnelDisconnected	1.3.6.1.4.1.890.1.6.22.2.3	This trap is sent when an IPsec VPN tunnel is disconnected.
vpnTunnelName	1.3.6.1.4.1.890.1.6.22.2.2.1.1	This trap is sent along with the vpnTunnelDisconnected trap. This trap carries the disconnected tunnel's IPsec SA name.
vpnIKENAME	1.3.6.1.4.1.890.1.6.22.2.2.1.2	This trap is sent along with the vpnTunnelDisconnected trap. This trap carries the disconnected tunnel's IKE SA name.
vpnTunnelSPI	1.3.6.1.4.1.890.1.6.22.2.2.1.3	This trap is sent along with the vpnTunnelDisconnected trap. This trap carries the security parameter index (SPI) of the disconnected VPN tunnel.

30.11.4 Configuring SNMP

To change your USG's SNMP settings, click **Configuration > System > SNMP** tab. The screen appears as shown. Use this screen to configure your SNMP settings, including from which zones SNMP can be used to access the USG. You can also specify from which IP addresses the access can come.

Figure 409 Configuration > System > SNMP

The screenshot shows the SNMP configuration interface. The 'General Settings' section includes:

- Enable
- Server Port: 161
- Trap:
 - Community: (Optional)
 - Destination: (Optional)
- Trap CAPWAP Event
- SNMPv2c
 - Get Community: public
 - Set Community: private
- SNMPv3

The table below the settings is empty, showing 'No data to display'.

The 'Service Control' section includes a table with the following data:

#	Zone	Address	Action
-	ALL	ALL	Accept

At the bottom of the page are 'Apply' and 'Reset' buttons.

The following table describes the labels in this screen.

Table 248 Configuration > System > SNMP

LABEL	DESCRIPTION
Enable	Select the check box to allow or disallow the computer with the IP address that matches the IP address(es) in the Service Control table to access the USG using this service.
Server Port	You may change the server port number for a service if needed, however you must use the same port number in order to use that service for remote management.
Trap	
Community	Type the trap community, which is the password sent with each trap to the SNMP manager. The default is public and allows all requests.
Destination	Type the IP address of the station to send your SNMP traps to.
SNMPv2c	Select the SNMP version for the USG. The SNMP version on the USG must match the version on the SNMP manager.
Get Community	Enter the Get Community , which is the password for the incoming Get and GetNext requests from the management station. The default is public and allows all requests.
Set Community	Enter the Set community , which is the password for incoming Set requests from the management station. The default is private and allows all requests.
SNMPv3	Select the SNMP version for the USG. The SNMP version on the USG must match the version on the SNMP manager. SNMPv3 (RFCs 3413 to 3415) provides secure access by authenticating and encrypting data packets over the network. The USG uses your login password as the SNMPv3 authentication and encryption passphrase. Note: Your login password must consist of at least 8 printable characters for SNMPv3. An error message will display if your login password has fewer characters.
Add	Click this to create a new entry. Select an entry and click Add to create a new entry after the selected entry
Edit	Double-click an entry or select it and click Edit to be able to modify the entry's settings.
Remove	To remove an entry, select it and click Remove . The USG confirms you want to remove it before doing so. Note that subsequent entries move up by one when you take this action.
#	This is the index number of the entry.
User	This displays the name of the user object to be sent to the SNMP manager along with the SNMP v3 trap.
Authentication	This displays the authentication algorithm used for this entry. MD5 (Message Digest 5) and SHA (Secure Hash Algorithm) are hash algorithms used to authenticate SNMP data. SHA authentication is generally considered stronger than MD5, but is slower.
Privacy	This displays the encryption method for SNMP communication from this user. Methods available are: <ul style="list-style-type: none"> • DES - Data Encryption Standard is a widely used (but breakable) method of data encryption. It applies a 56-bit key to each 64-bit block of data. • AES - Advanced Encryption Standard is another method for data encryption that also uses a secret key. AES applies a 128-bit key to 128-bit blocks of data.
Privilege	This displays the access rights to MIBs. <ul style="list-style-type: none"> • Read-Write - The associated user can create and edit the MIBs on the USG, except the user account. • Read-Only - The associated user can only collect information from the USG MIBs.
Service Control	This specifies from which computers you can access which USG zones.
Add	Click this to create a new entry. Select an entry and click Add to create a new entry after the selected entry. Refer to Table 242 on page 558 for details on the screen that opens.
Edit	Double-click an entry or select it and click Edit to be able to modify the entry's settings.
Remove	To remove an entry, select it and click Remove . The USG confirms you want to remove it before doing so. Note that subsequent entries move up by one when you take this action.

Table 248 Configuration > System > SNMP (continued)

LABEL	DESCRIPTION
Move	To change an entry's position in the numbered list, select the method and click Move to display a field to type a number for where you want to put it and press [ENTER] to move the rule to the number that you typed.
#	This the index number of the service control rule. The entry with a hyphen (-) instead of a number is the USG's (non-configurable) default policy. The USG applies this to traffic that does not match any other configured rule. It is not an editable rule. To apply other behavior, configure a rule that traffic will match so the USG will not have to use the default policy.
Zone	This is the zone on the USG the user is allowed or denied to access.
Address	This is the object name of the IP address(es) with which the computer is allowed or denied to access.
Action	This displays whether the computer with the IP address specified above can access the USG zone(s) configured in the Zone field (Accept) or not (Deny).
Apply	Click Apply to save your changes back to the USG.
Reset	Click Reset to return the screen to its last-saved settings.

30.12 Authentication Server

You can set the USG to work as a RADIUS server to exchange messages with a RADIUS client, such as an AP for user authentication and authorization. Click **Configuration > System > Auth. Server** tab. The screen appears as shown. Use this screen to enable the authentication server feature of the USG and specify the RADIUS client's IP address.

Figure 410 Configuration > System > Auth. Server

The screenshot shows the 'Auth. Server' configuration page. Under 'General Settings', the 'Enable Authentication Server' checkbox is checked. The 'Authentication Server Certificate' is set to 'default' and the 'Authentication Method' is also set to 'default'. The 'Trusted Client' section displays a table with the following data:

#	Status	Profile Name	IP Address	Mask	Description
1	On	test	172.16.1.11	255.255.255.0	

At the bottom of the page, there are 'Apply' and 'Reset' buttons.

The following table describes the labels in this screen.

Table 249 Configuration > System > Auth. Server

LABEL	DESCRIPTION
Enable Authentication Server	Select the check box to have the USG act as a RADIUS server.
Authentication Server Certificate	Select the certificate whose corresponding private key is to be used to identify the USG to the RADIUS client. You must have certificates already configured in the My Certificates screen.
Authentication Method	Select an authentication method if you have created any in the Configuration > Object > Auth. Method screen.
Trusted Client	Use this section to configure trusted clients in the USG RADIUS server database.
Add	Click this to create a new entry. Select an entry and click Add to create a new entry after the selected entry.
Edit	Double-click an entry or select it and click Edit to be able to modify the entry's settings.
Remove	To remove an entry, select it and click Remove . The USG confirms you want to remove it before doing so. Note that subsequent entries move up by one when you take this action.
Activate	To turn on an entry, select it and click Activate .
Inactivate	To turn off an entry, select it and click Inactivate .
#	This is the index number of the entry.
Status	This icon is lit when the entry is active and dimmed when the entry is inactive.
Profile Name	This field indicates the name assigned to the profile.
IP Address	This is the IP address of the RADIUS client that is allowed to exchange messages with the USG.
Mask	This is the subnet mask of the RADIUS client.
Description	This is the description of the RADIUS client.
Apply	Click Apply to save your changes back to the USG.
Reset	Click Reset to return the screen to its last-saved settings.

30.12.1 Add/Edit Trusted RADIUS Client

Click **Configuration > System > Auth. Server** to display the **Auth. Server** screen. Click the **Add** icon or an **Edit** icon to display the following screen. Use this screen to create a new entry or edit an existing one.

Figure 411 Configuration > System > Auth. Server > Add/Edit

The following table describes the labels in this screen.

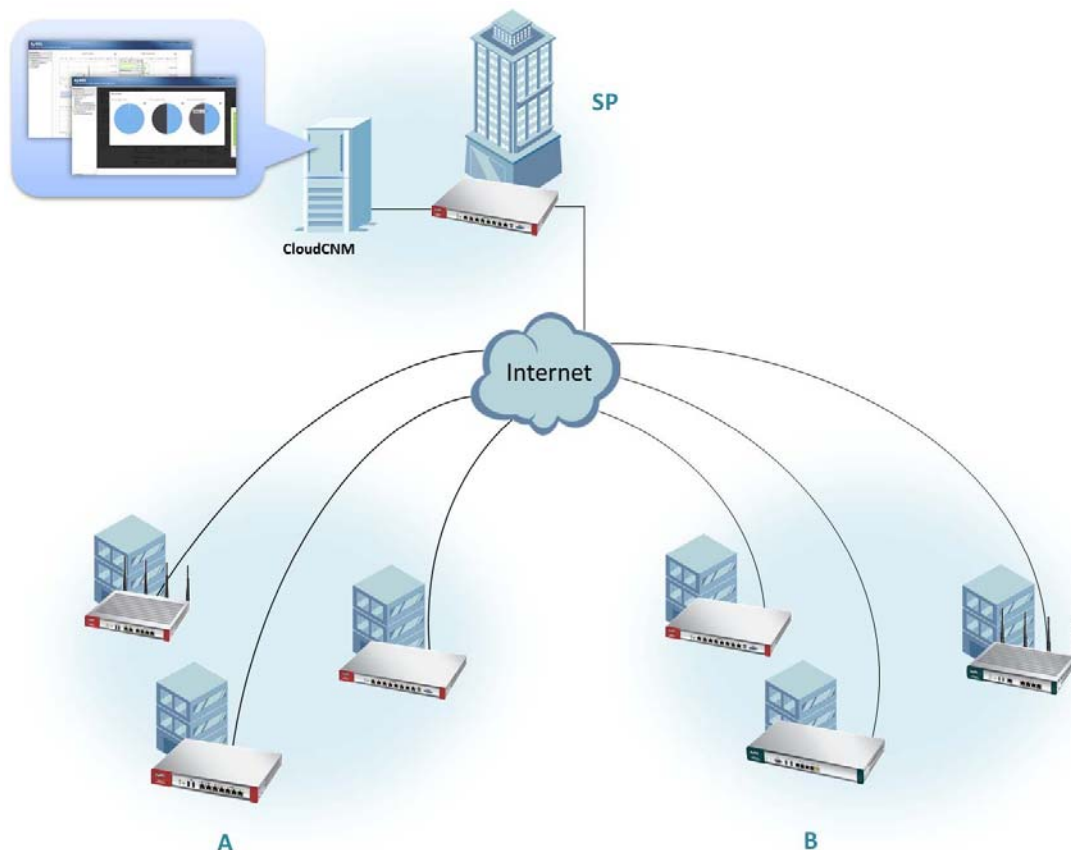
Table 250 Configuration > System > Auth. Server > Add/Edit

LABEL	DESCRIPTION
Activate	Select this check box to make this profile active.
Profile Name	Enter a descriptive name (up to 31 alphanumerical characters) for identification purposes.
IP Address	Enter the IP address of the RADIUS client that is allowed to exchange messages with the USG.
Netmask	Enter the subnet mask of the RADIUS client.
Secret	Enter a password (up to 64 alphanumeric characters) as the key to be shared between the USG and the RADIUS client. The key is not sent over the network. This key must be the same on the external authentication server and the USG.
Description	Enter the description of each server, if any. You can use up to 60 printable ASCII characters.
OK	Click OK to save the changes.
Cancel	Click Cancel to discard the changes.

30.13 CloudCNM Screen

CloudCNM is a cloud-based network management system that allows management and monitoring of ZyWALL/USG/UAG security gateways with firmware that supports the TR-069 protocol.

In the following figure, SP is the management service provider, while A and B are sites with devices being managed by SP.

Figure 412 CloudCNM Example Network Topology

CloudCNM features include:

- Batch import of managed devices at one time using one CSV file
- See an overview of all managed devices and system information in one place
- Monitor and manage devices
- Install firmware to multiple devices of the same model at one time
- Backup and restore device configuration
- View the location of managed devices on a map
- Receive notification for events and alarms, such as when a device goes down
- Graphically monitor individual devices and see related statistics
- Directly access a device for remote configuration
- Create four types of administrators with different privileges
- Perform Site-to-Site, Hub & Spoke, Fully-meshed and Remote Access VPN provisioning.

To allow CloudCNM management of your USG:

- You must have a CloudCNM license with CNM ID number or a CloudCNM URL identifying the server.
- The USG must be able to communicate with the CloudCNM server.

You must configure **Configuration > System > CloudCNM** to allow the USG to find the CloudCNM server.

Figure 413 Configuration > System > CloudCNM

The following table describes the labels in this screen.

Table 251 Configuration > System > CloudCNM

LABEL	DESCRIPTION
Show Advanced Settings / Hide Advanced Settings	Click this button to display a greater or lesser number of configuration fields.
Enable	Select this to allow management of the USG by CloudCNM.
Auto	Select this if your CloudCNM server can access MyZyXEL.com and you have a CNM ID from the CloudCNM license.
CNM ID	Enter the CNM ID exactly as on the CloudCNM license.
CNM URL	MyZyXEL.com associates the CNM ID with the CNM URL which identifies the server on which CloudCNM is installed. Therefore you don't need to enter the CNM URL when you select Auto .
Custom	Select this if your CloudCNM server cannot access MyZyXEL.com.
CNM URL	If your USG server cannot access MyZyXEL.com, then select Custom and enter the IPv4 IP address of the CloudCNM server followed by the port number (default 7547 for HTTPS or 7549 for HTTP) in CNM URL . For example, if you installed CloudCNM on a server with IP address 1.1.1.1, then enter 1.1.1.1:7547 or 1.1.1.1:7549 as the CNM URL .
Transfer Protocol	Choose the CNM URL protocol: HTTP or HTTPS . If you enter 1.1.1.1:7547 as the CNM URL , you must choose HTTPS as the Transfer Protocol , and then the whole CNM URL is https://1.1.1.1:7547. If you enter 1.1.1.1:7549 as the CNM URL , you must choose HTTP as the Transfer Protocol , and then the whole CNM URL is http://1.1.1.1:7549.
Periodic Inform	Enable this to have the USG inform the CloudCNM server of its presence at regular intervals.
Interval	Type how often the USG should inform CloudCNM server of its presence.
Apply	Click Apply to save your changes back to the USG.
Reset	Click Reset to return the screen to its last-saved settings.

Note: See the CloudCNM User Guide for more information on CloudCNM.

30.14 Language Screen

Click **Configuration > System > Language** to open the following screen. Use this screen to select a display language for the USG's Web Configurator screens.

Figure 414 Configuration > System > Language

The following table describes the labels in this screen.

Table 252 Configuration > System > Language

LABEL	DESCRIPTION
Language Setting	Select a display language for the USG's Web Configurator screens. You also need to open a new browser session to display the screens in the new language.
Apply	Click Apply to save your changes back to the USG.
Reset	Click Reset to return the screen to its last-saved settings.

30.15 IPv6 Screen

Click **Configuration > System > IPv6** to open the following screen. Use this screen to enable IPv6 support for the USG's Web Configurator screens.

Figure 415 Configuration > System > IPv6

The following table describes the labels in this screen.

Table 253 Configuration > System > IPv6

LABEL	DESCRIPTION
Enable IPv6	Select this to have the USG support IPv6 and make IPv6 settings be available on the screens that the functions support, such as the Configuration > Network > Interface > Ethernet, VLAN, and Bridge screens. The USG discards all IPv6 packets if you clear this check box.
Apply	Click Apply to save your changes back to the USG.
Reset	Click Reset to return the screen to its last-saved settings.

30.16 ZyXEL One Network (ZON) Utility

The ZyXEL One Network (ZON) utility uses the ZyXEL Discovery Protocol (ZDP) for discovering and configuring ZDP-aware ZyXEL devices in the same broadcast domain as the computer on which ZON is installed.

The ZON Utility issues requests via ZDP and in response to the query, the ZyXEL device responds with basic information including IP address, firmware version, location, system and model name. The information is then displayed in the ZON Utility screen and you can perform tasks like basic configuration of the devices and batch firmware upgrade in it. You can download the ZON Utility at www.zyxel.com and install it on a computer.

The following figure shows the ZON Utility screen.

Figure 416 ZON Utility Screen



In the ZON Utility, select a device and then use the icons to perform actions. The following table describes the icons numbered from left to right in the ZON Utility screen.

Table 254 ZON Utility Icons

ICON	DESCRIPTION
1 IP configuration	Change the selected device's IP address. This is not supported by the USG at the time of writing.
2 Renew IP	Update a DHCP-assigned dynamic IP address. This is not supported by the USG at the time of writing.
3 Reboot Device	Use this icon to restart the selected device(s). This may be useful when troubleshooting or upgrading new firmware.
4 Flash Locator LED	Use this icon to locate the selected device by causing its Locator LED to blink. This is not available on the USG at the time of writing.
5 Web GUI	Use this to access the selected device web configurator from your browser. You will need a username and password to log in.
6 Firmware Upgrade	Use this icon to upgrade new firmware to selected device(s) of the same model. Make sure you have downloaded the firmware from the ZyXEL website to your computer and unzipped it in advance.
7 Change Admin Password	Use this icon to change the admin password of the selected device. You must know the current admin password before changing to a new one.
8 ZAC	Use this icon to run the ZyXEL AP Configurator of the selected AP. This is not supported by the USG at the time of writing.
9 Discovery	You should use this icon first to display all connected devices in the same network as your computer.
10 Save Configuration	Use this icon to save configuration changes to permanent memory on a selected device. This is not needed by the USG at the time of writing.
11 Settings	Use this icon to select a network adaptor for the computer on which the ZON utility is installed, and the utility language.

The following table describes the fields in the ZON Utility main screen.

Table 255 ZON Utility Fields

LABEL	DESCRIPTION
Type	This field displays an icon of the kind of device discovered.
Model	This field displays the model name of the discovered device.
Firmware Version	This field displays the firmware version of the discovered device.
MAC Address	This field displays the MAC address of the discovered device.
IP Address	This field displays the IP address of an internal interface on the discovered device that first received an ZDP discovery request from the ZON utility.
System Name	This field displays the system name of the discovered device.
Location	This field displays where the discovered device is.
Status	This field displays whether changes to the discovered device have been done successfully. As the USG does not support IP Configuration , Renew IP address and Flash Locator LED , this field displays "Update failed", "Not support Renew IP address" and "Not support Flash Locator LED" respectively.

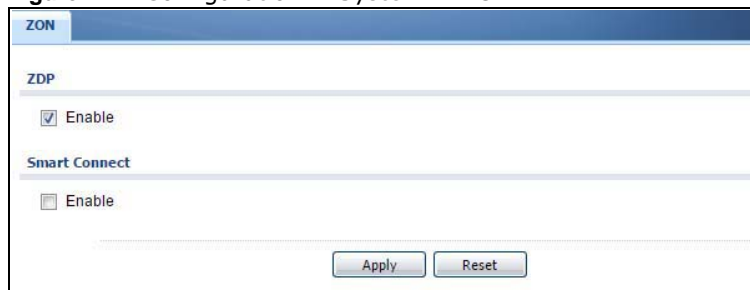
30.16.1 ZyXEL One Network (ZON) System Screen

Enable **ZDP** (ZON) and **Smart Connect** (Ethernet Neighbor) in the **System > ZON** screen.

See **Monitor > System Status > Ethernet Neighbor** for information on using **Smart Connect** (Link Layer Discovery Protocol (LLDP)) for discovering and configuring LLDP-aware devices in the same broadcast domain as the USG that you're logged into using the web configurator.

The following figure shows the **System > ZON** screen.

Figure 417 Configuration > System > ZON



The following table describes the labels in this screen.

Table 256 Configuration > System > ZON

LABEL	DESCRIPTION
ZDP	ZyXEL Discovery Protocol (ZDP) is the protocol that the ZyXEL One Network (ZON) utility uses for discovering and configuring ZDP-aware ZyXEL devices in the same broadcast domain as the computer on which ZON is installed.
Enable	Select to activate ZDP discovery on the USG.
Smart Connect	Smart Connect uses Link Layer Discovery Protocol (LLDP) for discovering and configuring LLDP-aware devices in the same broadcast domain as the USG that you're logged into using the web configurator.
Enable	Select to activate LLDP discovery on the USG. See also Monitor > System Status > Ethernet Discovery .

Table 256 Configuration > System > ZON

LABEL	DESCRIPTION
Apply	Click Apply to save your changes back to the USG.
Reset	Click Reset to return the screen to its last-saved settings.

Log and Report

31.1 Overview

Use these screens to configure daily reporting and log settings.

31.1.1 What You Can Do In this Chapter

- Use the **Email Daily Report** screen ([Section 31.2 on page 589](#)) to configure where and how to send daily reports and what reports to send.
- Use the **Log Setting** screens ([Section 31.3 on page 591](#)) to specify settings for recording log messages and alerts, e-mailing them, storing them on a connected USB storage device, and sending them to remote syslog servers.

31.2 Email Daily Report

Use the **Email Daily Report** screen to start or stop data collection and view various statistics about traffic passing through your USG.

Note: Data collection may decrease the USG's traffic throughput rate.

Click **Configuration > Log & Report > Email Daily Report** to display the following screen. Configure this screen to have the USG e-mail you system statistics every day.

Figure 418 Configuration > Log & Report > Email Daily Report

Email Daily Report

General Settings

Enable Email Daily Report

Email Settings

Mail Server: (Outgoing SMTP Server Name or IP Address)

Mail Server Port: TLS Security Authenticate Server

Mail Subject: Append system name Append date time

Mail From: (Email Address)

Mail To: (Email Address)
 (Email Address)
 (Email Address)
 (Email Address)

SMTP Authentication
 User Name :
 Password:
 Retype to Confirm:

Schedule

Time For Sending Report: (hours) (minutes)

Report Items

System Resource Usage

CPU Usage
 Memory Usage
 Session Usage
 Port Usage

Wireless Report

Station Count
 TX Statistics
 RX Statistics

Threat Report

Anti-Spam
 Content Filter

Interface Traffic Statistics

Reset counters after sending report successfully

The following table describes the labels in this screen.

Table 257 Configuration > Log & Report > Email Daily Report

LABEL	DESCRIPTION
Enable Email Daily Report	Select this to send reports by e-mail every day.
Mail Server	Type the name or IP address of the outgoing SMTP server.
Mail Server Port	Enter the same port number here as is on the mail server for mail traffic.
TLS Security	Select Transport Layer Security (TLS) if you want encrypted communications between the mail server and the USG.
Authenticate Server	If you choose TLS Security , you may also select this to have the USG authenticate the mail server in the TLS handshake.
Mail Subject	Type the subject line for outgoing e-mail from the USG.
Append system name	Select Append system name to add the USG's system name to the subject.
Append date time	Select Append date time to add the USG's system date and time to the subject.
Mail From	Type the e-mail address from which the outgoing e-mail is delivered. This address is used in replies.
Mail To	Type the e-mail address (or addresses) to which the outgoing e-mail is delivered.
SMTP Authentication	Select this check box if it is necessary to provide a user name and password to the SMTP server.
User Name	This box is effective when you select the SMTP Authentication check box. Type the user name to provide to the SMTP server when the log is e-mailed.
Password	This box is effective when you select the SMTP Authentication check box. Type the password to provide to the SMTP server when the log is e-mailed.
Retype to Confirm	Type the password again to make sure that you have entered is correctly.
Send Report Now	Click this button to have the USG send the daily e-mail report immediately.
Time for sending report	Select the time of day (hours and minutes) when the log is e-mailed. Use 24-hour notation.
Report Items	Select the information to include in the report. Types of information include System Resource Usage, Wireless Report, Threat Report, and Interface Traffic Statistics . Select Reset counters after sending report successfully if you only want to see statistics for a 24 hour period.
Reset All Counters	Click this to discard all report data and start all of the counters over at zero.
Apply	Click Apply to save your changes back to the USG.
Reset	Click Reset to return the screen to its last-saved settings.

31.3 Log Setting Screens

The **Log Setting** screens control log messages and alerts. A log message stores the information for viewing or regular e-mailing later, and an alert is e-mailed immediately. Usually, alerts are used for events that require more serious attention, such as system errors and attacks.

The USG provides a system log and supports e-mail profiles and remote syslog servers. View the system log in the **MONITOR > Log** screen. Use the e-mail profiles to mail log messages to the

specific destinations. You can also have the USG store system logs on a connected USB storage device. The other four logs are stored on specified syslog servers.

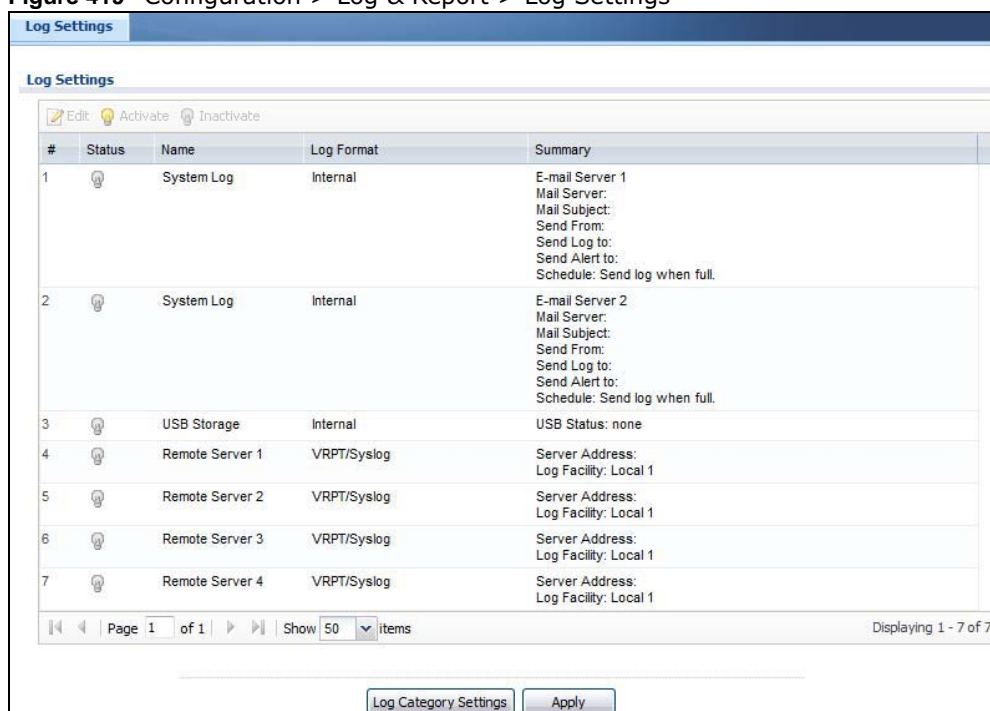
The **Log Setting** screens control what information the USG saves in each log. You can also specify which log messages to e-mail for the system log, and where and how often to e-mail them. These screens also set for which events to generate alerts and where to email the alerts.

The first **Log Setting** screen provides a settings summary. Use the **Edit** screens to configure settings such as log categories, e-mail addresses, and server names for any log. Use the **Log Category Settings** screen to edit what information is included in the system log, USB storage, e-mail profiles, and remote servers.

31.3.1 Log Settings

To access this screen, click **Configuration > Log & Report > Log Settings**.

Figure 419 Configuration > Log & Report > Log Settings



The following table describes the labels in this screen.

Table 258 Configuration > Log & Report > Log Settings

LABEL	DESCRIPTION
Edit	Double-click an entry or select it and click Edit to open a screen where you can modify it.
Activate	To turn on an entry, select it and click Activate .
Inactivate	To turn off an entry, select it and click Inactivate .
#	This field is a sequential value, and it is not associated with a specific log.
Name	This field displays the type of log setting entry (system log, logs stored on a USB storage device connected to the USG, or one of the remote servers).

Table 258 Configuration > Log & Report > Log Settings (continued)

LABEL	DESCRIPTION
Log Format	This field displays the format of the log. Internal - system log; you can view the log on the View Log tab. VRPT/Syslog - ZyXEL's Vantage Report, syslog-compatible format. CEF/Syslog - Common Event Format, syslog-compatible format.
Summary	This field is a summary of the settings for each log. Please see Section 31.3.2 on page 593 for more information.
Log Category Settings	Click this button to open the Log Category Settings Edit screen.
Apply	Click this button to save your changes (activate and deactivate logs) and make them take effect.

31.3.2 Edit System Log Settings

The **Log Settings Edit** screen controls the detailed settings for each log in the system log (which includes the e-mail profiles). Go to the **Log Settings** screen (see [Section 31.3.1 on page 592](#)), and click the system log **Edit** icon.

Figure 420 Configuration > Log & Report > Log Setting > Edit (System Log)

The screenshot displays the 'Edit Log Setting' web interface, which is divided into two sections for 'E-mail Server 1' and 'E-mail Server 2'. Each section contains the following fields and options:

- Active:** A checkbox to toggle the server's status.
- Mail Server:** A text input field for the outgoing SMTP server name or IP address.
- Mail Server Port:** A text input field with '25' entered, and checkboxes for 'TLS Security' and 'Authenticate Server'.
- Mail Subject:** A text input field.
- Send From:** A text input field for the email address.
- Send Log to:** A text input field for the log email address.
- Send Alerts to:** A text input field for the alert email address.
- Sending Log:** A dropdown menu set to 'When Full'.
- Day for Sending Log:** A dropdown menu set to 'Sunday'.
- Time for Sending Log:** A time selection field set to '00:00'.
- SMTP Authentication:** A checkbox to enable authentication, with sub-fields for 'User Name', 'Password', and 'Retype to Confirm'.

Figure 421 Configuration > Log & Report > Log Setting > Edit (System Log)



The following table describes the labels in this screen.

Table 259 Configuration > Log & Report > Log Setting > Edit (System Log)

LABEL	DESCRIPTION
E-Mail Server 1/2	
Active	Select this to send log messages and alerts according to the information in this section. You specify what kinds of log messages are included in log information and what kinds of log messages are included in alerts in the Active Log and Alert section.
Mail Server	Type the name or IP address of the outgoing SMTP server.
Mail Subject	Type the subject line for the outgoing e-mail.
Send From	Type the e-mail address from which the outgoing e-mail is delivered. This address is used in replies.
Send Log To	Type the e-mail address to which the outgoing e-mail is delivered.
Send Alerts To	Type the e-mail address to which alerts are delivered.
Sending Log	Select how often log information is e-mailed. Choices are: When Full, Hourly and When Full, Daily and When Full , and Weekly and When Full .
Day for Sending Log	This field is available if the log is e-mailed weekly. Select the day of the week the log is e-mailed.
Time for Sending Log	This field is available if the log is e-mailed weekly or daily. Select the time of day (hours and minutes) when the log is e-mailed. Use 24-hour notation.
SMTP Authentication	Select this check box if it is necessary to provide a user name and password to the SMTP server.
User Name	This box is effective when you select the SMTP Authentication check box. Type the user name to provide to the SMTP server when the log is e-mailed.
Password	This box is effective when you select the SMTP Authentication check box. Type the password to provide to the SMTP server when the log is e-mailed.
Retype to Confirm	Type the password again to make sure that you have entered is correctly.
Active Log and Alert	
System Log	<p>Use the System Log drop-down list to change the log settings for all of the log categories.</p> <p>disable all logs (red X) - do not log any information for any category for the system log or e-mail any logs to e-mail server 1 or 2.</p> <p>enable normal logs (green check mark) - create log messages and alerts for all categories for the system log. If e-mail server 1 or 2 also has normal logs enabled, the USG will e-mail logs to them.</p> <p>enable normal logs and debug logs (yellow check mark) - create log messages, alerts, and debugging information for all categories. The USG does not e-mail debugging information, even if this setting is selected.</p>
E-mail Server 1	<p>Use the E-Mail Server 1 drop-down list to change the settings for e-mailing logs to e-mail server 1 for all log categories.</p> <p>Using the System Log drop-down list to disable all logs overrides your e-mail server 1 settings.</p> <p>enable normal logs (green check mark) - e-mail log messages for all categories to e-mail server 1.</p> <p>enable alert logs (red exclamation point) - e-mail alerts for all categories to e-mail server 1.</p>

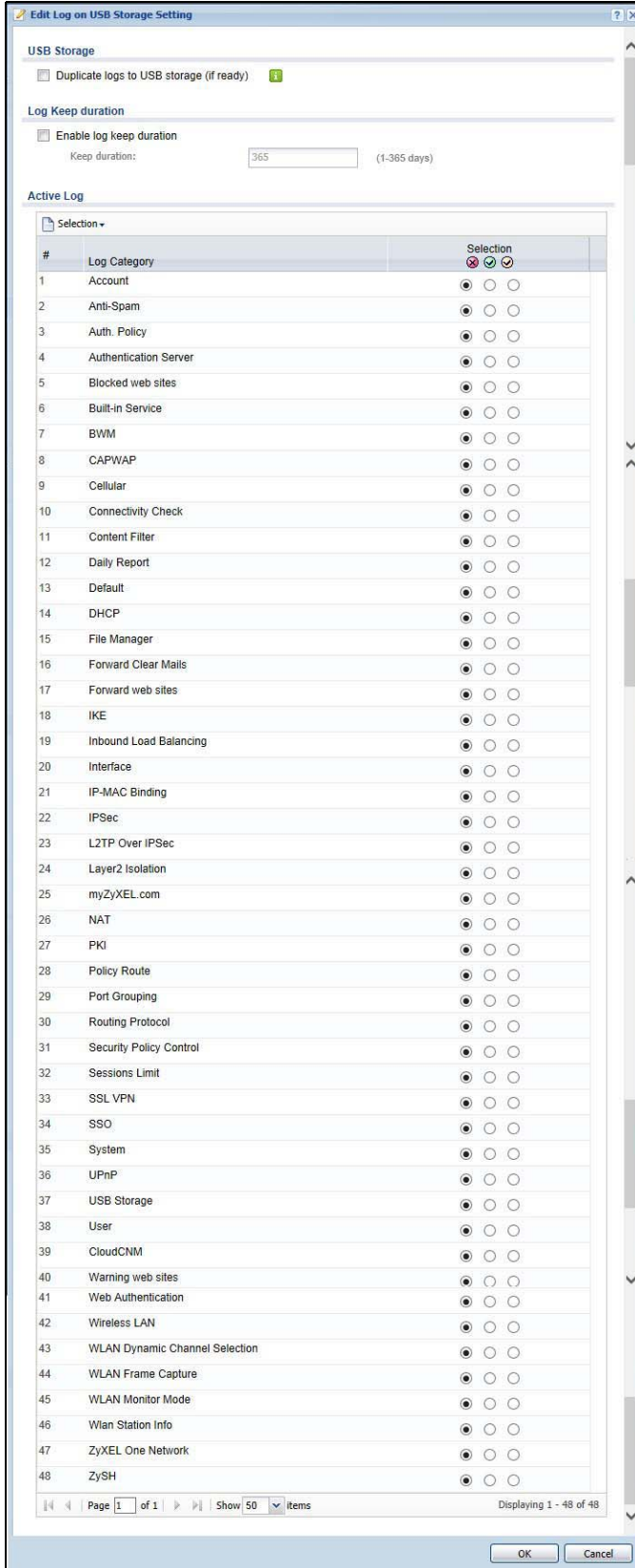
Table 259 Configuration > Log & Report > Log Setting > Edit (System Log) (continued)

LABEL	DESCRIPTION
E-mail Server 2	Use the E-Mail Server 2 drop-down list to change the settings for e-mailing logs to e-mail server 2 for all log categories. Using the System Log drop-down list to disable all logs overrides your e-mail server 2 settings. enable normal logs (green check mark) - e-mail log messages for all categories to e-mail server 2. enable alert logs (red exclamation point) - e-mail alerts for all categories to e-mail server 2.
#	This field is a sequential value, and it is not associated with a specific address.
Log Category	This field displays each category of messages. It is the same value used in the Display and Category fields in the View Log tab. The Default category includes debugging messages generated by open source software.
System log	Select which events you want to log by Log Category . There are three choices: disable all logs (red X) - do not log any information from this category enable normal logs (green check mark) - create log messages and alerts from this category enable normal logs and debug logs (yellow check mark) - create log messages, alerts, and debugging information from this category; the USG does not e-mail debugging information, however, even if this setting is selected.
E-mail Server 1	Select whether each category of events should be included in the log messages when it is e-mailed (green check mark) and/or in alerts (red exclamation point) for the e-mail settings specified in E-Mail Server 1 . The USG does not e-mail debugging information, even if it is recorded in the System log .
E-mail Server 2	Select whether each category of events should be included in log messages when it is e-mailed (green check mark) and/or in alerts (red exclamation point) for the e-mail settings specified in E-Mail Server 2 . The USG does not e-mail debugging information, even if it is recorded in the System log .
Log Consolidation	
Active	Select this to activate log consolidation. Log consolidation aggregates multiple log messages that arrive within the specified Log Consolidation Interval . In the View Log tab, the text "[count=x]", where <i>x</i> is the number of original log messages, is appended at the end of the Message field, when multiple log messages were aggregated.
Log Consolidation Interval	Type how often, in seconds, to consolidate log information. If the same log message appears multiple times, it is aggregated into one log message with the text "[count=x]", where <i>x</i> is the number of original log messages, appended at the end of the Message field.
OK	Click this to save your changes and return to the previous screen.
Cancel	Click this to return to the previous screen without saving your changes.

31.3.3 Edit Log on USB Storage Setting

The **Edit Log on USB Storage Setting** screen controls the detailed settings for saving logs to a connected USB storage device. Go to the **Log Setting Summary** screen (see [Section 31.3.1 on page 592](#)), and click the USB storage **Edit** icon.

Figure 422 Configuration > Log & Report > Log Setting > Edit (USB Storage)



The following table describes the labels in this screen.

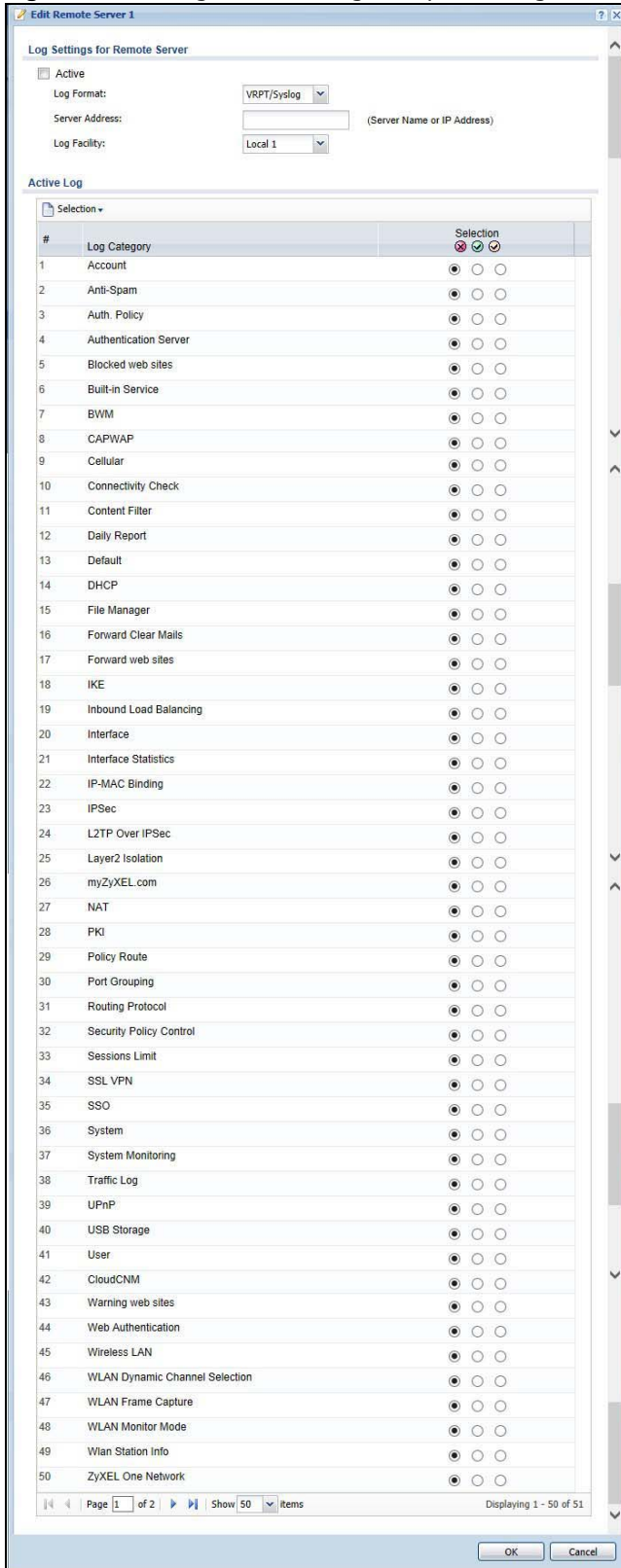
Table 260 Configuration > Log & Report > Log Setting > Edit (USB Storage)

LABEL	DESCRIPTION
USB Storage	
Duplicate logs to USB storage (if ready)	Select this to have the USG save a copy of its system logs to a connected USB storage device. Use the Active Log section to specify what kinds of messages to include.
Log Keep duration	
Enable log keep duration	Select this and enter the number of days you want the USG to store a log in Keep duration before deleting it forever from the USG.
Active Log	
Selection	Use the Selection drop-down list to change the log settings for all of the log categories. disable all logs (red X) - do not send the remote server logs for any log category. enable normal logs (green check mark) - send the remote server log messages and alerts for all log categories. enable normal logs and debug logs (yellow check mark) - send the remote server log messages, alerts, and debugging information for all log categories.
#	This field is a sequential value, and it is not associated with a specific entry.
Log Category	This field displays each category of messages. The Default category includes debugging messages generated by open source software.
Selection	Select what information you want to log from each Log Category (except All Logs ; see below). Choices are: disable all logs (red X) - do not log any information from this category enable normal logs (green check mark) - log regular information and alerts from this category enable normal logs and debug logs (yellow check mark) - log regular information, alerts, and debugging information from this category
OK	Click this to save your changes and return to the previous screen.
Cancel	Click this to return to the previous screen without saving your changes.

31.3.4 Edit Remote Server Log Settings

The **Log Settings Edit** screen controls the detailed settings for each log in the remote server (syslog). Go to the **Log Settings Summary** screen (see [Section 31.3.1 on page 592](#)), and click a remote server **Edit** icon.

Figure 423 Configuration > Log & Report > Log Setting > Edit (Remote Server)



The following table describes the labels in this screen.

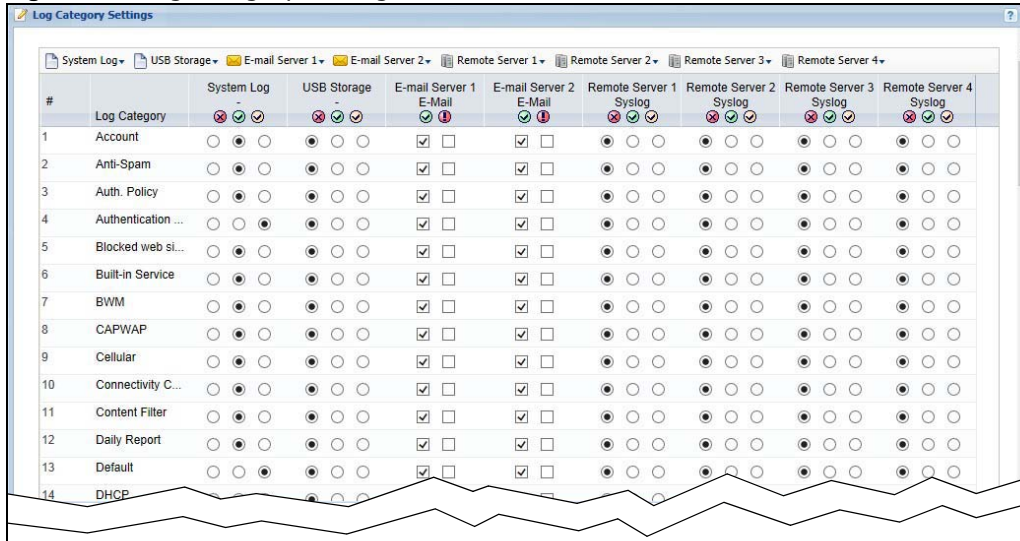
Table 261 Configuration > Log & Report > Log Setting > Edit (Remote Server)

LABEL	DESCRIPTION
Log Settings for Remote Server	
Active	Select this check box to send log information according to the information in this section. You specify what kinds of messages are included in log information in the Active Log section.
Log Format	This field displays the format of the log information. It is read-only. VRPT/Syslog - ZyXEL's Vantage Report, syslog-compatible format. CEF/Syslog - Common Event Format, syslog-compatible format.
Server Address	Type the server name or the IP address of the syslog server to which to send log information.
Log Facility	Select a log facility. The log facility allows you to log the messages to different files in the syslog server. Please see the documentation for your syslog program for more information.
Active Log	
Selection	Use the Selection drop-down list to change the log settings for all of the log categories. disable all logs (red X) - do not send the remote server logs for any log category. enable normal logs (green check mark) - send the remote server log messages and alerts for all log categories. enable normal logs and debug logs (yellow check mark) - send the remote server log messages, alerts, and debugging information for all log categories.
#	This field is a sequential value, and it is not associated with a specific address.
Log Category	This field displays each category of messages. It is the same value used in the Display and Category fields in the View Log tab. The Default category includes debugging messages generated by open source software.
Selection	Select what information you want to log from each Log Category (except All Logs ; see below). Choices are: disable all logs (red X) - do not log any information from this category enable normal logs (green check mark) - log regular information and alerts from this category enable normal logs and debug logs (yellow check mark) - log regular information, alerts, and debugging information from this category
OK	Click this to save your changes and return to the previous screen.
Cancel	Click this to return to the previous screen without saving your changes.

31.3.5 Log Category Settings Screen

The **Log Category Settings** screen allows you to view and to edit what information is included in the system log, USB storage, e-mail profiles, and remote servers at the same time. It does not let you change other log settings (for example, where and how often log information is e-mailed or remote server names). To access this screen, go to the **Log Settings** screen (see [Section 31.3.1 on page 592](#)), and click the **Log Category Settings** button.

Figure 424 Log Category Settings AC



This screen provides a different view and a different way of indicating which messages are included in each log and each alert. Please see [Section 31.3.2 on page 593](#), where this process is discussed. (The **Default** category includes debugging messages generated by open source software.)

The following table describes the fields in this screen.

Table 262 Configuration > Log & Report > Log Setting > Log Category Settings

LABEL	DESCRIPTION
System Log	<p>Use the System Log drop-down list to change the log settings for all of the log categories.</p> <p>disable all logs (red X) - do not log any information for any category for the system log or e-mail any logs to e-mail server 1 or 2.</p> <p>enable normal logs (green check mark) - create log messages and alerts for all categories for the system log. If e-mail server 1 or 2 also has normal logs enabled, the USG will e-mail logs to them.</p> <p>enable normal logs and debug logs (yellow check mark) - create log messages, alerts, and debugging information for all categories. The USG does not e-mail debugging information, even if this setting is selected.</p>
USB Storage	<p>Use the USB Storage drop-down list to change the log settings for saving logs to a connected USB storage device.</p> <p>disable all logs (red X) - do not log any information for any category to a connected USB storage device.</p> <p>enable normal logs (green check mark) - create log messages and alerts for all categories and save them to a connected USB storage device.</p> <p>enable normal logs and debug logs (yellow check mark) - create log messages, alerts, and debugging information for all categories and save them to a connected USB storage device.</p>

Table 262 Configuration > Log & Report > Log Setting > Log Category Settings (continued)

LABEL	DESCRIPTION
E-mail Server 1	<p>Use the E-Mail Server 1 drop-down list to change the settings for e-mailing logs to e-mail server 1 for all log categories.</p> <p>Using the System Log drop-down list to disable all logs overrides your e-mail server 1 settings.</p> <p>enable normal logs (green check mark) - e-mail log messages for all categories to e-mail server 1.</p> <p>enable alert logs (red exclamation point) - e-mail alerts for all categories to e-mail server 1.</p>
E-mail Server 2	<p>Use the E-Mail Server 2 drop-down list to change the settings for e-mailing logs to e-mail server 2 for all log categories.</p> <p>Using the System Log drop-down list to disable all logs overrides your e-mail server 2 settings.</p> <p>enable normal logs (green check mark) - e-mail log messages for all categories to e-mail server 2.</p> <p>enable alert logs (red exclamation point) - e-mail alerts for all categories to e-mail server 2.</p>
Remote Server 1~4	<p>For each remote server, use the Selection drop-down list to change the log settings for all of the log categories.</p> <p>disable all logs (red X) - do not send the remote server logs for any log category.</p> <p>enable normal logs (green check mark) - send the remote server log messages and alerts for all log categories.</p> <p>enable normal logs and debug logs (yellow check mark) - send the remote server log messages, alerts, and debugging information for all log categories.</p>
#	This field is a sequential value, and it is not associated with a specific address.
Log Category	This field displays each category of messages. It is the same value used in the Display and Category fields in the View Log tab. The Default category includes debugging messages generated by open source software.
System Log	<p>Select which events you want to log by Log Category. There are three choices:</p> <p>disable all logs (red X) - do not log any information from this category</p> <p>enable normal logs (green check mark) - create log messages and alerts from this category</p> <p>enable normal logs and debug logs (yellow check mark) - create log messages, alerts, and debugging information from this category; the USG does not e-mail debugging information, however, even if this setting is selected.</p>
USB Storage	<p>Select which event log categories to save to a connected USB storage device. There are three choices:</p> <p>disable all logs (red X) - do not log any information from this category</p> <p>enable normal logs (green check mark) - save log messages and alerts from this category</p> <p>enable normal logs and debug logs (yellow check mark) - save log messages, alerts, and debugging information from this category.</p>
E-mail Server 1 E-mail	Select whether each category of events should be included in the log messages when it is e-mailed (green check mark) and/or in alerts (red exclamation point) for the e-mail settings specified in E-Mail Server 1 . The USG does not e-mail debugging information, even if it is recorded in the System log .

Table 262 Configuration > Log & Report > Log Setting > Log Category Settings (continued)

LABEL	DESCRIPTION
E-mail Server 2 E-mail	Select whether each category of events should be included in log messages when it is e-mailed (green check mark) and/or in alerts (red exclamation point) for the e-mail settings specified in E-Mail Server 2 . The USG does not e-mail debugging information, even if it is recorded in the System log .
Remote Server 1~4	For each remote server, select what information you want to log from each Log Category (except All Logs ; see below). Choices are: disable all logs (red X) - do not log any information from this category enable normal logs (green check mark) - log regular information and alerts from this category enable normal logs and debug logs (yellow check mark) - log regular information, alerts, and debugging information from this category
OK	Click this to save your changes and return to the previous screen.
Cancel	Click this to return to the previous screen without saving your changes.

File Manager

32.1 Overview

Configuration files define the USG's settings. Shell scripts are files of commands that you can store on the USG and run when you need them. You can apply a configuration file or run a shell script without the USG restarting. You can store multiple configuration files and shell script files on the USG. You can edit configuration files or shell scripts in a text editor and upload them to the USG. Configuration files use a .conf extension and shell scripts use a .zysh extension.

32.1.1 What You Can Do in this Chapter

- Use the **Configuration File** screen (see [Section 32.2 on page 606](#)) to store and name configuration files. You can also download configuration files from the USG to your computer and upload configuration files from your computer to the USG.
- Use the **Firmware Package** screen (see [Section 32.3 on page 610](#)) to check your current firmware version and upload firmware to the USG.
- Use the **Shell Script** screen (see [Section 32.4 on page 612](#)) to store, name, download, upload and run shell script files.

32.1.2 What you Need to Know

Configuration Files and Shell Scripts

When you apply a configuration file, the USG uses the factory default settings for any features that the configuration file does not include. When you run a shell script, the USG only applies the commands that it contains. Other settings do not change.

These files have the same syntax, which is also identical to the way you run CLI commands manually. An example is shown below.

Figure 425 Configuration File / Shell Script: Example

```
# enter configuration mode
configure terminal
# change administrator password
username admin password 4321 user-type admin
# configure ge3
interface ge3
ip address 172.23.37.240 255.255.255.0
ip gateway 172.23.37.254 metric 1
exit
# create address objects for remote management / to-ZyWALL firewall rules
# use the address group in case we want to open up remote management later
address-object TW_SUBNET 172.23.37.0/24
object-group address TW_TEAM
address-object TW_SUBNET
exit
# enable Telnet access (not enabled by default, unlike other services)
ip telnet server
# open WAN-to-ZyWALL firewall for TW_TEAM for remote management
firewall WAN ZyWALL insert 4
sourceip TW_TEAM
service TELNET
action allow
exit
write
```

While configuration files and shell scripts have the same syntax, the USG applies configuration files differently than it runs shell scripts. This is explained below.

Table 263 Configuration Files and Shell Scripts in the USG

Configuration Files (.conf)	Shell Scripts (.zysh)
<ul style="list-style-type: none"> Resets to default configuration. Goes into CLI Configuration mode. Runs the commands in the configuration file. 	<ul style="list-style-type: none"> Goes into CLI Privilege mode. Runs the commands in the shell script.

You have to run the example in [Figure 425 on page 605](#) as a shell script because the first command is run in **Privilege** mode. If you remove the first command, you have to run the example as a configuration file because the rest of the commands are executed in **Configuration** mode.

Comments in Configuration Files or Shell Scripts

In a configuration file or shell script, use “#” or “!” as the first character of a command line to have the USG treat the line as a comment.

Your configuration files or shell scripts can use “exit” or a command line consisting of a single “!” to have the USG exit sub command mode.

Note: “exit” or “!” must follow sub commands if it is to make the USG exit sub command mode.

Line 3 in the following example exits sub command mode.

```
interface gel
ip address dhcp
!
```

Lines 1 and 3 in the following example are comments and line 4 exits sub command mode.

```
!
interface gel
# this interface is a DHCP client
!
```

Lines 1 and 2 are comments. Line 5 exits sub command mode.

```
! this is from Joe
# on 2008/04/05
interface gel
ip address dhcp
!
```

Errors in Configuration Files or Shell Scripts

When you apply a configuration file or run a shell script, the USG processes the file line-by-line. The USG checks the first line and applies the line if no errors are detected. Then it continues with the next line. If the USG finds an error, it stops applying the configuration file or shell script and generates a log.

You can change the way a configuration file or shell script is applied. Include `setenv stop-on-error off` in the configuration file or shell script. The USG ignores any errors in the configuration file or shell script and applies all of the valid commands. The USG still generates a log for any errors.

32.2 The Configuration File Screen

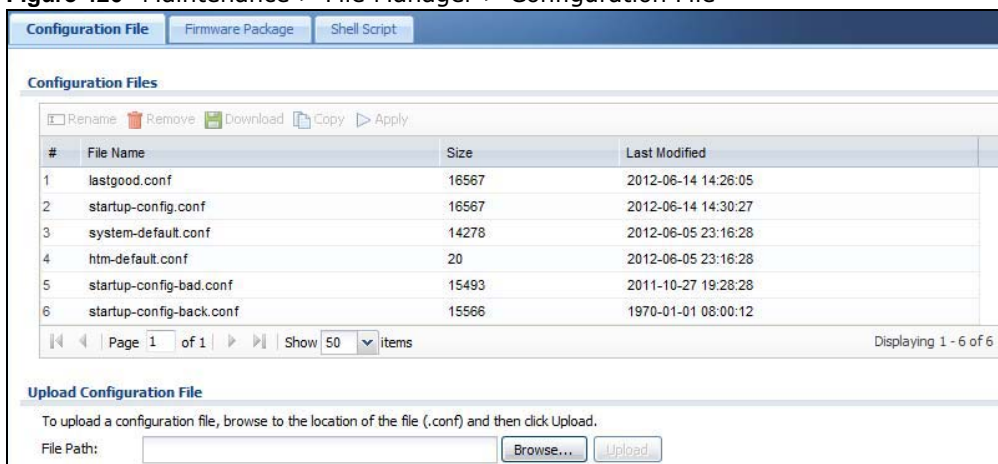
Click **Maintenance > File Manager > Configuration File** to open the **Configuration File** screen. Use the **Configuration File** screen to store, run, and name configuration files. You can also download configuration files from the USG to your computer and upload configuration files from your computer to the USG.

Once your USG is configured and functioning properly, it is highly recommended that you back up your configuration file before making further configuration changes. The backup configuration file will be useful in case you need to return to your previous settings.

Configuration File Flow at Restart

- If there is not a **startup-config.conf** when you restart the USG (whether through a management interface or by physically turning the power off and back on), the USG uses the **system-default.conf** configuration file with the USG's default settings.
- If there is a **startup-config.conf**, the USG checks it for errors and applies it. If there are no errors, the USG uses it and copies it to the **lastgood.conf** configuration file as a back up file. If there is an error, the USG generates a log and copies the **startup-config.conf** configuration file to the **startup-config-bad.conf** configuration file and tries the existing **lastgood.conf** configuration file. If there isn't a **lastgood.conf** configuration file or it also has an error, the USG applies the **system-default.conf** configuration file.
- You can change the way the **startup-config.conf** file is applied. Include the `setenv-startup stop-on-error off` command. The USG ignores any errors in the **startup-config.conf** file and applies all of the valid commands. The USG still generates a log for any errors.

Figure 426 Maintenance > File Manager > Configuration File



Do not turn off the USG while configuration file upload is in progress.

The following table describes the labels in this screen.

Table 264 Maintenance > File Manager > Configuration File

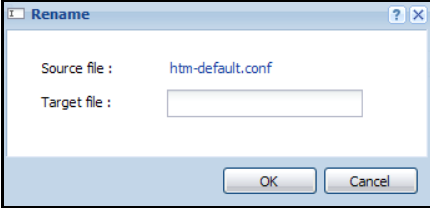
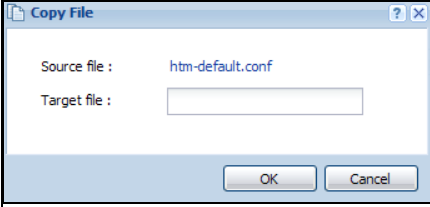
LABEL	DESCRIPTION
Rename	<p>Use this button to change the label of a configuration file on the USG. You can only rename manually saved configuration files. You cannot rename the lastgood.conf, system-default.conf and startup-config.conf files.</p> <p>You cannot rename a configuration file to the name of another configuration file in the USG.</p> <p>Click a configuration file's row to select it and click Rename to open the Rename File screen.</p> <p>Figure 427 Maintenance > File Manager > Configuration File > Rename</p>  <p>Specify the new name for the configuration file. Use up to 25 characters (including a-zA-Z0-9;~!@#\$%^&()_+[]{}',=-).</p> <p>Click OK to save the duplicate or click Cancel to close the screen without saving a duplicate of the configuration file.</p>
Remove	<p>Click a configuration file's row to select it and click Remove to delete it from the USG. You can only delete manually saved configuration files. You cannot delete the system-default.conf, startup-config.conf and lastgood.conf files.</p> <p>A pop-up window asks you to confirm that you want to delete the configuration file. Click OK to delete the configuration file or click Cancel to close the screen without deleting the configuration file.</p>
Download	<p>Click a configuration file's row to select it and click Download to save the configuration to your computer.</p>
Copy	<p>Use this button to save a duplicate of a configuration file on the USG.</p> <p>Click a configuration file's row to select it and click Copy to open the Copy File screen.</p> <p>Figure 428 Maintenance > File Manager > Configuration File > Copy</p>  <p>Specify a name for the duplicate configuration file. Use up to 25 characters (including a-zA-Z0-9;~!@#\$%^&()_+[]{}',=-).</p> <p>Click OK to save the duplicate or click Cancel to close the screen without saving a duplicate of the configuration file.</p>

Table 264 Maintenance > File Manager > Configuration File (continued)

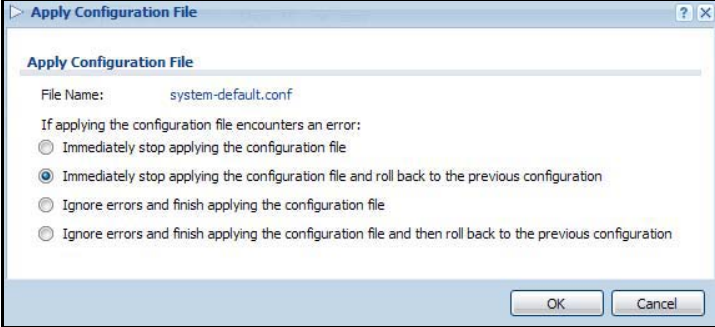
LABEL	DESCRIPTION
Apply	<p>Use this button to have the USG use a specific configuration file.</p> <p>Click a configuration file's row to select it and click Apply to have the USG use that configuration file. The USG does not have to restart in order to use a different configuration file, although you will need to wait for a few minutes while the system reconfigures.</p> <p>The following screen gives you options for what the USG is to do if it encounters an error in the configuration file.</p> <p>Figure 429 Maintenance > File Manager > Configuration File > Apply</p>  <p>Immediately stop applying the configuration file - this is not recommended because it would leave the rest of the configuration blank. If the interfaces were not configured before the first error, the console port may be the only way to access the device.</p> <p>Immediately stop applying the configuration file and roll back to the previous configuration - this gets the USG started with a fully valid configuration file as quickly as possible.</p> <p>Ignore errors and finish applying the configuration file - this applies the valid parts of the configuration file and generates error logs for all of the configuration file's errors. This lets the USG apply most of your configuration and you can refer to the logs for what to fix.</p> <p>Ignore errors and finish applying the configuration file and then roll back to the previous configuration - this applies the valid parts of the configuration file, generates error logs for all of the configuration file's errors, and starts the USG with a fully valid configuration file.</p> <p>Click OK to have the USG start applying the configuration file or click Cancel to close the screen</p>
#	<p>This column displays the number for each configuration file entry. This field is a sequential value, and it is not associated with a specific address. The total number of configuration files that you can save depends on the sizes of the configuration files and the available flash storage space.</p>

Table 264 Maintenance > File Manager > Configuration File (continued)

LABEL	DESCRIPTION
File Name	<p>This column displays the label that identifies a configuration file.</p> <p>You cannot delete the following configuration files or change their file names.</p> <p>The system-default.conf file contains the USG's default settings. Select this file and click Apply to reset all of the USG settings to the factory defaults. This configuration file is included when you upload a firmware package.</p> <p>The startup-config.conf file is the configuration file that the USG is currently using. If you make and save changes during your management session, the changes are applied to this configuration file. The USG applies configuration changes made in the Web Configurator to the configuration file when you click Apply or OK. It applies configuration changes made via commands when you use the <code>write</code> command.</p> <p>The lastgood.conf is the most recently used (valid) configuration file that was saved when the device last restarted. If you upload and apply a configuration file with an error, you can apply <code>lastgood.conf</code> to return to a valid configuration.</p>
Size	This column displays the size (in KB) of a configuration file.
Last Modified	This column displays the date and time that the individual configuration files were last changed or saved.
Upload Configuration File	<p>The bottom part of the screen allows you to upload a new or previously saved configuration file from your computer to your USG</p> <p>You cannot upload a configuration file named system-default.conf or lastgood.conf.</p> <p>If you upload startup-config.conf, it will replace the current configuration and immediately apply the new settings.</p>
File Path	Type in the location of the file you want to upload in this field or click Browse ... to find it.
Browse...	Click Browse... to find the <code>.conf</code> file you want to upload. The configuration file must use a <code>.conf</code> filename extension. You will receive an error message if you try to upload a file of a different format. Remember that you must decompress compressed (<code>.zip</code>) files before you can upload them.
Upload	Click Upload to begin the upload process. This process may take up to two minutes.

32.3 The Firmware Package Screen

Click **Maintenance > File Manager > Firmware Package** to open the **Firmware Package** screen. Use the **Firmware Package** screen to check your current firmware version and upload firmware to the USG. You can upload firmware to be the **Running** firmware or **Standby** firmware.

Note: The Web Configurator is the recommended method for uploading firmware. You only need to use the command line interface if you need to recover the firmware. See the CLI Reference Guide for how to determine if you need to recover the firmware and how to recover it.

Find the firmware package at www.zyxel.com in a file that (usually) uses the system model name with a `.bin` extension, for example, "zywall.bin".

The firmware update can take up to five minutes. Do not turn off or reset the USG while the firmware update is in progress!

Figure 430 Maintenance > File Manager > Firmware Package

The screenshot shows the 'Firmware Package' management interface. At the top, there are tabs for 'Configuration File', 'Firmware Package', and 'Shell Script'. Below the tabs is the 'Firmware Status' section, which includes a 'Reboot now' button and a table with the following data:

#	Status	Model	Version	Released Date
1	Running		VZLD-fw	2015-08-13 21:59:49
2	N/A	N/A	VN/A	N/A

Below the table, there is an 'Upload File' section. It includes a dropdown menu for 'To upload image file in system space:' with the value '2'. There are two radio buttons for 'Boot Options': 'Reboot now' (selected) and 'Don't Reboot'. A text box says 'To upload firmware, browse to the location of the file (*.bin) and then click Upload.' Below this is a 'File Path:' input field with 'Browse...' and 'Upload' buttons.

The following table describes the labels in this screen.

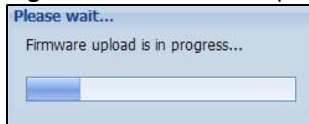
Table 265 Maintenance > File Manager > Firmware Package

LABEL	DESCRIPTION
Firmware Status	
Reboot Now	<p>Click the Reboot Now button to restart the USG. If you applied changes in the Web configurator, these were saved automatically and do not change when you reboot. If you made changes in the CLI, however, you have to use the <code>write</code> command to save the configuration before you reboot. Otherwise, the changes are lost when you reboot.</p> <p>If you want the Standby firmware to be the Running firmware, then select the Standby firmware row and click Reboot Now. Wait a few minutes until the login screen appears. If the login screen does not appear, clear your browser cache and refresh the screen or type the IP address of the USG in your Web browser again.</p> <p>You can also use the CLI command <code>reboot</code> to restart the USG.</p>
#	This displays the system space (partition) index number where the firmwarm is located. The firmware can be either Standby or Running ; only one firmware can be running at any one time.
Status	This indicates whether the firmware is Running , or not running but already uploaded to the USG and is on Standby . It displays N/A if there is no firmware uploaded to that system space.
Model	This is the model name of the device which the firmware is running on.
Version	This is the firmware version and the date created.
Released Date	This is the date that the version of the firmware was created.
Upload File	
To upload image file in system space	Click the To upload image file in system space pull-down menu and select 1 or 2 . The default is the Standby system space, so if you want to upload new firmware to be the Running firmware, then select the correct system space.
Boot Options	If you upload firmware to the Running system space, the USG will reboot automatically. If you upload firmware to the Standby system space, you have the option to Reboot now or Don't Reboot .
Reboot now	If you select Reboot now , then the firmware upload to Standby system space will become the Running firmware after you click Upload and the upload process completes.

Table 265 Maintenance > File Manager > Firmware Package (continued)

LABEL	DESCRIPTION
Don't Reboot	If you choose Don't Reboot , then the firmware upload to Standby system space will be the Standby firmware after you click Upload and the upload process completes. If you want the Standby firmware to be the Running firmware, then select the Standby firmware row in Firmware Status and click Reboot Now .
File Path	Type in the location of the file you want to upload in this field or click Browse ... to find it.
Browse...	Click Browse... to find the .bin file you want to upload. Remember that you must decompress compressed (.zip) files before you can upload them.
Upload	Click Upload to begin the upload process. This process may take a few minutes.

After you see the **Firmware Upload in Process** screen, wait a few minutes before logging into the USG again.

Figure 431 Firmware Upload In Process

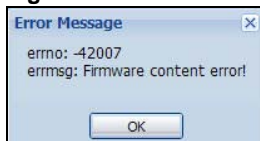
Note: The USG automatically reboots after a successful upload.

The USG automatically restarts causing a temporary network disconnect. In some operating systems, you may see the following icon on your desktop.

Figure 432 Network

After five minutes, log in again and check your new firmware version in the **Dashboard** screen.

If the upload was not successful, the following message appears in the status bar at the bottom of the screen.

Figure 433 Firmware Upload Error

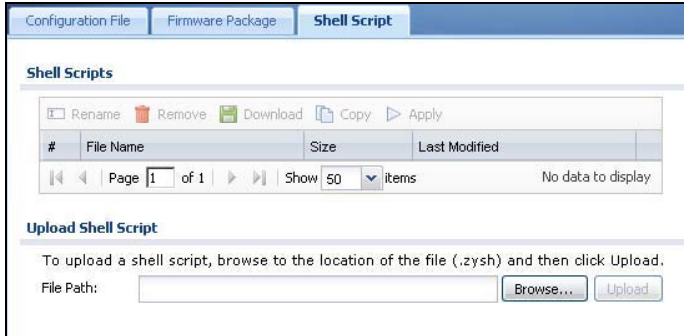
32.4 The Shell Script Screen

Use shell script files to have the USG use commands that you specify. Use a text editor to create the shell script files. They must use a ".zysh" filename extension.

Click **Maintenance > File Manager > Shell Script** to open the **Shell Script** screen. Use the **Shell Script** screen to store, name, download, upload and run shell script files. You can store multiple shell script files on the USG at the same time.

Note: You should include `write` commands in your scripts. If you do not use the `write` command, the changes will be lost when the USG restarts. You could use multiple `write` commands in a long script.

Figure 434 Maintenance > File Manager > Shell Script



Each field is described in the following table.

Table 266 Maintenance > File Manager > Shell Script

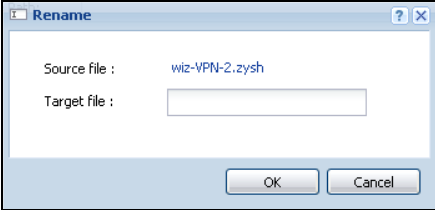
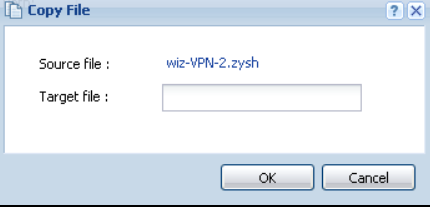
LABEL	DESCRIPTION
Rename	<p>Use this button to change the label of a shell script file on the USG.</p> <p>You cannot rename a shell script to the name of another shell script in the USG.</p> <p>Click a shell script's row to select it and click Rename to open the Rename File screen.</p> <p>Figure 435 Maintenance > File Manager > Shell Script > Rename</p>  <p>Specify the new name for the shell script file. Use up to 25 characters (including a-zA-Z0-9;`~!@#\$\$%^&()_+[]{}',.=).).</p> <p>Click OK to save the duplicate or click Cancel to close the screen without saving a duplicate of the configuration file.</p>
Remove	<p>Click a shell script file's row to select it and click Remove to delete the shell script file from the USG.</p> <p>A pop-up window asks you to confirm that you want to delete the shell script file. Click OK to delete the shell script file or click Cancel to close the screen without deleting the shell script file.</p>
Download	<p>Click a shell script file's row to select it and click Download to save the configuration to your computer.</p>

Table 266 Maintenance > File Manager > Shell Script (continued)

LABEL	DESCRIPTION
Copy	<p>Use this button to save a duplicate of a shell script file on the USG.</p> <p>Click a shell script file's row to select it and click Copy to open the Copy File screen.</p> <p>Figure 436 Maintenance > File Manager > Shell Script > Copy</p>  <p>Specify a name for the duplicate file. Use up to 25 characters (including a-zA-Z0-9;`~!@#\$\$%^&()_+[]{}',.-).</p> <p>Click OK to save the duplicate or click Cancel to close the screen without saving a duplicate of the configuration file.</p>
Apply	<p>Use this button to have the USG use a specific shell script file.</p> <p>Click a shell script file's row to select it and click Apply to have the USG use that shell script file. You may need to wait awhile for the USG to finish applying the commands.</p>
#	This column displays the number for each shell script file entry.
File Name	This column displays the label that identifies a shell script file.
Size	This column displays the size (in KB) of a shell script file.
Last Modified	This column displays the date and time that the individual shell script files were last changed or saved.
Upload Shell Script	The bottom part of the screen allows you to upload a new or previously saved shell script file from your computer to your USG.
File Path	Type in the location of the file you want to upload in this field or click Browse ... to find it.
Browse...	Click Browse... to find the .zysh file you want to upload.
Upload	Click Upload to begin the upload process. This process may take up to several minutes.

Diagnostics

33.1 Overview

Use the diagnostics screens for troubleshooting.

33.1.1 What You Can Do in this Chapter

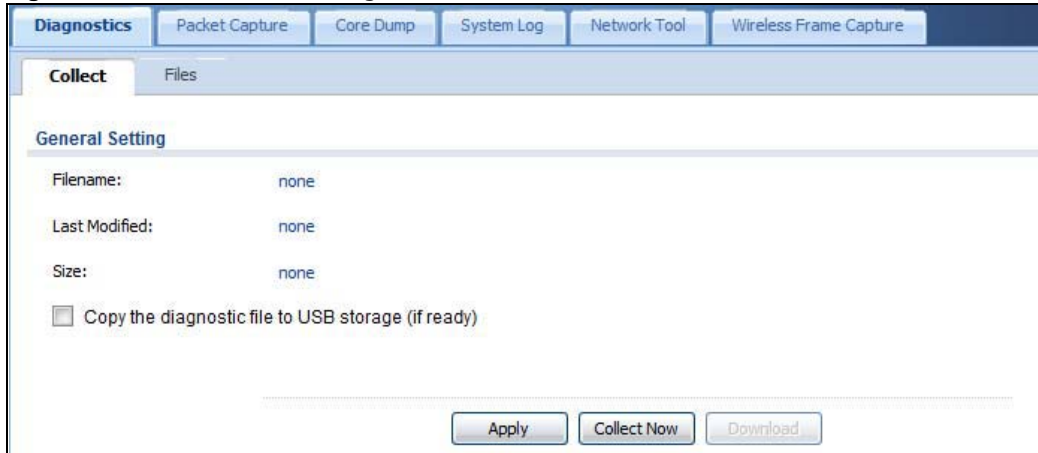
- Use the **Diagnostics** screen (see [Section 33.2 on page 615](#)) to generate a file containing the USG's configuration and diagnostic information if you need to provide it to customer support during troubleshooting.
- Use the **Packet Capture** screens (see [Section 33.3 on page 617](#)) to capture packets going through the USG.
- The **Core Dump** screens ([Section 33.4 on page 620](#)) save a process's core dump to an attached USB storage device if the process terminates abnormally (crashes) so you can send the file to customer support for troubleshooting.
- The **System Log** screens ([Section 33.5 on page 622](#)) download files of system logs from a connected USB storage device to your computer.
- Use the **Network Tool** screen (see [Section 33.6 on page 622](#)) to ping an IP address or trace the route packets take to a host.
- Use the **Wireless Frame Capture** screens (see [Section 33.7 on page 623](#)) to capture network traffic going through the AP interfaces connected to your USG.

33.2 The Diagnostic Screen

The **Diagnostic** screen provides an easy way for you to generate a file containing the USG's configuration and diagnostic information. You may need to send this file to customer support for troubleshooting.

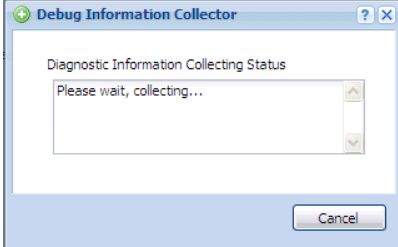
Click **Maintenance > Diagnostics** to open the **Diagnostic** screen.

Figure 437 Maintenance > Diagnostics



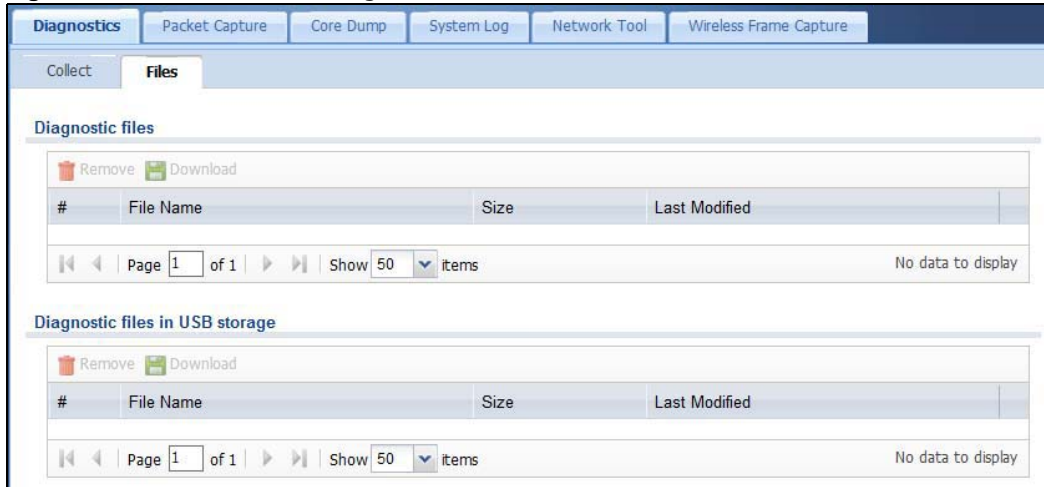
The following table describes the labels in this screen.

Table 267 Maintenance > Diagnostics

LABEL	DESCRIPTION
Filename	This is the name of the most recently created diagnostic file.
Last modified	This is the date and time that the last diagnostic file was created. The format is yyyy-mm-dd hh:mm:ss.
Size	This is the size of the most recently created diagnostic file.
Copy the diagnostic file to USB storage (if ready)	Select this to have the USG create an extra copy of the diagnostic file to a connected USB storage device.
Apply	Click Apply to save your changes.
Collect Now	Click this to have the USG create a new diagnostic file. Wait while information is collected. 
Download	Click this to save the most recent diagnostic file to a computer.

33.2.1 The Diagnostics Files Screen

Click **Maintenance > Diagnostics > Files** to open the diagnostic files screen. This screen lists the files of diagnostic information the USG has collected and stored on the USG or a connected USB storage device. You may need to send these files to customer support for troubleshooting.

Figure 438 Maintenance > Diagnostics > Files

The following table describes the labels in this screen.

Table 268 Maintenance > Diagnostics > Files

LABEL	DESCRIPTION
Remove	Select files and click Remove to delete them from the USG. Use the [Shift] and/or [Ctrl] key to select multiple files. A pop-up window asks you to confirm that you want to delete.
Download	Click a file to select it and click Download to save it to your computer.
#	This column displays the number for each file entry. The total number of files that you can save depends on the file sizes and the available storage space.
File Name	This column displays the label that identifies the file.
Size	This column displays the size (in bytes) of a file.
Last Modified	This column displays the date and time that the individual files were saved.

33.3 The Packet Capture Screen

Use this screen to capture network traffic going through the USG's interfaces. Studying these packet captures may help you identify network problems. Click **Maintenance > Diagnostics > Packet Capture** to open the packet capture screen.

Note: New capture files overwrite existing files of the same name. Change the **File Suffix** field's setting to avoid this.

Figure 439 Maintenance > Diagnostics > Packet Capture

The following table describes the labels in this screen.

Table 269 Maintenance > Diagnostics > Packet Capture

LABEL	DESCRIPTION
Interfaces	Enabled interfaces (except for virtual interfaces) appear under Available Interfaces . Select interfaces for which to capture packets and click the right arrow button to move them to the Capture Interfaces list. Use the [Shift] and/or [Ctrl] key to select multiple objects.
Filter	
IP Version	Select the version of IP for which to capture packets. Select any to capture packets for all IP versions.
Protocol Type	Select the protocol of traffic for which to capture packets. Select any to capture packets for all types of traffic.
Host IP	Select a host IP address object for which to capture packets. Select any to capture packets for all hosts. Select User Defined to be able to enter an IP address.
Host Port	This field is configurable when you set the IP Type to any , tcp , or udp . Specify the port number of traffic to capture.
Misc setting	
Continuously capture and overwrite old ones	Select this to have the USG keep capturing traffic and overwriting old packet capture entries when the available storage space runs out.

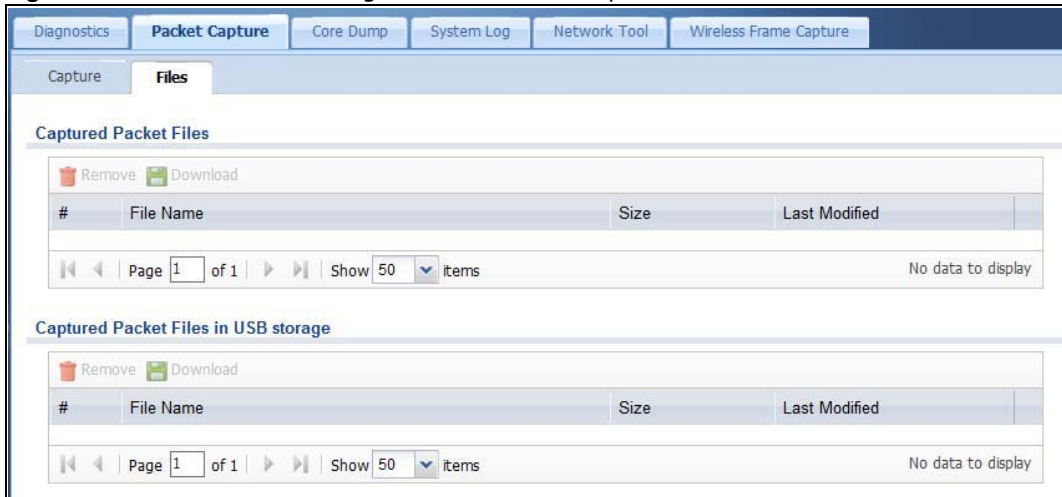
Table 269 Maintenance > Diagnostics > Packet Capture (continued)

LABEL	DESCRIPTION
Save data to onboard storage only	<p>Select this to have the USG only store packet capture entries on the USG. The available storage size is displayed as well.</p> <p>Note: The USG reserves some onboard storage space as a buffer.</p>
Save data to USB storage	<p>Select this to have the USG store packet capture entries only on a USB storage device connected to the USG if the USG allows this.</p> <p>Status:</p> <p>Unused - the connected USB storage device was manually unmounted by using the Remove Now button or for some reason the USG cannot mount it.</p> <p>none - no USB storage device is connected.</p> <p>service deactivated - USB storage feature is disabled (in Configuration > Object > USB Storage), so the USG cannot use a connected USB device to store system logs and other diagnostic information.</p> <p>available - you can have the USG use the USB storage device. The available storage capacity also displays.</p> <p>Note: The USG reserves some USB storage space as a buffer.</p>
Captured Packet Files	<p>When saving packet captures only to the USG's onboard storage, specify a maximum limit in megabytes for the total combined size of all the capture files on the USG.</p> <p>When saving packet captures to a connected USB storage device, specify a maximum limit in megabytes for each capture file.</p> <p>Note: If you have existing capture files and have not selected the Continuously capture and overwrite old ones option, you may need to set this size larger or delete existing capture files.</p> <p>The valid range depends on the available onboard/USB storage size. The USG stops the capture and generates the capture file when either the file reaches this size or the time period specified in the Duration field expires.</p>
Split threshold	Specify a maximum size limit in megabytes for individual packet capture files. After a packet capture file reaches this size, the USG starts another packet capture file.
Capture	<p>Click this button to have the USG capture packets according to the settings configured in this screen.</p> <p>You can configure the USG while a packet capture is in progress although you cannot modify the packet capture settings.</p> <p>The USG's throughput or performance may be affected while a packet capture is in progress.</p> <p>After the USG finishes the capture it saves a separate capture file for each selected interface. The total number of packet capture files that you can save depends on the file sizes and the available flash storage space. Once the flash storage space is full, adding more packet captures will fail.</p>
Stop	Click this button to stop a currently running packet capture and generate a separate capture file for each selected interface.
Reset	Click this button to return the screen to its last-saved settings.

33.3.1 The Packet Capture Files Screen

Click **Maintenance > Diagnostics > Packet Capture > Files** to open the packet capture files screen. This screen lists the files of packet captures stored on the USG or a connected USB storage device. You can download the files to your computer where you can study them using a packet analyzer (also known as a network or protocol analyzer) such as Wireshark.

Figure 440 Maintenance > Diagnostics > Packet Capture > Files



The following table describes the labels in this screen.

Table 270 Maintenance > Diagnostics > Packet Capture > Files

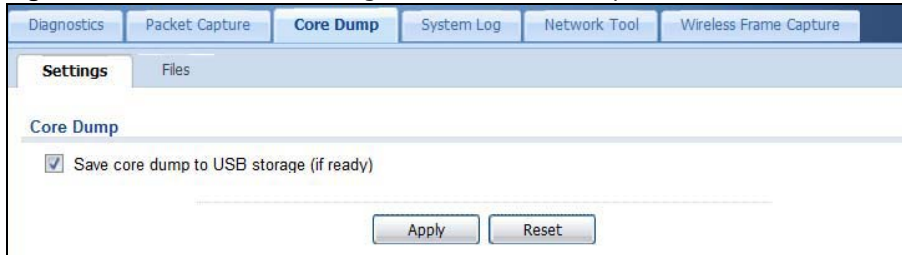
LABEL	DESCRIPTION
Remove	Select files and click Remove to delete them from the USG or the connected USB storage device. Use the [Shift] and/or [Ctrl] key to select multiple files. A pop-up window asks you to confirm that you want to delete.
Download	Click a file to select it and click Download to save it to your computer.
#	This column displays the number for each packet capture file entry. The total number of packet capture files that you can save depends on the file sizes and the available flash storage space.
File Name	This column displays the label that identifies the file. The file name format is interface name-file suffix.cap.
Size	This column displays the size (in bytes) of a configuration file.
Last Modified	This column displays the date and time that the individual files were saved.

33.4 The Core Dump Screen

Use the **Core Dump** screen to have the USG save a process's core dump to an attached USB storage device if the process terminates abnormally (crashes). You may need to send this file to customer support for troubleshooting.

Click **Maintenance > Diagnostics > Core Dump** to open the following screen.

Figure 441 Maintenance > Diagnostics > Core Dump



The following table describes the labels in this screen.

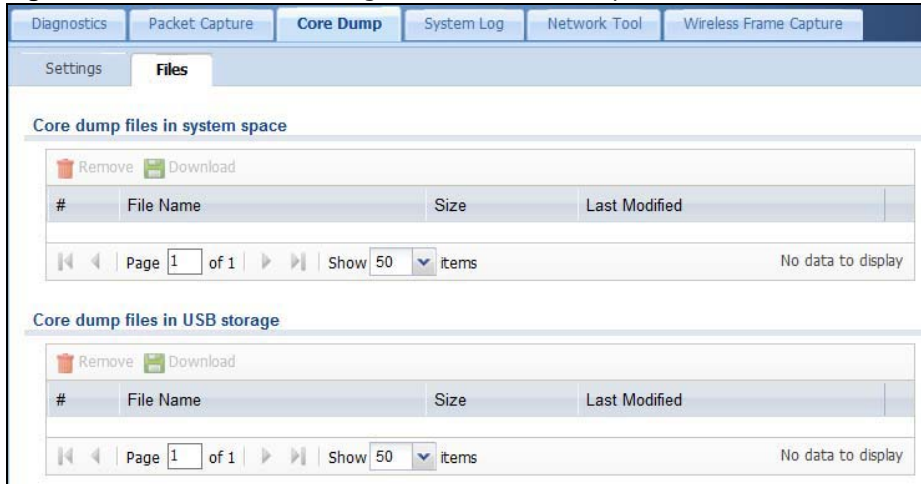
Table 271 Maintenance > Diagnostics > Core Dump

LABEL	DESCRIPTION
Save core dump to USB storage (if ready)	Select this to have the USG save a process's core dump to an attached USB storage device if the process terminates abnormally (crashes). If you clear this option the USG only saves
Apply	Click Apply to save the changes.
Reset	Click Reset to return the screen to its last-saved settings.

33.4.1 The Core Dump Files Screen

Click **Maintenance > Diagnostics > Core Dump > Files** to open the core dump files screen. This screen lists the core dump files stored on the USG or a connected USB storage device. You may need to send these files to customer support for troubleshooting.

Figure 442 Maintenance > Diagnostics > Core Dump > Files



The following table describes the labels in this screen.

Table 272 Maintenance > Diagnostics > Core Dump > Files

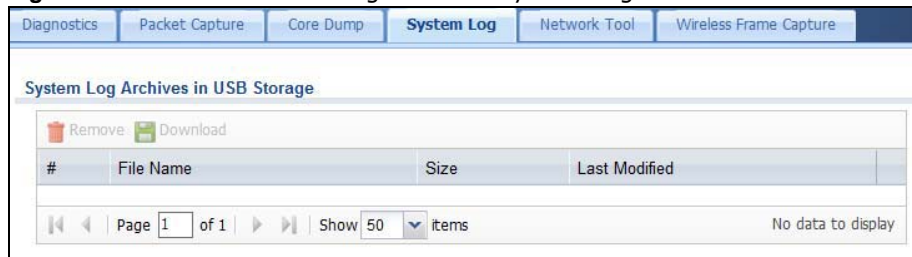
LABEL	DESCRIPTION
Remove	Select files and click Remove to delete them from the USG. Use the [Shift] and/or [Ctrl] key to select multiple files. A pop-up window asks you to confirm that you want to delete.
Download	Click a file to select it and click Download to save it to your computer.
#	This column displays the number for each core dump file entry. The total number of core dump files that you can save depends on the file sizes and the available flash storage space.

Table 272 Maintenance > Diagnostics > Core Dump > Files (continued)

LABEL	DESCRIPTION
File Name	This column displays the label that identifies the file.
Size	This column displays the size (in bytes) of a file.
Last Modified	This column displays the date and time that the individual files were saved.

33.5 The System Log Screen

Click **Maintenance > Diagnostics > System Log** to open the system log files screen. This screen lists the files of system logs stored on a connected USB storage device. The files are in comma separated value (csv) format. You can download them to your computer and open them in a tool like Microsoft's Excel.

Figure 443 Maintenance > Diagnostics > System Log

The following table describes the labels in this screen.

Table 273 Maintenance > Diagnostics > System Log

LABEL	DESCRIPTION
Remove	Select files and click Remove to delete them from the USG. Use the [Shift] and/or [Ctrl] key to select multiple files. A pop-up window asks you to confirm that you want to delete.
Download	Click a file to select it and click Download to save it to your computer.
#	This column displays the number for each file entry. The total number of files that you can save depends on the file sizes and the available storage space.
File Name	This column displays the label that identifies the file.
Size	This column displays the size (in bytes) of a file.
Last Modified	This column displays the date and time that the individual files were saved.

33.6 The Network Tool Screen

Use this screen to ping or traceroute an IP address.

Click **Maintenance > Diagnostics > Network Tool** to display this screen.

Figure 444 Maintenance > Diagnostics > Network Tool

The following table describes the labels in this screen.

Table 274 Maintenance > Diagnostics > Network Tool

LABEL	DESCRIPTION
Network Tool	Select PING IPv4 to ping the IP address that you entered. Select TRACEROUTE IPv4 to perform the traceroute function. This determines the path a packet takes to the specified computer.
Domain Name or IP Address	Type the IPv4 address of a computer that you want to perform ping or traceroute in order to test a connection.
Test	Click this button to start to ping or run a traceroute.
Stop	Click this button to terminate the current ping operation or traceroute.
Reset	Click this button to return the screen to its last-saved settings.

33.7 The Wireless Frame Capture Screen

Use this screen to capture wireless network traffic going through the AP interfaces connected to your USG. Studying these frame captures may help you identify network problems.

Click **Maintenance > Diagnostics > Wireless Frame Capture** to display this screen.

Note: New capture files overwrite existing files of the same name. Change the **File Prefix** field's setting to avoid this.

Figure 445 Maintenance > Diagnostics > Wireless Frame Capture > Capture

The following table describes the labels in this screen.

Table 275 Maintenance > Diagnostics > Wireless Frame Capture > Capture

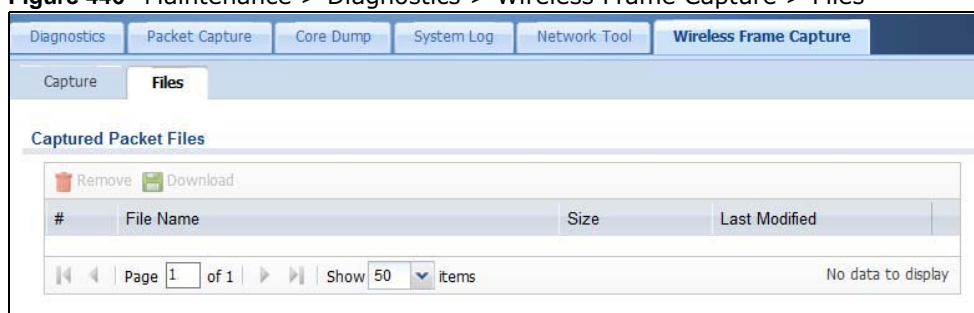
LABEL	DESCRIPTION
MON Mode APs	
Configure AP to MON Mode	Click this to go the Configuration > Wireless > AP Management screen, where you can set one or more APs to monitor mode.
Available MON Mode APs	This column displays which APs on your wireless network are currently configured for monitor mode. Use the arrow buttons to move APs off this list and onto the Captured MON Mode APs list.
Capture MON Mode APs	This column displays the monitor-mode configured APs selected to for wireless frame capture.
Misc Setting	
File Size	Specify a maximum size limit in kilobytes for the total combined size of all the capture files on the USG, including any existing capture files and any new capture files you generate. Note: If you have existing capture files you may need to set this size larger or delete existing capture files. The valid range is 1 to 50000. The USG stops the capture and generates the capture file when either the file reaches this size.

Table 275 Maintenance > Diagnostics > Wireless Frame Capture > Capture (continued)

LABEL	DESCRIPTION
File Prefix	Specify text to add to the front of the file name in order to help you identify frame capture files. You can modify the prefix to also create new frame capture files each time you perform a frame capture operation. Doing this does not overwrite existing frame capture files. The file format is: [file prefix].cap. For example, "monitor.cap".
Capture	Click this button to have the USG capture frames according to the settings configured in this screen. You can configure the USG while a frame capture is in progress although you cannot modify the frame capture settings. The USG's throughput or performance may be affected while a frame capture is in progress. After the USG finishes the capture it saves a combined capture file for all APs. The total number of frame capture files that you can save depends on the file sizes and the available flash storage space. Once the flash storage space is full, adding more frame captures will fail.
Stop	Click this button to stop a currently running frame capture and generate a combined capture file for all APs.
Reset	Click this button to return the screen to its last-saved settings.

33.7.1 The Wireless Frame Capture Files Screen

Click **Maintenance > Diagnostics > Wireless Frame Capture > Files** to open this screen. This screen lists the files of wireless frame captures the USG has performed. You can download the files to your computer where you can study them using a packet analyzer (also known as a network or protocol analyzer) such as Wireshark.

Figure 446 Maintenance > Diagnostics > Wireless Frame Capture > Files

The following table describes the labels in this screen.

Table 276 Maintenance > Diagnostics > Wireless Frame Capture > Files

LABEL	DESCRIPTION
Remove	Select files and click Remove to delete them from the USG. Use the [Shift] and/or [Ctrl] key to select multiple files. A pop-up window asks you to confirm that you want to delete.
Download	Click a file to select it and click Download to save it to your computer.
#	This column displays the number for each packet capture file entry. The total number of packet capture files that you can save depends on the file sizes and the available flash storage space.

Table 276 Maintenance > Diagnostics > Wireless Frame Capture > Files (continued)

LABEL	DESCRIPTION
File Name	This column displays the label that identifies the file. The file name format is interface name-file suffix.cap.
Size	This column displays the size (in bytes) of a configuration file.
Last Modified	This column displays the date and time that the individual files were saved.

Packet Flow Explore

34.1 Overview

Use this to get a clear picture on how the USG determines where to forward a packet and how to change the source IP address of the packet according to your current settings. This function provides you a summary of all your routing and SNAT settings and helps troubleshoot any related problems.

34.1.1 What You Can Do in this Chapter

- Use the **Routing Status** screen (see [Section 34.2 on page 627](#)) to view the overall routing flow and each routing function's settings.
- Use the **SNAT Status** screen (see [Section 34.3 on page 632](#)) to view the overall source IP address conversion (SNAT) flow and each SNAT function's settings.

34.2 The Routing Status Screen

The **Routing Status** screen allows you to view the current routing flow and quickly link to specific routing settings. Click a function box in the **Routing Flow** section, the related routes (activated) will display in the **Routing Table** section. To access this screen, click **Maintenance > Packet Flow Explore**.

The order of the routing flow may vary depending on whether you:

- Select **use policy route to override direct route** in the **CONFIGURATION > Network > Routing > Policy Route** screen.
- Use policy routes to control 1-1 NAT by using the `policy control-virtual-server-rules activate` command.
- Select **use policy routes to control dynamic IPSec rules** in the **CONFIGURATION > VPN > IPSec VPN > VPN Connection** screen.

Note: Once a packet matches the criteria of a routing rule, the USG takes the corresponding action and does not perform any further flow checking.

Figure 447 Maintenance > Packet Flow Explore > Routing Status (Direct Route)

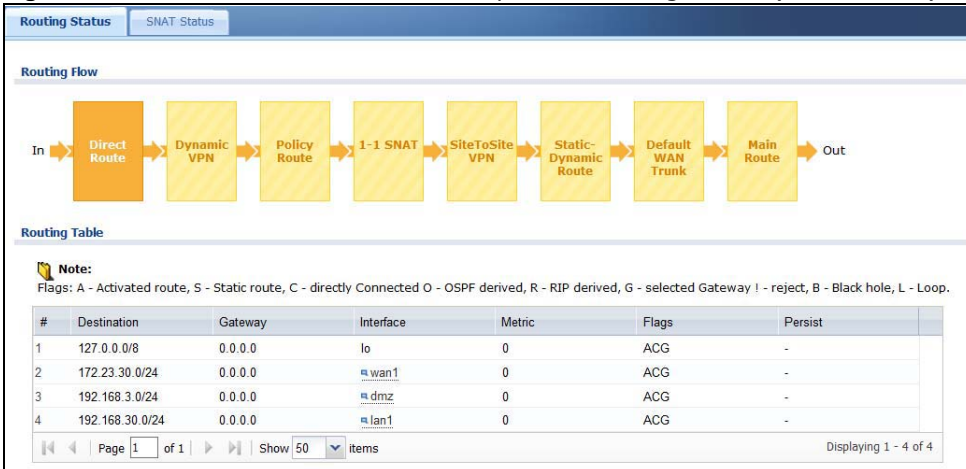


Figure 448 Maintenance > Packet Flow Explore > Dynamic VPN

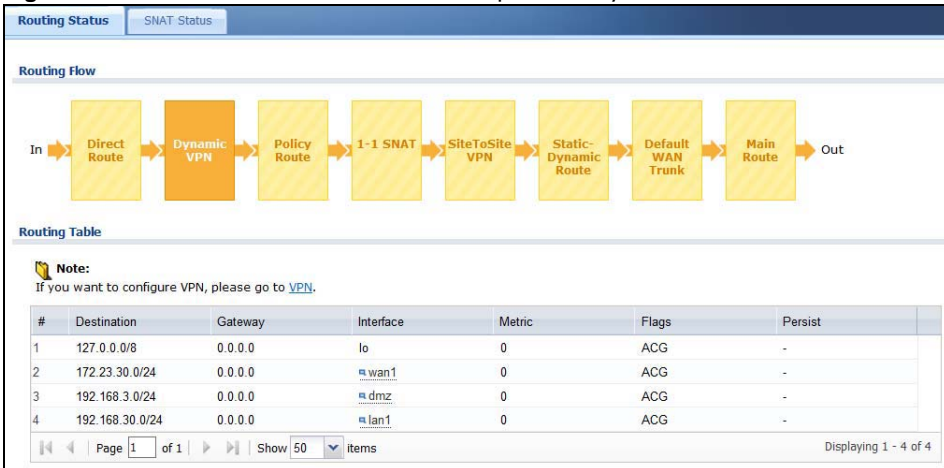


Figure 449 Maintenance > Packet Flow Explore > Routing Status (Policy Route)

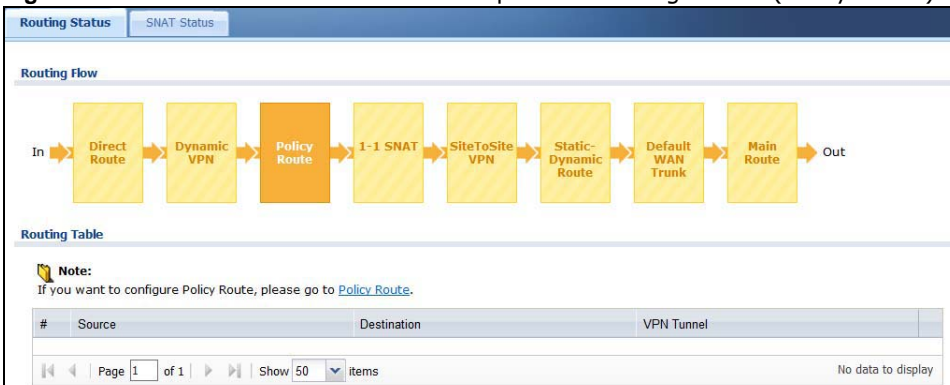


Figure 450 Maintenance > Packet Flow Explore > Routing Status (1-1 SNAT)

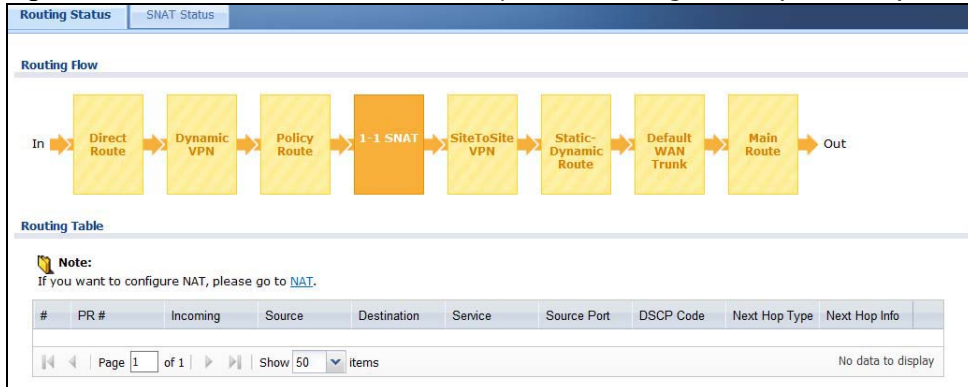


Figure 451 Maintenance > Packet Flow Explore > Routing Status (SiteToSite VPN)

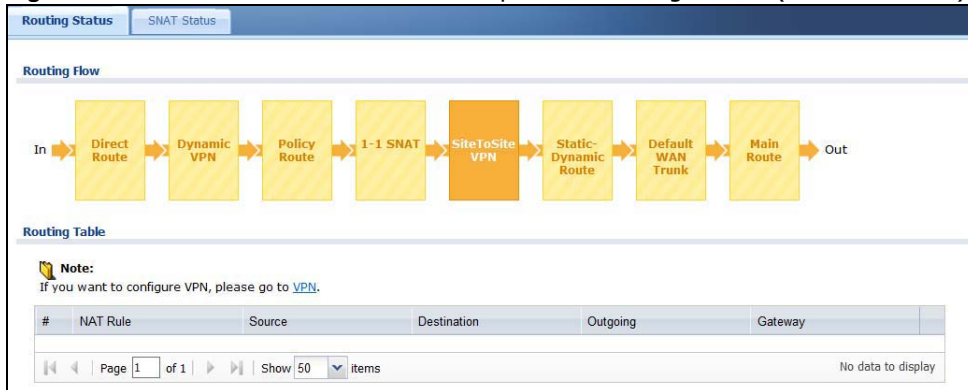


Figure 452 Maintenance > Packet Flow Explore > Routing Status (Dynamic VPN)

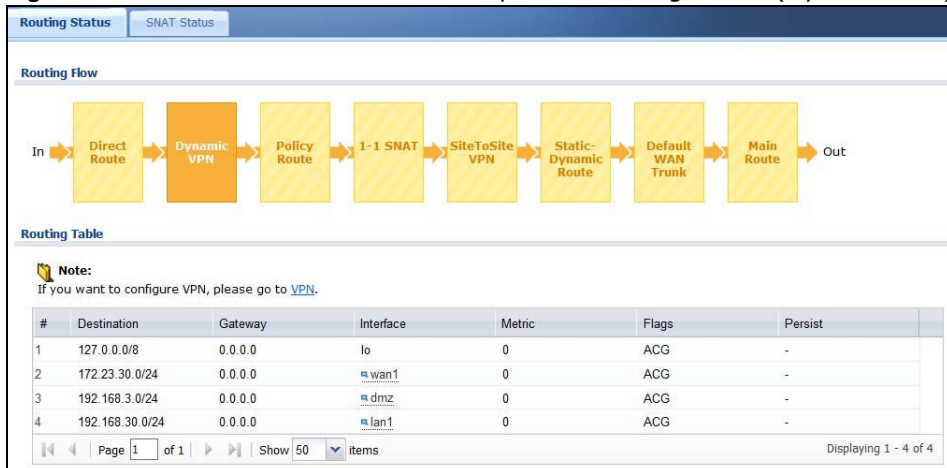


Figure 453 Maintenance > Packet Flow Explore > Routing Status (Static-Dynamic Route)

Routing Status | SNAT Status

Routing Flow

In → Direct Route → Dynamic VPN → Policy Route → 1-1 SNAT → SiteToSite VPN → **Static-Dynamic Route** → Default WAN Trunk → Main Route → Out

Routing Table

Note:
If you want to configure Static Route, please go to [Static Route](#) and If you want to configure Dynamic Route, please go to [RIP](#) or [OSPF](#).
Flags: A - Activated route, S - Static route, C - directly Connected O - OSPF derived, R - RIP derived, G - selected Gateway I - reject, B - Black hole, L - Loop.

#	Source	Destination	VPN Tunnel
No data to display			

Page 1 of 1 | Show 50 items

Figure 454 Maintenance > Packet Flow Explore > Routing Status (Default WAN Trunk)

Routing Status | SNAT Status

Routing Flow

In → Direct Route → Dynamic VPN → Policy Route → 1-1 SNAT → SiteToSite VPN → Static-Dynamic Route → **Default WAN Trunk** → Main Route → Out

Routing Table

Note:
If you want to configure Default WAN Trunk, please go to [Trunk](#).

#	Destination	Gateway	Interface	Metric	Flags	Persist
No data to display						

Page 1 of 1 | Show 50 items

Figure 455 Maintenance > Packet Flow Explore > Routing Status (Main Route)

Routing Status | SNAT Status

Routing Flow

In → Direct Route → Dynamic VPN → Policy Route → 1-1 SNAT → SiteToSite VPN → Static-Dynamic Route → Default WAN Trunk → **Main Route** → Out

Routing Table

Note:
Flags: A - Activated route, S - Static route, C - directly Connected O - OSPF derived, R - RIP derived, G - selected Gateway I - reject, B - Black hole, L - Loop.

#	Destination	Gateway	Interface	Metric	Flags	Persist
1	0.0.0.0/0	172.20.0.254	wan1	0	ASG	-
2	127.0.0.0/8	0.0.0.0	lo	0	ACG	-
3	172.20.0.0/24	0.0.0.0	wan1	0	ACG	-
4	192.168.0.0/24	0.0.0.0	dmz	0	ACG	-
5	192.168.31.0/24	0.0.0.0	lan1	0	ACG	-

Page 1 of 1 | Show 50 items | Displaying 1 - 5 of 5

The following table describes the labels in this screen.

Table 277 Maintenance > Packet Flow Explore > Routing Status

LABEL	DESCRIPTION
Routing Flow	This section shows you the flow of how the USG determines where to route a packet. Click a function box to display the related settings in the Routing Table section.
Routing Table	This section shows the corresponding settings according to the function box you click in the Routing Flow section.
The following fields are available if you click Direct Route , Static-Dynamic Route , or Main Route in the Routing Flow section.	
#	This field is a sequential value, and it is not associated with any entry.
Destination	This is the destination IP address of a route.
Gateway	This is the IP address of the next-hop gateway or the interface through which the traffic is routed.
Interface	This is the name of an interface associated with the route.
Metric	This is the route's priority among the displayed routes.
Flags	This indicates additional information for the route. The possible flags are: <ul style="list-style-type: none"> • A - this route is currently activated • S - this is a static route • C - this is a direct connected route • O - this is a dynamic route learned through OSPF • R - this is a dynamic route learned through RIP • G - the route is to a gateway (router) in the same network. • ! - this is a route which forces a route lookup to fail. • B - this is a route which discards packets. • L - this is a recursive route.
Persist	This is the remaining time of a dynamically learned route. The USG removes the route after this time period is counted down to zero.
The following fields are available if you click Policy Route in the Routing Flow section.	
#	This field is a sequential value, and it is not associated with any entry.
PR #	This is the number of an activated policy route. If you have configured a schedule for the route, this screen only displays the route at the scheduled time.
Incoming	This is the interface on which the packets are received.
Source	This is the source IP address(es) from which the packets are sent.
Destination	This is the destination IP address(es) to which the packets are transmitted.
Service	This is the name of the service object. any means all services.
DSCP Code	This is the DSCP value of incoming packets to which this policy route applies. See Section 10.2 on page 228 for more information.
Next Hop Type	This is the type of the next hop to which packets are directed.
Next Hop Info	<ul style="list-style-type: none"> • This is the main route if the next hop type is Auto. • This is the interface name and gateway IP address if the next hop type is Interface / GW. • This is the tunnel name if the next hop type is VPN Tunnel. • This is the trunk name if the next hop type is Trunk.
The following fields are available if you click 1-1 SNAT in the Routing Flow section.	
#	This field is a sequential value, and it is not associated with any entry.
NAT Rule	This is the name of an activated 1:1 or Many 1:1 NAT rule in the NAT table.
Source	This is the original source IP address(es). any means any IP address.
Destination	This is the original destination IP address(es). any means any IP address.

Table 277 Maintenance > Packet Flow Explore > Routing Status (continued)

LABEL	DESCRIPTION
Outgoing	This is the name of an interface which transmits packets out of the USG.
Gateway	This is the IP address of the gateway in the same network of the outgoing interface.
The following fields are available if you click Dynamic VPN or SiteToSite VPN in the Routing Flow section.	
#	This field is a sequential value, and it is not associated with any entry.
Source	This is the IP address(es) of the local VPN network.
Destination	This is the IP address(es) for the remote VPN network.
VPN Tunnel	This is the name of the VPN tunnel.
The following fields are available if you click Default WAN Trunk in the Routing Flow section.	
#	This field is a sequential value, and it is not associated with any entry.
Source	This is the source IP address(es) from which the packets are sent. any means any IP address.
Destination	This is the destination IP address(es) to which the packets are transmitted. any means any IP address.
Trunk	This is the name of the WAN trunk through which the matched packets are transmitted.

34.3 The SNAT Status Screen

The **SNAT Status** screen allows you to view and quickly link to specific source NAT (SNAT) settings. Click a function box in the **SNAT Flow** section, the related SNAT rules (activated) will display in the **SNAT Table** section. To access this screen, click **Maintenance > Packet Flow Explore > SNAT Status**.

The order of the SNAT flow may vary depending on whether you:

- select **use default SNAT** in the **CONFIGURATION > Network > Interface > Trunk** screen.
- use policy routes to control 1-1 NAT by using the `policy control-virtual-server-rules activate` command.

Note: Once a packet matches the criteria of an SNAT rule, the USG takes the corresponding action and does not perform any further flow checking.

Figure 456 Maintenance > Packet Flow Explore > SNAT Status (Policy Route SNAT)

The screenshot displays the SNAT Status screen. At the top, there is a 'SNAT flow' diagram showing a sequence of four yellow boxes: 'Policy Route SNAT', '1-1 SNAT', 'Loopback SNAT', and 'Default SNAT', connected by arrows from 'In' to 'Out'. Below the diagram is a 'SNAT Table' section. A note indicates that users should go to 'Policy Route' for configuration. The table has columns for '#', 'PR #', 'Outgoing', and 'SNAT'. The table is currently empty, and the footer shows 'Page 1 of 1', 'Show 50 items', and 'No data to display'.

Figure 457 Maintenance > Packet Flow Explore > SNAT Status (1-1 SNAT)

The screenshot shows the 'SNAT Flow' section with a diagram: In → Policy Route SNAT → 1-1 SNAT → Loopback SNAT → Default SNAT → Out. Below it, the 'SNAT Table' is empty. A note says: 'Note: If you want to configure 1-1 SNAT, please go to [NAT](#).' The table has columns: #, NAT Rule, Source, Destination, Outgoing, SNAT. Page 1 of 1, Show 50 items. No data to display.

Figure 458 Maintenance > Packet Flow Explore > SNAT Status (Loopback SNAT)

The screenshot shows the 'SNAT Flow' section with a diagram: In → Policy Route SNAT → 1-1 SNAT → Loopback SNAT → Default SNAT → Out. Below it, the 'SNAT Table' is empty. A note says: 'Note: If you want to configure loopback SNAT, please go to [NAT](#). Loopback SNAT will be only applied only when the initiator is located at the network which the server locates at.' The table has columns: #, NAT Rule, Source, Destination, SNAT. Page 1 of 1, Show 50 items. No data to display.

Figure 459 Maintenance > Packet Flow Explore > SNAT Status (Default SNAT)

The screenshot shows the 'SNAT Flow' section with a diagram: In → Policy Route SNAT → 1-1 SNAT → Loopback SNAT → Default SNAT → Out. Below it, the 'SNAT Table' has one entry. A note says: 'Note: If you want to configure Default SNAT, please go to [Trunk](#).' The table has columns: #, Incoming, Outgoing, SNAT. Entry 1: Internal Interface, External Interface, Outgoing Interface IP. Page 1 of 1, Show 50 items. Displaying 1 - 1 of 1.

The following table describes the labels in this screen.

Table 278 Maintenance > Packet Flow Explore > SNAT Status

LABEL	DESCRIPTION
SNAT Flow	This section shows you the flow of how the USG changes the source IP address for a packet according to the rules you have configured in the USG. Click a function box to display the related settings in the SNAT Table section.
SNAT Table	The table fields in this section vary depending on the function box you select in the SNAT Flow section.
The following fields are available if you click Policy Route SNAT in the SNAT Flow section.	
#	This field is a sequential value, and it is not associated with any entry.
PR #	This is the number of an activated policy route which uses SNAT.
Outgoing	This is the outgoing interface that the route uses to transmit packets.
SNAT	This is the source IP address(es) that the SNAT rule uses finally.
The following fields are available if you click 1-1 SNAT in the SNAT Flow section.	

Table 278 Maintenance > Packet Flow Explore > SNAT Status (continued)

LABEL	DESCRIPTION
#	This field is a sequential value, and it is not associated with any entry.
NAT Rule	This is the name of an activated NAT rule which uses SNAT.
Source	This is the original source IP address(es).
Destination	This is the original destination IP address(es).
Outgoing	This is the outgoing interface that the SNAT rule uses to transmit packets.
SNAT	This is the source IP address(es) that the SNAT rule uses finally.
The following fields are available if you click Loopback SNAT in the SNAT Flow section.	
#	This field is a sequential value, and it is not associated with any entry.
NAT Rule	This is the name of an activated NAT rule which uses SNAT and enables NAT loopback.
Source	This is the original source IP address(es). any means any IP address.
Destination	This is the original destination IP address(es). any means any IP address.
SNAT	This indicates which source IP address the SNAT rule uses finally. For example, Outgoing Interface IP means that the USG uses the IP address of the outgoing interface as the source IP address for the matched packets it sends out through this rule.
The following fields are available if you click Default SNAT in the SNAT Flow section.	
#	This field is a sequential value, and it is not associated with any entry.
Incoming	This indicates internal interface(s) on which the packets are received.
Outgoing	This indicates external interface(s) from which the packets are transmitted.
SNAT	This indicates which source IP address the SNAT rule uses finally. For example, Outgoing Interface IP means that the USG uses the IP address of the outgoing interface as the source IP address for the matched packets it sends out through this rule.

Shutdown

35.1 Overview

Use this to shutdown the device in preparation for disconnecting the power.

Always use the Maintenance > Shutdown > Shutdown screen or the “shutdown” command before you turn off the USG or remove the power. Not doing so can cause the firmware to become corrupt.

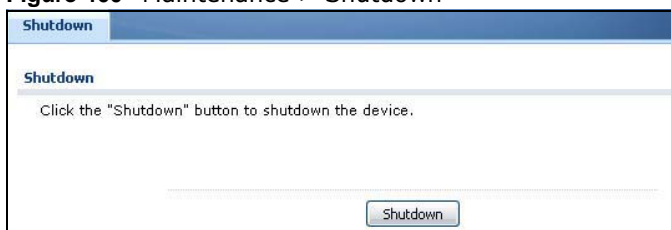
35.1.1 What You Need To Know

Shutdown writes all cached data to the local storage and stops the system processes.

35.2 The Shutdown Screen

To access this screen, click **Maintenance > Shutdown**.

Figure 460 Maintenance > Shutdown



Click the **Shutdown** button to shut down the USG. Wait for the device to shut down before you manually turn off or remove the power. It does not turn off the power.

You can also use the CLI command `shutdown` to shutdown the USG.

Troubleshooting

This chapter offers some suggestions to solve problems you might encounter.

- You can also refer to the logs (see [Chapter 6 on page 100](#)).
- For the order in which the USG applies its features and checks, see [Chapter 34 on page 627](#).

None of the LEDs turn on.

Make sure that you have the power cord connected to the USG and plugged in to an appropriate power source. Make sure you have the USG turned on. Check all cable connections.

If the LEDs still do not turn on, you may have a hardware problem. In this case, you should contact your local vendor.

Cannot access the USG from the LAN.

- Check the cable connection between the USG and your computer or switch.
- Ping the USG from a LAN computer. Make sure your computer's Ethernet card is installed and functioning properly. Also make sure that its IP address is in the same subnet as the USG's.
- In the computer, click **Start, (All) Programs, Accessories** and then **Command Prompt**. In the **Command Prompt** window, type "ping" followed by the USG's LAN IP address (192.168.1.1 is the default) and then press [ENTER]. The USG should reply.
- If you've forgotten the USG's password, use the **RESET** button. Press the button in for about 5 seconds (or until the **PWR** LED starts to blink), then release it. It returns the USG to the factory defaults (password is 1234, LAN IP address 192.168.1.1 etc.; see your User's Guide for details).
- If you've forgotten the USG's IP address, you can use the commands through the console port to check it. Connect your computer to the **CONSOLE** port using a console cable. Your computer should have a terminal emulation communications program (such as HyperTerminal) set to VT100 terminal emulation, no parity, 8 data bits, 1 stop bit, no flow control and 115200 bps port speed.

I cannot access the Internet.

- Check the USG's connection to the Ethernet jack with Internet access. Make sure the Internet gateway device (such as a DSL modem) is working properly.
- Check the WAN interface's status in the **Dashboard**. Use the installation setup wizard again and make sure that you enter the correct settings. Use the same case as provided by your ISP.

The content filter category service is not working.

- Make sure your USG has the content filter category service registered and that the license is not expired. Purchase a new license if the license is expired.
- Make sure your USG is connected to the Internet.

I configured security settings but the USG is not applying them for certain interfaces.

Many security settings are usually applied to zones. Make sure you assign the interfaces to the appropriate zones. When you create an interface, there is no security applied on it until you assign it to a zone.

The USG is not applying the custom policy route I configured.

The USG checks the policy routes in the order that they are listed. So make sure that your custom policy route comes before any other routes that the traffic would also match.

The USG is not applying the custom security policy I configured.

The USG checks the security policies in the order that they are listed. So make sure that your custom security policy comes before any other rules that the traffic would also match.

I cannot enter the interface name I want.

The format of interface names other than the Ethernet interface names is very strict. Each name consists of 2-4 letters (interface type), followed by a number (x, limited by the maximum number of each type of interface). For example, VLAN interfaces are vlan0, vlan1, vlan2, ...; and so on.

- The names of virtual interfaces are derived from the interfaces on which they are created. For example, virtual interfaces created on Ethernet interface wan1 are called wan1:1, wan1:2, and so on. Virtual interfaces created on VLAN interface vlan2 are called vlan2:1, vlan2:2, and so on. You cannot specify the number after the colon(:) in the Web Configurator; it is a sequential number. You can specify the number after the colon if you use the CLI to set up a virtual interface.

I cannot set up a PPP interface, virtual Ethernet interface or virtual VLAN interface on an Ethernet interface.

You cannot set up a PPP interface, virtual Ethernet interface or virtual VLAN interface if the underlying interface is a member of a bridge. You also cannot add an Ethernet interface or VLAN interface to a bridge if the member interface has a virtual interface or PPP interface on top of it.

My rules and settings that apply to a particular interface no longer work.

The interface's IP address may have changed. To avoid this create an IP address object based on the interface. This way the USG automatically updates every rule or setting that uses the object whenever the interface's IP address settings change. For example, if you change LAN1's IP address, the USG automatically updates the corresponding interface-based, LAN1 subnet address object.

I cannot set up a PPP interface.

You have to set up an ISP account before you create a PPPoE or PPTP interface.

The data rates through my cellular connection are no-where near the rates I expected.

The actual cellular data rate you obtain varies depending on the cellular device you use, the signal strength to the service provider's base station, and so on.

I created a cellular interface but cannot connect through it.

- Make sure you have a compatible mobile broadband device installed or connected. See www.zyxel.com for details.
- Make sure you have the cellular interface enabled.
- Make sure the cellular interface has the correct user name, password, and PIN code configured with the correct casing.
- If the USG has multiple WAN interfaces, make sure their IP addresses are on different subnets.

Hackers have accessed my WEP-encrypted wireless LAN.

WEP is extremely insecure. Its encryption can be broken by an attacker, using widely-available software. It is strongly recommended that you use a more effective security mechanism. Use the strongest security mechanism that all the wireless devices in your network support. WPA2 or WPA2-PSK is recommended.

The wireless security is not following the re-authentication timer setting I specified.

If a RADIUS server authenticates wireless stations, the re-authentication timer on the RADIUS server has priority. Change the RADIUS server's configuration if you need to use a different re-authentication timer setting.

I cannot configure a particular VLAN interface on top of an Ethernet interface even though I have it configured it on top of another Ethernet interface.

Each VLAN interface is created on top of only one Ethernet interface.

The USG is not applying an interface's configured ingress bandwidth limit.

At the time of writing, the USG does not support ingress bandwidth management.

The USG routes and applies SNAT for traffic from some interfaces but not from others.

The USG automatically uses SNAT for traffic it routes from internal interfaces to external interfaces. For example LAN to WAN traffic. You must manually configure a policy route to add routing and SNAT settings for an interface with the **Interface Type** set to **General**. You can also configure a policy route to override the default routing and SNAT behavior for an interface with the **Interface Type** set to **Internal** or **External**.

I cannot get Dynamic DNS to work.

- You must have a public WAN IP address to use Dynamic DNS.
- Make sure you recorded your DDNS account's user name, password, and domain name and have entered them properly in the USG.
- You may need to configure the DDNS entry's IP Address setting to **Auto** if the interface has a dynamic IP address or there are one or more NAT routers between the USG and the DDNS server.
- The USG may not determine the proper IP address if there is an HTTP proxy server between the USG and the DDNS server.

I cannot create a second HTTP redirect rule for an incoming interface.

You can configure up to one HTTP redirect rule for each (incoming) interface.

The USG keeps resetting the connection.

If an alternate gateway on the LAN has an IP address in the same subnet as the USG's LAN IP address, return traffic may not go through the USG. This is called an asymmetrical or "triangle" route. This causes the USG to reset the connection, as the connection has not been acknowledged.

You can set the USG's security policy to permit the use of asymmetrical route topology on the network (so it does not reset the connection) although this is not recommended since allowing asymmetrical routes may let traffic from the WAN go directly to the LAN without passing through the USG. A better solution is to use virtual interfaces to put the USG and the backup gateway on separate subnets. See [Asymmetrical Routes on page 320](#) and the chapter about interfaces for more information.

I cannot set up an IPsec VPN tunnel to another device.

If the IPsec tunnel does not build properly, the problem is likely a configuration error at one of the IPsec routers. Log into both ZyXEL IPsec routers and check the settings in each field methodically and slowly. Make sure both the USG and remote IPsec router have the same security settings for the VPN tunnel. It may help to display the settings for both routers side-by-side.

Here are some general suggestions. See also [Chapter 21 on page 332](#).

- The system log can often help to identify a configuration problem.
- If you enable NAT traversal, the remote IPsec device must also have NAT traversal enabled.
- The USG and remote IPsec router must use the same authentication method to establish the IKE SA.
- Both routers must use the same negotiation mode.
- Both routers must use the same encryption algorithm, authentication algorithm, and DH key group.
- When using pre-shared keys, the USG and the remote IPsec router must use the same pre-shared key.
- The USG's local and peer ID type and content must match the remote IPsec router's peer and local ID type and content, respectively.
- The USG and remote IPsec router must use the same active protocol.
- The USG and remote IPsec router must use the same encapsulation.
- The USG and remote IPsec router must use the same SPI.
- If the sites are/were previously connected using a leased line or ISDN router, physically disconnect these devices from the network before testing your new VPN connection. The old route may have been learnt by RIP and would take priority over the new VPN connection.
- To test whether or not a tunnel is working, ping from a computer at one site to a computer at the other.
Before doing so, ensure that both computers have Internet access (via the IPsec routers).
- It is also helpful to have a way to look at the packets that are being sent and received by the USG and remote IPsec router (for example, by using a packet sniffer).

Check the configuration for the following USG features.

- The USG does not put IPsec SAs in the routing table. You must create a policy route for each VPN tunnel. See [Chapter 10 on page 226](#).
- Make sure the To-USG security policies allow IPsec VPN traffic to the USG. IKE uses UDP port 500, AH uses IP protocol 51, and ESP uses IP protocol 50.
- The USG supports UDP port 500 and UDP port 4500 for NAT traversal. If you enable this, make sure the To-USG security policies allow UDP port 4500 too.
- Make sure regular security policies allow traffic between the VPN tunnel and the rest of the network. Regular security policies check packets the USG sends before the USG encrypts them and check packets the USG receives after the USG decrypts them. This depends on the zone to which you assign the VPN tunnel and the zone from which and to which traffic may be routed.
- If you set up a VPN tunnel across the Internet, make sure your ISP supports AH or ESP (whichever you are using).
- If you have the USG and remote IPsec router use certificates to authenticate each other, You must set up the certificates for the USG and remote IPsec router first and make sure they trust each other's certificates. If the USG's certificate is self-signed, import it into the remote IPsec router. If it is signed by a CA, make sure the remote IPsec router trusts that CA. The USG uses one of its **Trusted Certificates** to authenticate the remote IPsec router's certificate. The trusted certificate can be the remote IPsec router's self-signed certificate or that of a trusted CA that signed the remote IPsec router's certificate.
- Multiple SAs connecting through a secure gateway must have the same negotiation mode.

The VPN connection is up but VPN traffic cannot be transmitted through the VPN tunnel.

If you have the **Configuration > VPN > IPsec VPN > VPN Connection** screen's **Use Policy Route to control dynamic IPsec rules option** enabled, check the routing policies to see if they are sending traffic elsewhere instead of through the VPN tunnels.

I uploaded a logo to show in the SSL VPN user screens but it does not display properly.

The logo graphic must be GIF, JPG, or PNG format. The graphic should use a resolution of 103 x 29 pixels to avoid distortion when displayed. The USG automatically resizes a graphic of a different resolution to 103 x 29 pixels. The file size must be 100 kilobytes or less. Transparent background is recommended.

I logged into the SSL VPN but cannot see some of the resource links.

Available resource links vary depending on the SSL application object's configuration.

I changed the LAN IP address and can no longer access the Internet.

The USG automatically updates address objects based on an interface's IP address, subnet, or gateway if the interface's IP address settings change. However, you need to manually edit any address objects for your LAN that are not based on the interface.

I cannot get the RADIUS server to authenticate the USG's default admin account.

The default **admin** account is always authenticated locally, regardless of the authentication method setting.

The USG fails to authentication the ext-user user accounts I configured.

An external server such as AD, LDAP or RADIUS must authenticate the ext-user accounts. If the USG tries to use the local database to authenticate an **ext-user**, the authentication attempt will always fail. (This is related to AAA servers and authentication methods, which are discussed in other chapters in this guide.)

I cannot add the admin users to a user group with access users.

You cannot put access users and admin users in the same user group.

I cannot add the default admin account to a user group.

You cannot put the default **admin** account into any user group.

The schedule I configured is not being applied at the configured times.

Make sure the USG's current date and time are correct.

I cannot get a certificate to import into the USG.

- 1 For **My Certificates**, you can import a certificate that matches a corresponding certification request that was generated by the USG. You can also import a certificate in PKCS#12 format, including the certificate's public and private keys.
- 2 You must remove any spaces from the certificate's filename before you can import the certificate.
- 3 Any certificate that you want to import has to be in one of these file formats:

- Binary X.509: This is an ITU-T recommendation that defines the formats for X.509 certificates.
- PEM (Base-64) encoded X.509: This Privacy Enhanced Mail format uses lowercase letters, uppercase letters and numerals to convert a binary X.509 certificate into a printable form.
- Binary PKCS#7: This is a standard that defines the general syntax for data (including digital signatures) that may be encrypted. A PKCS #7 file is used to transfer a public key certificate. The private key is not included. The USG currently allows the importation of a PKCS#7 file that contains a single certificate.
- PEM (Base-64) encoded PKCS#7: This Privacy Enhanced Mail (PEM) format uses lowercase letters, uppercase letters and numerals to convert a binary PKCS#7 certificate into a printable form.
- Binary PKCS#12: This is a format for transferring public key and private key certificates. The private key in a PKCS #12 file is within a password-encrypted envelope. The file's password is not connected to your certificate's public or private passwords. Exporting a PKCS #12 file creates this and you must provide it to decrypt the contents when you import the file into the USG.

Note: Be careful not to convert a binary file to text during the transfer process. It is easy for this to occur since many programs use text files by default.

I cannot access the USG from a computer connected to the Internet.

Check the service control rules and to-USG security policies.

I uploaded a logo to display on the upper left corner of the Web Configurator login screen and access page but it does not display properly.

Make sure the logo file is a GIF, JPG, or PNG of 100 kilobytes or less.

I uploaded a logo to use as the screen or window background but it does not display properly.

Make sure the logo file is a GIF, JPG, or PNG of 100 kilobytes or less.

The USG's traffic throughput rate decreased after I started collecting traffic statistics.

Data collection may decrease the USG's traffic throughput rate.

I can only see newer logs. Older logs are missing.

When a log reaches the maximum number of log messages, new log messages automatically overwrite existing log messages, starting with the oldest existing log message first.

The commands in my configuration file or shell script are not working properly.

- In a configuration file or shell script, use “#” or “!” as the first character of a command line to have the USG treat the line as a comment.
- Your configuration files or shell scripts can use “exit” or a command line consisting of a single “!” to have the USG exit sub command mode.
- Include `write` commands in your scripts. Otherwise the changes will be lost when the USG restarts. You could use multiple `write` commands in a long script.

Note: “exit” or “!” must follow sub commands if it is to make the USG exit sub command mode.

See [Chapter 32 on page 604](#) for more on configuration files and shell scripts.

I cannot get the firmware uploaded using the commands.

The Web Configurator is the recommended method for uploading firmware. You only need to use the command line interface if you need to recover the firmware. See the CLI Reference Guide for how to determine if you need to recover the firmware and how to recover it.

My packet capture captured less than I wanted or failed.

The packet capture screen’s **File Size** sets a maximum size limit for the total combined size of all the capture files on the USG, including any existing capture files and any new capture files you generate. If you have existing capture files you may need to set this size larger or delete existing capture files.

The USG stops the capture and generates the capture file when either the capture files reach the **File Size** or the time period specified in the **Duration** field expires.

My earlier packet capture files are missing.

New capture files overwrite existing files of the same name. Change the **File Suffix** field’s setting to avoid this.

36.1 Resetting the USG

If you cannot access the USG by any method, try restarting it by turning the power off and then on again. If you still cannot access the USG by any method or you forget the administrator

password(s), you can reset the USG to its factory-default settings. Any configuration files or shell scripts that you saved on the USG should still be available afterwards.

Use the following procedure to reset the USG to its factory-default settings. This overwrites the settings in the startup-config.conf file with the settings in the system-default.conf file.

Note: This procedure removes the current configuration.

- 1 Make sure the **SYS** LED is on and not blinking.
- 2 Press the **RESET** button and hold it until the **SYS** LED begins to blink. (This usually takes about five seconds.)
- 3 Release the **RESET** button, and wait for the USG to restart.

You should be able to access the USG using the default settings.

36.2 Getting More Troubleshooting Help

Search for support information for your model at www.zyxel.com for more troubleshooting suggestions.

Customer Support

In the event of problems that cannot be solved by using this manual, you should contact your vendor. If you cannot contact your vendor, then contact a ZyXEL office for the region in which you bought the device.

See <http://www.zyxel.com/homepage.shtml> and also

http://www.zyxel.com/about_zyxel/zyxel_worldwide.shtml for the latest information.

Please have the following information ready when you contact an office.

Required Information

- Product model and serial number.
- Warranty Information.
- Date that you received your device.
- Brief description of the problem and the steps you took to solve it.

Corporate Headquarters (Worldwide)

Taiwan

- ZyXEL Communications Corporation
- <http://www.zyxel.com>

Asia

China

- ZyXEL Communications (Shanghai) Corp.
- ZyXEL Communications (Beijing) Corp.
- ZyXEL Communications (Tianjin) Corp.
- <http://www.zyxel.cn>

India

- ZyXEL Technology India Pvt Ltd
- <http://www.zyxel.in>

Kazakhstan

- ZyXEL Kazakhstan
- <http://www.zyxel.kz>

Korea

- ZyXEL Korea Corp.
- <http://www.zyxel.kr>

Malaysia

- ZyXEL Malaysia Sdn Bhd.
- <http://www.zyxel.com.my>

Pakistan

- ZyXEL Pakistan (Pvt.) Ltd.
- <http://www.zyxel.com.pk>

Philippines

- ZyXEL Philippines
- <http://www.zyxel.com.ph>

Singapore

- ZyXEL Singapore Pte Ltd.
- <http://www.zyxel.com.sg>

Taiwan

- ZyXEL Communications Corporation
- <http://www.zyxel.com/tw/zh/>

Thailand

- ZyXEL Thailand Co., Ltd
- <http://www.zyxel.co.th>

Vietnam

- ZyXEL Communications Corporation-Vietnam Office
- <http://www.zyxel.com/vn/vi>

Europe

Austria

- ZyXEL Deutschland GmbH
- <http://www.zyxel.de>

Belarus

- ZyXEL BY
- <http://www.zyxel.by>

Belgium

- ZyXEL Communications B.V.
- <http://www.zyxel.com/be/nl/>
- <http://www.zyxel.com/be/fr/>

Bulgaria

- ZyXEL България
- <http://www.zyxel.com/bg/bg/>

Czech Republic

- ZyXEL Communications Czech s.r.o
- <http://www.zyxel.cz>

Denmark

- ZyXEL Communications A/S
- <http://www.zyxel.dk>

Estonia

- ZyXEL Estonia
- <http://www.zyxel.com/ee/et/>

Finland

- ZyXEL Communications
- <http://www.zyxel.fi>

France

- ZyXEL France
- <http://www.zyxel.fr>

Germany

- ZyXEL Deutschland GmbH
- <http://www.zyxel.de>

Hungary

- ZyXEL Hungary & SEE
- <http://www.zyxel.hu>

Italy

- ZyXEL Communications Italy
- <http://www.zyxel.it/>

Latvia

- ZyXEL Latvia
- <http://www.zyxel.com/lv/lv/homepage.shtml>

Lithuania

- ZyXEL Lithuania
- <http://www.zyxel.com/lt/lt/homepage.shtml>

Netherlands

- ZyXEL Benelux
- <http://www.zyxel.nl>

Norway

- ZyXEL Communications
- <http://www.zyxel.no>

Poland

- ZyXEL Communications Poland
- <http://www.zyxel.pl>

Romania

- ZyXEL Romania
- <http://www.zyxel.com/ro/ro>

Russia

- ZyXEL Russia
- <http://www.zyxel.ru>

Slovakia

- ZyXEL Communications Czech s.r.o. organizacna zlozka
- <http://www.zyxel.sk>

Spain

- ZyXEL Communications ES Ltd
- <http://www.zyxel.es>

Sweden

- ZyXEL Communications
- <http://www.zyxel.se>

Switzerland

- Studerus AG
- <http://www.zyxel.ch/>

Turkey

- ZyXEL Turkey A.S.
- <http://www.zyxel.com.tr>

UK

- ZyXEL Communications UK Ltd.
- <http://www.zyxel.co.uk>

Ukraine

- ZyXEL Ukraine
- <http://www.ua.zyxel.com>

Latin America

Argentina

- ZyXEL Communication Corporation
- <http://www.zyxel.com/ec/es/>

Brazil

- ZyXEL Communications Brasil Ltda.
- <https://www.zyxel.com/br/pt/>

Ecuador

- ZyXEL Communication Corporation
- <http://www.zyxel.com/ec/es/>

Middle East

Israel

- ZyXEL Communication Corporation
- <http://il.zyxel.com/homepage.shtml>

Middle East

- ZyXEL Communication Corporation
- <http://www.zyxel.com/me/en/>

North America

USA

- ZyXEL Communications, Inc. - North America Headquarters
- <http://www.zyxel.com/us/en/>

Oceania

Australia

- ZyXEL Communications Corporation
- <http://www.zyxel.com/au/en/>

Africa

South Africa

- Nology (Pty) Ltd.
- <http://www.zyxel.co.za>

Legal Information

Copyright

Copyright © 2015 by ZyXEL Communications Corporation.

The contents of this publication may not be reproduced in any part or as a whole, transcribed, stored in a retrieval system, translated into any language, or transmitted in any form or by any means, electronic, mechanical, magnetic, optical, chemical, photocopying, manual, or otherwise, without the prior written permission of ZyXEL Communications Corporation.

Published by ZyXEL Communications Corporation. All rights reserved.

Disclaimer

ZyXEL does not assume any liability arising out of the application or use of any products, or software described herein. Neither does it convey any license under its patent rights nor the patent rights of others. ZyXEL further reserves the right to make changes in any products described herein without notice. This publication is subject to change without notice.

Regulatory Notice and Statement (Class B)

UNITED STATES of AMERICA



The following information applies if you use the product within USA area.

FCC EMC Statement

- The device complies with Part 15 of FCC rules. Operation is subject to the following two conditions:
 - (1) This device may not cause harmful interference, and
 - (2) This device must accept any interference received, including interference that may cause undesired operation.
- Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the device.
- This product has been tested and complies with the specifications for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This device generates, uses, and can radiate radio frequency energy and, if not installed and used according to the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.
- If this device does cause harmful interference to radio or television reception, which is found by turning the device off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
 - Reorient or relocate the receiving antenna
 - Increase the separation between the devices
 - Connect the equipment to an outlet other than the receiver's
 - Consult a dealer or an experienced radio/TV technician for assistance

FCC Radiation Exposure Statement

- This device complies with FCC RF radiation exposure limits set forth for an uncontrolled environment.

This transmitter must be at least 20 cm from the user and must not be co-located or operating in conjunction with any other antenna or transmitter.

CANADA

The following information applies if you use the product within Canada area

Industry Canada ICES statement

ICAN ICES-3 (B)/NMB-3(B)

Industry Canada RSS-GEN & RSS-247 statement

- This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.
- This radio transmitter (2468C-USG20WVPN) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Antenna Information

TYPE	MANUFACTURER	GAIN	CONNECTOR
Omini-directional dipole	WHA YU	3dBi	Reverse SMA plug

If the product with 5G wireless function operating in 5150-5250 MHz and 5725-5850 MHz , the following attention must be paid,

- The device for operation in the band 5150-5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems.
- For devices with detachable antenna(s), the maximum antenna gain permitted for devices in the band 5725-5850 MHz shall be such that the equipment still complies with the e.i.r.p. limits specified for point-to-point and non-point-to-point operation as appropriate; and
- The worst-case tilt angle(s) necessary to remain compliant with the e.i.r.p. elevation mask requirement set forth in Section 6.2.2(3) of RSS 247 shall be clearly indicated.

If the product with 5G wireless function operating in 5250-5350 MHz and 5470-5725 MHz , the following attention must be paid.

- For devices with detachable antenna(s), the maximum antenna gain permitted for devices in the bands 5250-5350 MHz and 5470-5725 MHz shall be such that the equipment still complies with the e.i.r.p. limit
- Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.
- Le présent émetteur radio (2468C-USG20WVPN) de modèle s'il fait partie du matériel de catégorie I a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

Informations Antenne

TYPE	FABRICANT	GAIN	CONNECTEUR
Omini-directional dipole	WHA YU	3dBi	Reverse SMA plug

Lorsque la fonction sans fil 5G fonctionnant en 5150-5250 MHz and 5725-5850 MHz est activée pour ce produit , il est nécessaire de porter une attention particulière aux choses suivantes

- Les dispositifs fonctionnant dans la bande 5150-5250 MHz sont réservés uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux;
- Pour les dispositifs munis d'antennes amovibles, le gain maximal d'antenne permis (pour les dispositifs utilisant la bande de 5 725 à 5 850 MHz) doit être conforme à la limite de la p.i.r.e. spécifiée pour l'exploitation point à point et l'exploitation non point à point, selon le cas;
- Les pires angles d'inclinaison nécessaires pour rester conforme à l'exigence de la p.i.r.e. applicable au masque d'élévation, et énoncée à la section 6.2.2 3) du CNR-247, doivent être clairement indiqués.

Lorsque la fonction sans fil 5G fonctionnant en 5250-5350 MHz et 5470-5725 MHz est activée pour ce produit , il est nécessaire de porter une attention particulière aux choses suivantes

- Pour les dispositifs munis d'antennes amovibles, le gain maximal d'antenne permis pour les dispositifs utilisant les bandes de 5 250 à 5 350 MHz et de 5 470 à 5 725 MHz doit être conforme à la limite de la p.i.r.e.

Industry Canada radiation exposure statement

This device complies with IC radiation exposure limits set forth for an uncontrolled environment. This device should be installed and operated with a minimum distance of 20 cm between the radiator and your body.

Déclaration d'exposition aux radiations:

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.

EUROPEAN UNION



Appendix B Legal Information

The following information applies if you use the product within the European Union.

Declaration of Conformity with Regard to EU Directive 1999/5/EC (R&TTE Directive)

Compliance information for 2.4GHz and/or 5GHz wireless products relevant to the EU and other Countries following the EU Directive 1999/5/EC (R&TTE)

Български (Bulgarian)	С настоящото ZyXEL декларира, че това оборудване е в съответствие със съществените изисквания и другите приложими разпоредбите на Директива 1999/5/EC.
Español (Spanish)	Por medio de la presente ZyXEL declara que el equipo cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/EC.
Čeština (Czech)	ZyXEL tímto prohlašuje, že tento zařízení je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/EC.
Dansk (Danish)	Undertegnede ZyXEL erklærer herved, at følgende udstyr overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.
Deutsch (German)	Hiermit erkläre ZyXEL, dass sich das Gerät Ausstattung in Übereinstimmung mit den grundlegenden Anforderungen und den übrigen einschlägigen Bestimmungen der Richtlinie 1999/5/EU befindet.
Eesti keel (Estonian)	Käesolevaga kinnitab ZyXEL seadme vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.
Ελληνικά (Greek)	ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ ΖyXEL ΔΗΛΩΝΕΙ ΟΤΙ ΕΞΟΠΛΙΣΜΟΣ ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/EC.
English	Hereby, ZyXEL declares that this device is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
Français (French)	Par la présente ZyXEL déclare que l'appareil équipements est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/EC.
Hrvatski (Croatian)	ZyXEL ovime izjavljuje da je radijska oprema tipa u skladu s Direktivom 1999/5/EC.
Íslenska (Icelandic)	Hér með lýsir, ZyXEL því yfir að þessi búnaður er í samræmi við grunnkröfur og önnur viðeigandi ákvæði tilskipunar 1999/5/EC.
Italiano (Italian)	Con la presente ZyXEL dichiara che questo attrezzatura è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Latviešu valoda (Latvian)	Ar šo ZyXEL deklarē, ka iekārtas atbilst Direktīvas 1999/5/EK būtiskajām prasībām un citiem ar to saistītajiem noteikumiem.
Lietuvių kalba (Lithuanian)	Šiuo ZyXEL deklaruoja, kad šis įranga atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.
Magyar (Hungarian)	Alulírott, ZyXEL nyilatkozom, hogy a berendezés megfelel a vonatkozó alapvető követelményeknek és az 1999/5/EK irányelv egyéb előírásainak.
Malti (Maltese)	Hawnhekk, ZyXEL, jiddikjara li dan taghmir jikkonforma mal-htigijiet essenzjali u ma provvedimenti oħrajn relevanti li hemm fid-Dirrettiva 1999/5/EC.
Nederlands (Dutch)	Hierbij verklaart ZyXEL dat het toestel uitrusting in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EC.
Polski (Polish)	Niniejszym ZyXEL oświadcza, że sprzęt jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 1999/5/EC.
Português (Portuguese)	ZyXEL declara que este equipamento está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/EC.
Română (Romanian)	Prin prezenta, ZyXEL declară că acest echipament este în conformitate cu cerințele esențiale și alte prevederi relevante ale Directivei 1999/5/EC.
Slovenčina (Slovak)	ZyXEL týmto vyhlasuje, že zariadenia spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/EC.
Slovenščina (Slovene)	ZyXEL izjavlja, da je ta oprema v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 1999/5/EC.
Suomi (Finnish)	ZyXEL vakuuttaa täten että laitteet tyypinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
Svenska (Swedish)	Härmed intygar ZyXEL att denna utrustning står i överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EC.
Norsk (Norwegian)	Erklærer herved ZyXEL at dette utstyret er i samsvar med de grunnleggende kravene og andre relevante bestemmelser i direktiv 1999/5/EF.

This device is restricted to indoor use only when operating in the 5150 to 5350 MHz frequency range.

National Restrictions

This product may be used in all EU countries (and other countries following the EU Directive 1999/5/EC) without any limitation except for the countries mentioned below:

Appendix B Legal Information

Ce produit peut être utilisé dans tous les pays de l'UE (et dans tous les pays ayant transposés la directive 1999/5/CE) sans aucune limitation, excepté pour les pays mentionnés ci-dessous:

Questo prodotto è utilizzabile in tutte i paesi EU (ed in tutti gli altri paesi che seguono le direttiva 1999/5/EC) senza nessuna limitazione, eccetto per i paesi menzionati di seguito:

Das Produkt kann in allen EU Staaten ohne Einschränkungen eingesetzt werden (sowie in anderen Staaten die der Richtlinie 1999/5/CE folgen) mit Ausnahme der folgenden aufgeführten Staaten:

In the majority of the EU and other European countries, the 2.4GHz and 5GHz bands have been made available for the use of wireless local area networks (LANs). Later in this document you will find an overview of countries in which additional restrictions or requirements or both are applicable.

The requirements for any country may evolve. ZyXEL recommends that you check with the local authorities for the latest status of their national regulations for both the 2.4GHz and 5GHz wireless LANs.

The following countries have restrictions and/or requirements in addition to those given in the table labeled "Overview of Regulatory Requirements for Wireless LANs":.

Belgium

The Belgian Institute for Postal Services and Telecommunications (BIPT) must be notified of any outdoor wireless link having a range exceeding 300 meters. Please check <http://www.bipt.be> for more details.

Draadloze verbindingen voor buitengebruik en met een reikwijdte van meer dan 300 meter dienen aangemeld te worden bij het Belgisch Instituut voor postdiensten en telecommunicatie (BIPT). Zie <http://www.bipt.be> voor meer gegevens.

Les liaisons sans fil pour une utilisation en extérieur d'une distance supérieure à 300 mètres doivent être notifiées à l'Institut Belge des services Postaux et des Télécommunications (IBPT). Visitez <http://www.ibpt.be> pour de plus amples détails.

Denmark

In Denmark, the band 5150 - 5350 MHz is also allowed for outdoor usage.

I Danmark må frekvensbåndet 5150 - 5350 også anvendes udendørs.

Italy

This product meets the National Radio Interface and the requirements specified in the National Frequency Allocation Table for Italy. Unless this wireless LAN product is operating within the boundaries of the owner's property, its use requires a "general authorization." Please check <http://www.sviluppoeconomico.gov.it/> for more details.

Questo prodotto è conforme alla specifiche di Interfaccia Radio Nazionali e rispetta il Piano Nazionale di ripartizione delle frequenze in Italia. Se non viene installato all'interno del proprio fondo, l'utilizzo di prodotti Wireless LAN richiede una "Autorizzazione Generale". Consultare <http://www.sviluppoeconomico.gov.it/> per maggiori dettagli.

Latvia

The outdoor usage of the 2.4 GHz band requires an authorization from the Electronic Communications Office. Please check <http://www.esd.lv> for more details.

2.4 GHz frekvenču joslas izmantošanai ārpus telpām nepieciešama atļauja no Elektronisko sakaru direkcijas. Vairāk informācijas: <http://www.esd.lv>.

Notes:

1. Although Norway, Switzerland and Liechtenstein are not EU member states, the EU Directive 1999/5/EC has also been implemented in those countries.
2. The regulatory limits for maximum output power are specified in EIRP. The EIRP level (in dBm) of a device can be calculated by adding the gain of the antenna used (specified in dBi) to the output power available at the connector (specified in dBm).

List of national codes

COUNTRY	ISO 3166 2 LETTER CODE	COUNTRY	ISO 3166 2 LETTER CODE
Austria	AT	Liechtenstein	LI
Belgium	BE	Lithuania	LT
Bulgaria	BG	Luxembourg	LU
Croatia	HR	Malta	MT
Cyprus	CY	Netherlands	NL
Czech Republic	CZ	Norway	NO
Denmark	DK	Poland	PL
Estonia	EE	Portugal	PT
Finland	FI	Romania	RO
France	FR	Serbia	RS
Germany	DE	Slovakia	SK
Greece	GR	Slovenia	SI
Hungary	HU	Spain	ES
Iceland	IS	Switzerland	CH
Ireland	IE	Sweden	SE
Italy	IT	Turkey	TR
Latvia	LV	United Kingdom	GB

Safety Warnings

- Do not use this product near water, for example, in a wet basement or near a swimming pool.
- Do not expose your device to dampness, dust or corrosive liquids.
- Do not store things on the device.
- Do not install, use, or service this device during a thunderstorm. There is a remote risk of electric shock from lightning.
- Connect ONLY suitable accessories to the device.
- Do not open the device or unit. Opening or removing covers can expose you to dangerous high voltage points or other risks. ONLY qualified service personnel should service or disassemble this device. Please contact your vendor for further information.
- Make sure to connect the cables to the correct ports.
- Place connecting cables carefully so that no one will step on them or stumble over them.
- Always disconnect all cables from this device before servicing or disassembling.
- Do not remove the plug and connect it to a power outlet by itself; always attach the plug to the power adaptor first before connecting it to a power outlet.
- Do not allow anything to rest on the power adaptor or cord and do NOT place the product where anyone can walk on the power adaptor or cord.
- Please use the provided or designated connection cables/power cables/ adaptors. Connect it to the right supply voltage (for example, 110V AC in North America or 230V AC in Europe). If the power adaptor or cord is damaged, it might cause electrocution. Remove it from the device and the power source, repairing the power adapter or cord is prohibited. Contact your local vendor to order a new one.
- Do not use the device outside, and make sure all the connections are indoors. There is a remote risk of electric shock from lightning.
- CAUTION: Risk of explosion if battery is replaced by an incorrect type, dispose of used batteries according to the instruction. Dispose them at the applicable collection point for the recycling of electrical and electronic devices. For detailed information about recycling of this product, please contact your local city office, your household waste disposal service or the store where you purchased the product.
- Do not obstruct the device ventilation slots, as insufficient airflow may harm your device.

The following warning statements apply, where the disconnect device is not incorporated in the device or where the plug on the power supply cord is intended to serve as the disconnect device,

- For permanently connected devices, a readily accessible disconnect device shall be incorporated external to the device;
- For pluggable devices, the socket-outlet shall be installed near the device and shall be easily accessible.

Environment Statement

ErP (Energy-related Products)

ZyXEL products put on the EU market in compliance with the requirement of the European Parliament and the Council published Directive 2009/125/EC establishing a framework for the setting of ecodesign requirements for energy-related products (recast), so called as "ErP Directive (Energy-related Products directive) as well as ecodesign requirement laid down in applicable implementing measures, power consumption has satisfied regulation requirements which are:

Network standby power consumption < 12W, and/or

Off mode power consumption < 0.5W, and/or

Standby mode power consumption < 0.5W.

Wireless setting, please refer to "Wireless" chapter for more detail.

European Union - Disposal and Recycling Information

The symbol below means that according to local regulations your product and/or its battery shall be disposed of separately from domestic waste. If this product is end of life, take it to a recycling station designated by local authorities. At the time of disposal, the separate collection of your product and/or its battery will help save natural resources and ensure that the environment is sustainable development.

Die folgende Symbol bedeutet, dass Ihr Produkt und/oder seine Batterie gemäß den örtlichen Bestimmungen getrennt vom Hausmüll entsorgt werden muss. Wenden Sie sich an eine Recyclingstation, wenn dieses Produkt das Ende seiner Lebensdauer erreicht hat. Zum Zeitpunkt der Entsorgung wird die getrennte Sammlung von Produkt und/oder seiner Batterie dazu beitragen, natürliche Ressourcen zu sparen und die Umwelt und die menschliche Gesundheit zu schützen.

El símbolo de abajo indica que según las regulaciones locales, su producto y/o su batería deberán depositarse como basura separada de la doméstica. Cuando este producto alcance el final de su vida útil, llévelo a un punto limpio. Cuando llegue el momento de desechar el producto, la recogida por separado éste y/o su batería ayudará a salvar los recursos naturales y a proteger la salud humana y medioambiental.

Le symbole ci-dessous signifie que selon les réglementations locales votre produit et/ou sa batterie doivent être éliminés séparément des ordures ménagères. Lorsque ce produit atteint sa fin de vie, amenez-le à un centre de recyclage. Au moment de la mise au rebut, la collecte séparée de votre produit et/ou de sa batterie aidera à économiser les ressources naturelles et protéger l'environnement et la santé humaine.

Il simbolo sotto significa che secondo i regolamenti locali il vostro prodotto e/o batteria deve essere smaltito separatamente dai rifiuti domestici. Quando questo prodotto raggiunge la fine della vita di servizio portarlo a una stazione di riciclaggio. Al momento dello smaltimento, la raccolta separata del vostro prodotto e/o della sua batteria aiuta a risparmiare risorse naturali e a proteggere l'ambiente e la salute umana.

Symbolen innebär att enligt lokal lagstiftning ska produkten och/eller dess batteri kastas separat från hushållsavfallet. När den här produkten når slutet av sin livslängd ska du ta den till en återvinningsstation. Vid tiden för kasseringen bidrar du till en bättre miljö och mänsklig hälsa genom att göra dig av med den på ett återvinningsställe.



Environmental Product Declaration

Български (Bulgarian)	Čeština (Czech)	Dansk (Danish)	Deutsch (German)
<p>Екологична продуктова декларация</p> <p>RoHS Директива 2011/65/EC WEEE Директива 2012/19/EC PFW Директива 94/62/EC REACH Регламент (EC) № 1907/2006 EUP Директива 2009/125/EC</p> <p>Име/титул: Richard Hsu / Quality Management Division Senior Manager Подпис: <i>Richard Hsu</i> Дата (dd/mm/yyyy): 01/10/2014</p>  	<p>Environmentální prohlášení o produktu</p> <p>RoHS Směrnice 2011/65/EU WEEE Směrnice 2012/19/EU PFW Směrnice 94/62/ES REACH Nařízení (ES) č. 1907/2006 EUP Směrnice 2009/125/EC</p> <p>Jméno/ titul: Richard Hsu / Quality Management Division Senior Manager Podpis: <i>Richard Hsu</i> Datum (ddmm/yyyy): 01/10/2014</p>  	<p>Miljøvaredeklaration</p> <p>RoHS Direktiv 2011/65/EU WEEE Direktiv 2012/19/EU PFW Direktiv 94/62/EF REACH Forordning (EF) nr. 1907/2006 EUP Direktiv 2009/125/EF</p> <p>Navn/ titel: Richard Hsu / Quality Management Division Senior Manager Underskrift: <i>Richard Hsu</i> Dato (dd/mm/åååå): 01/10/2014</p>  	<p>Produkt-Umweltdeklaration</p> <p>RoHS Richtlinie 2011/65/EU WEEE Richtlinie 2012/19/EU PFW Richtlinie 94/62/EG REACH VERORDNUNG (EG) Nr. 1907/2006 EUP Richtlinie 2009/125/EG</p> <p>Name/ titel: Richard Hsu / Quality Management Division Senior Manager Unterschrift: <i>Richard Hsu</i> Datum (dd/mm/yyyy): 2014/10/01</p>  
Eesti keel (Estonian)	English	Español (Spanish)	Français (French)
<p>Toote keskkonnadeklaratsioon</p> <p>RoHS Direktiiv 2011/65/EL WEEE Direktiiv 2012/19/EL PFW Direktiiv 94/62/EÜ REACH MAARLUS (EÜ) nr 1907/2006 EUP Direktiiv 2009/125/EC</p> <p>Nimi/ nimetus: Richard Hsu / Quality Management Division Senior Manager Allkiri: <i>Richard Hsu</i> Kuupäev (pp/kk/aaaa): 01/10/2014</p>  	<p>Environmental product declaration</p> <p>RoHS Directive 2011/65/EU WEEE Directive 2012/19/EU PFW Directive 94/62/EC REACH Regulation (EC) No 1907/2006 EUP Directive 2009/125/EC</p> <p>Name/ title: Richard Hsu / Quality Management Division Senior Manager Signature: <i>Richard Hsu</i> Date (dd/mm/yyyy): 01/10/2014</p>  	<p>Declaraciones Ambientales de Producto</p> <p>RoHS Directiva 2011/65/UE WEEE Directiva 2012/19/UE PFW Directiva 94/62/CE REACH REGLAMENTO (CE) N.º 1907/2006 EUP Directiva 2009/125/CE</p> <p>Nombre/ título: Richard Hsu / Quality Management Division Senior Manager Firma: <i>Richard Hsu</i> Fecha (aaaa/mm/dd): 2014/10/01</p>  	<p>Profil environnemental de produit</p> <p>RoHS Directive 2011/65/UE WEEE Directive 2012/19/UE PFW Directive 94/62/CE REACH REGLEMENT (CE) N.º 1907/2006 EUP Directive 2009/125/CE</p> <p>Nom/ titre: Richard Hsu / Quality Management Division Senior Manager Signature: <i>Richard Hsu</i> Date (aaaa/mm/jj): 2014/10/01</p>  
Hrvatski (Croatian)	Italiano (Italian)	Latviešu valoda (Latvian)	Lietuvių kalba (Lithuanian)
<p>Deklaracija o zbrinjavanju proizvoda</p> <p>RoHS Direktiva 2011/65/EU WEEE Direktiva 2012/19/EU PFW Direktiva 94/62/EZ REACH Uredba (EZ) br. 1907/2006 EUP Direktiva 2009/125/EZ</p> <p>Ime/ naziv: Richard Hsu / Quality Management Division Senior Manager Potpis: <i>Richard Hsu</i> Datum (dd/mm/yyyy): 01/10/2014</p>  	<p>Dichiarazione ambientale di prodotto</p> <p>RoHS Direttiva 2011/65/UE WEEE Direttiva 2012/19/UE PFW Direttiva 94/62/CE REACH REGOLAMENTO (CE) n. 1907/2006 EUP Direttiva 2009/125/CE</p> <p>Nome/ titolo: Richard Hsu / Quality Management Division Senior Manager Firma: <i>Richard Hsu</i> Data (aaaa/mm/gg): 2014/10/01</p>  	<p>Produkta vides ietekmējuma deklarācija</p> <p>RoHS Direktīva 2011/65/EĻ WEEE Direktīva 2012/19/EĻ PFW Direktīva 94/62/EK REACH Regula (EK) Nr. 1907/2006 EUP Direktīva 2009/125/EK</p> <p>Nosaucums/ tītuls: Richard Hsu / Quality Management Division Senior Manager Paraksts: <i>Richard Hsu</i> Datums (dd/mm/yyyy): 01/10/2014</p>  	<p>Aplinkosauginę gaminių deklaraciją</p> <p>RoHS Direktyva 2011/65/ES WEEE Direktyva 2012/19/ES PFW Direktyva 94/62/ES REACH REGLAMENTAS (ES) Nr. 1907/2006 EUP Direktyva 2009/125/ES</p> <p>Vardas/ statusas: Richard Hsu / Quality Management Division Senior Manager Parašas: <i>Richard Hsu</i> Data (ddmmmmmm): 01/10/2014</p>  
Magyar (Hungarian)	Malti (Maltese)	Nederlands (Dutch)	Polski (Polish)
<p>Környezetvédelmi terméknyilatkozat</p> <p>RoHS 2011/65/EU irányelv WEEE 2012/19/EU irányelv PFW 94/62/EK irányelv REACH 1907/2006/EK rendelet EUP 2009/125/EK irányelv</p> <p>Név/ cím: Richard Hsu / Quality Management Division Senior Manager Aláírás: <i>Richard Hsu</i> Dátum (aaaa/hh/yy): 2014/10/01</p>  	<p>Dikjarazzjoni Ambientali dwar il-Prodott</p> <p>RoHS Direttiva 2011/65/UE WEEE Direttiva 2012/19/UE PFW Direttiva 94/62/CE REACH REGOLAMENTO (CE) NR 1907/2006 EUP Direttiva 2009/125/CE</p> <p>Isen/ titolu: Richard Hsu / Quality Management Division Senior Manager Firma: <i>Richard Hsu</i> Data (aaaa/xx/jj): 2014/10/01</p>  	<p>Milieuproductverklaring</p> <p>RoHS Richtlijn 2011/65/EU WEEE Richtlijn 2012/19/EU PFW Richtlijn 94/62/EG REACH Verordening (EG) nr. 1907/2006 EUP Richtlijn 2009/125/EG</p> <p>Naam/ titel: Richard Hsu / Quality Management Division Senior Manager Handtekening: <i>Richard Hsu</i> Datum (dd/mm/jaar): 01/10/2014</p>  	<p>Deklarację środowiskową produktu</p> <p>RoHS Dyrektywa 2011/65/UE WEEE Dyrektywa 2012/19/UE PFW Dyrektywa 94/62/WE REACH Rozporządzenie (WE) nr 1907/2006 EUP Dyrektywa 2009/125/WE</p> <p>Nazwisko/ tytuł: Richard Hsu / Quality Management Division Senior Manager Podpis: <i>Richard Hsu</i> Data (mmmm/yy): 2014/10/01</p>  
Português (Portuguese)	Română (Romanian)	Slovenčina (Slovak)	Slovenščina (Slovene)
<p>Declaração ambiental do produto</p> <p>RoHS Diretiva 2011/65/UE WEEE Diretiva 2012/19/UE PFW Diretiva 94/62/CE REACH Regulamento (CE) n.º 1907/2006 EUP Diretiva 2009/125/CE</p> <p>Nome/ título: Richard Hsu / Quality Management Division Senior Manager Assinatura: <i>Richard Hsu</i> Data (dd/mm/aaaa): 01/10/2014</p>  	<p>Declarație de mediu privind produsele</p> <p>RoHS Directiva 2011/65/UE WEEE Directiva 2012/19/UE PFW Directiva 94/62/CE REACH REGULAMENTAL (CE) NR. 1907/2006 EUP Directiva 2009/125/CE</p> <p>Numele/ titlu: Richard Hsu / Quality Management Division Senior Manager Semnatura: <i>Richard Hsu</i> Data (dd/mm/aaaa): 01/10/2014</p>  	<p>Vyhľadanie o environmentálnom výrobu</p> <p>RoHS Smernica 2011/65/EU WEEE Smernica 2012/19/EU PFW Smernica 94/62/ES REACH Nariadenie (ES) č. 1907/2006 EUP Smernica 2009/125/ES</p> <p>Menlo/ titul: Richard Hsu / Quality Management Division Senior Manager Podpis: <i>Richard Hsu</i> Datum (ddmm/yyyy): 01/10/2014</p>  	<p>Okoljsko deklaracija izdelka</p> <p>RoHS Direktiva 2011/65/EU WEEE Direktiva 2012/19/EU PFW Direktiva 94/62/ES REACH Uredba (ES) št. 1907/2006 EUP Direktiva 2009/125/ES</p> <p>Ime/ naziv: Richard Hsu / Quality Management Division Senior Manager Podpis: <i>Richard Hsu</i> Datum (ddmm/yyyy): 01/10/2014</p>  
Suomi (Finnish)	Svenska (Swedish)	Ελληνικά (Greek)	Norsk (Norwegian)
<p>Standardin perustava ympäristötietoseloste</p> <p>RoHS Direktiiv 2011/65/EU WEEE Direktiiv 2012/19/EU PFW Direktiiv 94/62/EY REACH ASETUS (EY) N:o 1907/2006 EUP Direktiiv 2009/125/EY</p> <p>Nimi/ osasto: Richard Hsu / Quality Management Division Senior Manager Alaikirjoitus: <i>Richard Hsu</i> Päivämäärä (pp/kk/vvvv): 01/10/2014</p>  	<p>Miljöproduktdeklaration</p> <p>RoHS Direktiv 2011/65/EU WEEE Direktiv 2012/19/EU PFW Direktiv 94/62/EG REACH Förordning (EG) nr 1907/2006 EUP Direktiv 2009/125/EG</p> <p>Navn/ titel: Richard Hsu / Quality Management Division Senior Manager Namnteckning: <i>Richard Hsu</i> Datum (ddmm/åååå): 01/10/2014</p>  	<p>Περιβαλλοντική δήλωση προϊόντος</p> <p>RoHS Οδηγία 2011/65/ΕΥ WEEE Οδηγία 2012/19/ΕΥ PFW Οδηγία 94/62/ΕΚ REACH Κανονισμός (ΕΚ) αριθ. 1907/2006 EUP Οδηγία 2009/125/ΕΚ</p> <p>Όνομα/ τμήμα: Richard Hsu / Quality Management Division Senior Manager Υπογραφή: <i>Richard Hsu</i> Ημερομηνία (ππ/μμ/εεεε): 01/10/2014</p>  	<p>Miljødeklarasjon</p> <p>RoHS Direktiv 2011/65/EU WEEE Direktiv 2012/19/EU PFW Direktiv 94/62/EF REACH Forordning (EF) nr. 1907/2006 EUP Direktiv 2009/125/EF</p> <p>Navn/ tittel: Richard Hsu / Quality Management Division Senior Manager Signatur: <i>Richard Hsu</i> Dato (ddmm/åååå): 01/10/2014</p>  

台灣



以下訊息僅適用於產品具有無線功能且銷售至台灣地區

第十二條 經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

第十四條 低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前項合法通信，指依電信法規定作業之無線電通信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

用 20cm 計算 MPE 能符合 1 mW/cm²

電磁波曝露量 MPE 標準值 1mW/cm²，送測產品實測值為：0.918 mW/cm²

無線資訊傳輸設備忍受合法通信之干擾且不得干擾合法通信；如造成干擾，應立即停用，俟無干擾之虞，始得繼續使用。

無線資訊傳輸設備的製造廠商應確保頻率穩定性，如依製造廠商使用手冊上所述正常操作，發射的信號應維持於操作頻帶中

以下訊息僅適用於產品操作於 5.25-5.35 兆赫頻帶內並銷售至台灣地區

- 在 5.25-5.35 兆赫頻帶內操作之無線資訊傳輸設備，限於室內使用。

以下訊息僅適用於產品屬於專業安裝並銷售至台灣地區

- 本器材須經專業工程人員安裝及設定，始得設置使用，且不得直接販售給一般消費者

安全警告

為了您的安全，請先閱讀以下警告及指示：

- 請勿將此產品接近水、火焰或放置在高溫的環境。
- 避免設備接觸任何液體 - 切勿讓設備接觸水、雨水、高濕度、污水腐蝕性的液體或其他水份。
- 灰塵及污物 - 切勿接觸灰塵、污物、沙土、食物或其他不適合的材料。
- 雷雨天氣時，不要安裝，使用或維修此設備。有遭受電擊的風險。
- 切勿重摔或撞擊設備，並勿使用不正確的電源變壓器。
- 若接上不正確的電源變壓器會有爆炸的風險。
- 請勿隨意更換產品內的電池。
- 如果更換不正確之電池型式，會有爆炸的風險，請依製造商說明書處理使用過之電池。
- 請將廢電池丟棄在適當的電器或電子設備回收處。
- 請勿將設備解體。
- 請勿阻礙設備的散熱孔，空氣對流不足將會造成設備損害。
- 請插在正確的電壓供給插座（如：北美 / 台灣電壓 110V AC，歐洲是 230V AC）。
- 假若電源變壓器或電源變壓器的纜線損壞，請從插座拔除，若您還繼續插電使用，會有觸電死亡的風險。
- 請勿試圖修理電源變壓器或電源變壓器的纜線，若有毀損，請直接聯絡您購買的店家，購買一個新的電源變壓器。
- 請勿將此設備安裝於室外，此設備僅適合放置於室內。
- 請勿隨一般垃圾丟棄。
- 請參閱產品背貼上的設備額定功率。
- 請參考產品型錄或是彩盒上的作業溫度。
- 產品沒有斷電裝置或者採用電源線的插頭視為斷電裝置的一部分，以下警語將適用：
 - 對永久連接之設備，在設備外部須安裝可觸及之斷電裝置；
 - 對插接式之設備，插座必須接近安裝之地點而且是易於觸及的。

Viewing Certifications

Go to <http://www.zyxel.com> to view this product's documentation and certifications.

Specifications

- Product Rating: Refer to the USG label.
- Power Adapter: 12V DC, 2.0A, LPS, 40°C (degrees Centigrade).
- Device Operating / Storage Environment: Refer to the USG package.

This product is intended to be supplied by a Listed Direct Plug-In Power Unit marked "Class 2", Listed Power Adapter or DC power source marked "L.P.S." (or "Limited Power Source"), rated 12Vdc, 2A minimum, Tma = 40 degree C, and the altitude of operation = 2000m. If need further assistance with purchasing the power source, please contact ZyXEL for further information.

ZyXEL Limited Warranty

ZyXEL warrants to the original end user (purchaser) that this product is free from any defects in material or workmanship for a specific period (the Warranty Period) from the date of purchase. The Warranty Period varies by region. Check with your vendor and/or the authorized ZyXEL local distributor for details about the Warranty Period of this product. During the warranty period, and upon proof of purchase, should the product have indications of failure due to faulty workmanship and/or materials, ZyXEL will, at its discretion, repair or replace the defective products or components without charge for either parts or labor, and to whatever extent it shall deem necessary to restore the product or components to proper operating condition. Any replacement will consist of a new or re-manufactured functionally equivalent product of equal or higher value, and will be solely at the discretion of ZyXEL. This warranty shall not apply if the product has been modified, misused, tampered with, damaged by an act of God, or subjected to abnormal working conditions.

Note

Repair or replacement, as provided under this warranty, is the exclusive remedy of the purchaser. This warranty is in lieu of all other warranties, express or implied, including any implied warranty of merchantability or fitness for a particular use or purpose. ZyxEL shall in no event be held liable for indirect or consequential damages of any kind to the purchaser.

To obtain the services of this warranty, contact your vendor. You may also refer to the warranty policy for the region in which you bought the device at http://www.zyxel.com/web/support_warranty_info.php.

Registration

Register your product online to receive e-mail notices of firmware upgrades and information at www.zyxel.com for global products, or at www.us.zyxel.com for North American products.

Open Source Licenses

This product contains in part some free software distributed under GPL license terms and/or GPL like licenses. Open source licenses are provided with the firmware package. You can download the latest firmware at www.zyxel.com. To obtain the source code covered under those Licenses, please contact support@zyxel.com.tw to get it.

Product Features

Please refer to the product datasheet for the latest product features.

Table 279 Product Features

MODEL NAME	USG20-VPN	USG20W-VPN
Version	4.16	4.16
# of MAC	6	7
Interface		
VLAN	8	8
Virtual (alias)	4	4
PPP (system default)	2	2
PPP (user create)	2	2
Bridge	2	2
Tunnel (GRE/IPv6 Transition)	4	4
Routing		
Static route	64	64
Policy route	100	100
Sessions (Forwarding, NAT/firewall)	20000	20000
Reserved Sessions For Managed Devices	500	500
ARP Table Size	16384	16384
NAT		
Max. Virtual Server Number	128	128
Firewall (Security policy)		
Max Firewall ACL Rule Number = Secure Policy Number (Marketing spec, Lab test * 10%)	500	500
Max Session Limit per Host Rules	1000	1000
User Profile		
Max. Local User	64	64
Max. Admin User	5	5
Max. User Group.	16	16
Max User In One User Group	64	64
Max Concurrent User	64	64
Objects		
Address Object (Marketing spec, Lab amount = VPN rule #)	100	100

Table 279 Product Features

MODEL NAME	USG20-VPN	USG20W-VPN
Address Group	25	25
Max. Address Object In One Group	64	64
Service Object	200	200
Service Group	50	50
Max. Service Object In One Group	64	64
Schedule Object	32	32
Schedule Group	16	16
Max. Schedule Object In One Group	24	24
ISP Account	16(PPP+3G)	16(PPP+3G)
Max. LDAP Server Object #	2	2
Max. LDAP Server for Each LDAP Group	2	2
Max. RADIUS Server Object #	2	2
Max. RADIUS Server for Each RADIUS Group	2	2
Max. AD Server Object #	4	4
Max. AD Server for Each AD Group	2	2
Max. Zone Number (System Default)	8	8
Max. Zone Number (User Define)	8	8
Max. Trunk Number (System Default)	1	1
Max. Trunk Number (User Define)	4	4
Max Radio Profile	16	16
Max SSID Profile	32	32
Max Security Profile	32	32
Max Macfilter Profile	32	32
Max MAC Entry Per Macfilter Profile	512	512
VPN		
Max. VPN Tunnels Number	10	10
Max. VPN Concentrator Number	2	2
Max. VPN Configuration Provision Rule Number	10	10
Certificate		
Certificate Buffer Size	128k	128k
Built-in service		
A record	32	32
NS record (DNS Domain Zone Forward)	8	8
MX record	4	4
Max Service Control Entries	16 per service	16 per service
Max. DHCP Network Pool	vlan+brg+ethernet	vlan+brg+ethernet

Table 279 Product Features

MODEL NAME	USG20-VPN	USG20W-VPN
Max. DHCP Host Pool(Static DHCP)	64	64
Max. DHCP Extended Options	10	10
Max DDNS Profiles	5	5
DHCP Relay	2 per interface	2 per interface
USB Storage		
Device Number	1	1
Centralized Log		
Log Entries	512	512
Debug Log Entries	1024	1024
Admin E-mail Address	2	2
Syslog Server	4	4
Content Filtering		
Max. Number of Content Filter Policy	16	16
Max. Number of Filtering Profiles	16	16
Forbidden Domain Entry Number	256 per profile	256 per profile
Trusted Domain Entry Number	256 per profile	256 per profile
Keyword Blocking Number	128 per profile	128 per profile
Common Forbidden Domain Entry Number	1024	1024
Common Trusted Domain Entry Number	1024	1024
Anti-Spam (Available in ZLD 2.10 and later versions)		
Maximum AS Rule Number (Profile)	16	16
Maximum White List Rule Support	128	128
Maximum Black List Rule Support	128	128
Maximum DNSBL Domain Support	5	5
Max. Statistics Number	500	500
Max. Statistics Ranking	10	10
MyZyXEL.com		
SKU update interval (day)	2 ~ 6 hrs	2 ~ 6 hrs
SSL VPN (Available in ZLD 2.00 and later versions)		
Default SSL VPN Connections	5	5
Maximum SSL VPN Connections	15	15
Max. SSL VPN Network List	8	8
SSL VPN Max Policy	16	16
AP controller		
Default # of Control AP	NA	NA
Max. # of Control AP	NA	NA

Table 279 Product Features

MODEL NAME	USG20-VPN	USG20W-VPN
Others		
Device HA VRRP Group	n/a	n/a
Max OSPF Areas	32	32

Symbols

Numbers

3322 Dynamic DNS [249](#)

3DES [358](#)

6in4 tunneling [183](#)

6to4 tunneling [183](#)

A

AAA

Base DN [504](#)

Bind DN [504](#), [507](#)

directory structure [503](#)

Distinguished Name, see DN

DN [504](#), [505](#), [507](#)

password [507](#)

port [507](#), [509](#)

search time limit [507](#)

SSL [507](#)

AAA server [501](#)

AD [503](#)

and users [455](#)

directory service [502](#)

LDAP [502](#), [503](#)

local user database [503](#)

RADIUS [502](#), [503](#), [508](#)

RADIUS group [509](#)

see also RADIUS

access [22](#)

Access Point Name, see APN

access users [455](#), [456](#)

custom page [559](#)

forcing login [298](#)

idle timeout [463](#)

logging in [298](#)

multiple logins [463](#)

see also users [455](#)

Web Configurator [465](#)

access users, see also force user authentication policies

account

user [454](#)

accounting server [501](#)

Active Directory, see AD

active protocol [363](#)

AH [363](#)

and encapsulation [363](#)

ESP [363](#)

active sessions [90](#), [108](#)

ActiveX [429](#)

AD [502](#), [504](#), [505](#), [507](#)

directory structure [503](#)

Distinguished Name, see DN

password [507](#)

port [507](#), [509](#)

search time limit [507](#)

SSL [507](#)

address groups [487](#)

and content filtering [415](#), [416](#)

and FTP [576](#)

and security policy [302](#)

and SNMP [580](#)

and SSH [572](#)

and Telnet [574](#)

and WWW [558](#)

address objects [487](#)

and content filtering [415](#), [416](#)

and FTP [576](#)

and NAT [234](#), [258](#)

and policy routes [233](#)

and security policy [302](#)

and SNMP [580](#)

and SSH [572](#)

and Telnet [574](#)

and VPN connections [337](#)

and WWW [558](#)

HOST [487](#)

RANGE [487](#)

- SUBNET [487](#)
 - types of [487](#)
 - address record [547](#)
 - admin user
 - troubleshooting [642](#)
 - admin users [455](#)
 - multiple logins [463](#)
 - see also users [455](#)
 - Advanced Encryption Standard, see AES
 - AES [358](#)
 - AF [237](#)
 - AH [341, 363](#)
 - and transport mode [364](#)
 - alerts [595, 596, 598, 600, 601, 602](#)
 - anti-spam [438](#)
 - ALG [266, 271](#)
 - and NAT [266, 268](#)
 - and policy routes [268, 271](#)
 - and security policy [266, 268](#)
 - and trunks [271](#)
 - FTP [266](#)
 - H.323 [266, 267, 272](#)
 - peer-to-peer calls [268](#)
 - RTP [272](#)
 - see also VoIP pass through [266](#)
 - SIP [266, 267](#)
 - anti-spam [434, 438, 441](#)
 - action for spam mails [439](#)
 - alerts [438](#)
 - and registration [437](#)
 - black list [434, 438, 441](#)
 - concurrent e-mail sessions [128, 436](#)
 - DNSBL [435, 439, 446](#)
 - e-mail header buffer [435](#)
 - e-mail headers [435](#)
 - excess e-mail sessions [436](#)
 - general settings [436](#)
 - identifying legitimate e-mail [434](#)
 - identifying spam [434](#)
 - log options [438](#)
 - mail scan [439](#)
 - mail sessions threshold [436](#)
 - POP2 [435](#)
 - POP3 [435](#)
 - registration status [437](#)
 - regular expressions [444](#)
 - SMTP [435](#)
 - status [129](#)
 - white list [434, 438, 443, 444](#)
 - APN [178](#)
 - Application Layer Gateway, see ALG
 - application patrol
 - and HTTP redirect [263](#)
 - ASAS (Authenex Strong Authentication System) [502](#)
 - asymmetrical routes [320](#)
 - allowing through the security policy [323](#)
 - vs virtual interfaces [320](#)
 - attacks
 - Denial of Service (DoS) [340](#)
 - Authenex Strong Authentication System (ASAS) [502](#)
 - authentication
 - in IPsec [342](#)
 - LDAP/AD [503](#)
 - server [501](#)
 - authentication algorithms [247, 358, 359](#)
 - and active protocol [358](#)
 - and routing protocols [247](#)
 - MD5 [247, 359](#)
 - SHA1 [359](#)
 - text [247](#)
 - Authentication Header, see AH
 - authentication method objects [510](#)
 - and users [455](#)
 - and WWW [558](#)
 - create [512](#)
 - example [510](#)
 - authentication policy
 - exceptional services [300](#)
 - Authentication server
 - RADIUS client [581](#)
 - authentication server [580](#)
 - authentication type [53, 530](#)
 - Authentication, Authorization, Accounting servers, see AAA server
 - authorization server [501](#)
 - auxiliary interfaces [141](#)
- ## B
- backing up configuration files [606](#)
 - bandwidth

egress [179, 188](#)
ingress [179, 188](#)
bandwidth limit
troubleshooting [639](#)
bandwidth management
maximize bandwidth usage [237, 404](#)
Base DN [504](#)
Batch import [583](#)
Bind DN [504, 507](#)
black list [438, 441](#)
anti-spam [434](#)
bookmarks [383](#)
bridge interfaces [141, 202](#)
and virtual interfaces of members [203](#)
basic characteristics [142](#)
effect on routing table [202](#)
member interfaces [202](#)
virtual [213](#)
bridges [201](#)

C

CA
and certificates [514](#)
CA (Certificate Authority), see certificates
Calling Station ID [480](#)
capturing packets [617](#)
card SIM [179](#)
CEF (Common Event Format) [593, 600](#)
cellular [173](#)
APN [178](#)
interfaces [141](#)
signal quality [114](#)
SIM card [179](#)
status [115](#)
system [114](#)
troubleshooting [638](#)
certificate
troubleshooting [642](#)
Certificate Authority (CA)
see certificates
Certificate Revocation List (CRL) [514](#)
vs OCSP [528](#)
certificates [513](#)
advantages of [514](#)

and CA [514](#)
and FTP [575](#)
and HTTPS [554](#)
and IKE SA [362](#)
and SSH [571](#)
and VPN gateways [337](#)
and WWW [557](#)
certification path [514, 521, 526](#)
expired [514](#)
factory-default [514](#)
file formats [515](#)
fingerprints [522, 527](#)
importing [517](#)
in IPSec [349](#)
not used for encryption [514](#)
revoked [514](#)
self-signed [514, 519](#)
serial number [521, 526](#)
storage space [517, 524](#)
thumbprint algorithms [515](#)
thumbprints [515](#)
used for authentication [514](#)
verifying fingerprints [515](#)
certification requests [519](#)
certifications [656](#)
viewing [659](#)
Challenge Handshake Authentication Protocol (CHAP) [530](#)
CHAP (Challenge Handshake Authentication Protocol) [530](#)
CHAP/PAP [530](#)
CLI [21, 27](#)
button [27](#)
messages [27](#)
popup window [27](#)
Reference Guide [1](#)
client [391](#)
cloud-based network management system [582](#)
commands [21](#)
sent by Web Configurator [27](#)
Common Event Format (CEF) [593, 600](#)
compression (stac) [530](#)
computer names [161, 199, 211, 217, 398](#)
concurrent e-mail sessions [128, 436](#)
configuration
information [615, 620](#)
web-based SSL application example [532](#)
configuration file

- troubleshooting [644](#)
- configuration files [604](#)
 - at restart [607](#)
 - backing up [606](#)
 - downloading [608](#), [625](#)
 - downloading with FTP [575](#)
 - editing [604](#)
 - how applied [605](#)
 - lastgood.conf [607](#), [610](#)
 - managing [606](#)
 - startup-config.conf [610](#)
 - startup-config-bad.conf [607](#)
 - syntax [605](#)
 - system-default.conf [610](#)
 - uploading [610](#)
 - uploading with FTP [575](#)
 - use without restart [604](#)
- connection
 - troubleshooting [640](#)
- connection monitor (in SSL) [123](#)
- connectivity check [160](#), [172](#), [179](#), [188](#), [198](#), [212](#), [342](#)
- console port
 - speed [543](#)
- contact information [646](#), [661](#)
- content filter
 - troubleshooting [637](#)
- content filtering [415](#), [416](#)
 - and address groups [415](#), [416](#)
 - and address objects [415](#), [416](#)
 - and registration [418](#), [421](#)
 - and schedules [415](#), [416](#)
 - and user groups [415](#)
 - and users [415](#)
 - by category [415](#), [416](#), [422](#)
 - by keyword (in URL) [416](#), [430](#)
 - by URL [416](#), [429](#), [431](#), [432](#)
 - by web feature [416](#), [429](#)
- cache [433](#)
- categories [422](#)
- category service [421](#)
- default policy [416](#)
- external web filtering service [421](#), [433](#)
- filter list [416](#)
- managed web pages [422](#)
- policies [415](#), [416](#)
- registration status [134](#), [418](#), [421](#)
- statistics [125](#)
- testing [423](#)

- uncategorized pages [422](#)
- unsafe web pages [421](#)
- URL for blocked access [418](#)
- cookies [22](#), [429](#)
- copyright [652](#)
- CPU usage [90](#)
- current date/time [85](#), [539](#)
 - and schedules [496](#)
 - daylight savings [541](#)
 - setting manually [542](#)
 - time server [543](#)
- current user list [123](#)
- custom
 - access user page [559](#)
 - login page [559](#)
- customer support [646](#), [661](#)

D

- Data Encryption Standard, see DES
- date [539](#)
- daylight savings [541](#)
- DCS [136](#)
- DDNS [249](#)
 - backup mail exchanger [254](#)
 - mail exchanger [254](#)
 - service providers [249](#)
 - troubleshooting [639](#)
- Dead Peer Detection, see DPD
- default
 - security policy behavior [319](#)
- Default_L2TP_VPN_GW [396](#)
- Denial of Service (Dos) attacks [340](#)
- DES [358](#)
- device access
 - troubleshooting [636](#)
- DHCP [216](#), [538](#)
 - and DNS servers [217](#)
 - and domain name [538](#)
 - and interfaces [216](#)
 - pool [217](#)
 - static DHCP [217](#)
- DHCP Unique IDentifier [145](#)
- DHCPv6 [536](#)
 - DHCP Unique IDentifier [145](#)

diagnostics [615, 620](#)
Diffie-Hellman key group [359](#)
DiffServ [237](#)
Digital Signature Algorithm public-key algorithm,
 see DSA
direct routes [229](#)
directory [502](#)
directory service [502](#)
 file structure [503](#)
disclaimer [652](#)
Distinguished Name (DN) [504, 505, 507](#)
DN [504, 505, 507](#)
DNS [544](#)
 address records [547](#)
 domain name forwarders [549](#)
 domain name to IP address [547](#)
 IP address to domain name [548](#)
 L2TP VPN [398](#)
 Mail eXchange (MX) records [550](#)
 pointer (PTR) records [548](#)
DNS Blacklist see DNSBL [435](#)
DNS inbound LB [291](#)
DNS servers [54, 544, 549](#)
 and interfaces [217](#)
DNSBL [435, 439, 446](#)
 see also anti-spam [435](#)
documentation
 related [1](#)
domain name [538](#)
Domain Name System, see DNS
DPD [351](#)
DSA [519](#)
DSCP [230, 233, 406, 631](#)
DUID [145](#)
Dynamic Channel Selection [136](#)
Dynamic Domain Name System, see DDNS
Dynamic Host Configuration Protocol, see DHCP.
dynamic peers in IPsec [340](#)
DynDNS [249](#)
DynDNS see also DDNS [249](#)
Dynu [249](#)

E

egress bandwidth [179, 188](#)
e-mail [434](#)
 daily statistics report [589](#)
 header buffer [435](#)
 headers [435](#)
Encapsulating Security Payload, see ESP
encapsulation
 and active protocol [363](#)
 IPsec [341](#)
 transport mode [363](#)
 tunnel mode [363](#)
 VPN [363](#)
encryption
 IPsec [342](#)
 RSA [521](#)
encryption algorithms [358](#)
 3DES [358](#)
 AES [358](#)
 and active protocol [358](#)
 DES [358](#)
encryption method [530](#)
enforcing policies in IPsec [341](#)
ESP [341, 363](#)
 and transport mode [364](#)
Ethernet interfaces [141](#)
 and OSPF [148](#)
 and RIP [148](#)
 and routing protocols [147](#)
 basic characteristics [142](#)
 virtual [213](#)
exceptional services [300](#)
extended authentication
 and VPN gateways [337](#)
 IKE SA [362](#)
Extended Service Set IDentification [469](#)
ext-user
 troubleshooting [642](#)

F

file extensions
 configuration files [604](#)
 shell scripts [604](#)

- file manager [604](#)
 - file sharing SSL application
 - create [533](#)
 - Firefox [22](#)
 - firmware
 - and restart [610](#)
 - current version [85](#), [611](#)
 - getting updated [610](#)
 - uploading [610](#), [612](#)
 - uploading with FTP [575](#)
 - firmware upload
 - troubleshooting [644](#)
 - flash usage [90](#)
 - forcing login [298](#)
 - FQDN [547](#)
 - FTP [575](#)
 - additional signaling port [271](#)
 - ALG [266](#)
 - and address groups [576](#)
 - and address objects [576](#)
 - and certificates [575](#)
 - and zones [576](#)
 - signaling port [271](#)
 - with Transport Layer Security (TLS) [575](#)
 - full tunnel mode [367](#), [371](#)
 - Fully-Qualified Domain Name, see FQDN
- ## G
- Generic Routing Encapsulation, see GRE.
 - global SSL setting [372](#)
 - user portal logo [373](#)
 - GRE [218](#)
 - GSM [179](#)
 - Guide
 - CLI Reference [1](#)
 - Quick Start [1](#)
- ## H
- H.323 [272](#)
 - additional signaling port [270](#)
 - ALG [266](#), [272](#)
 - and RTP [272](#)
 - and security policy [267](#)
 - signaling port [270](#)
 - HSDPA [179](#)
 - HTTP
 - over SSL, see HTTPS
 - redirect to HTTPS [557](#)
 - vs HTTPS [554](#)
 - HTTP redirect [262](#)
 - and application patrol [263](#)
 - and interfaces [265](#)
 - and policy routes [263](#)
 - and security policy [263](#)
 - packet flow [263](#)
 - troubleshooting [639](#)
 - HTTPS [554](#)
 - and certificates [554](#)
 - authenticating clients [554](#)
 - avoiding warning messages [563](#)
 - example [562](#)
 - vs HTTP [554](#)
 - with Internet Explorer [562](#)
 - with Netscape Navigator [562](#)
 - hub-and-spoke VPN, see VPN concentrator
 - HyperText Transfer Protocol over Secure Socket Layer, see HTTPS
- ## I
- ICMP [492](#)
 - identifying
 - legitimate e-mail [434](#)
 - spam [434](#)
 - IEEE 802.1q VLAN
 - IEEE 802.1q. See VLAN.
 - IEEE 802.1x [469](#)
 - IKE SA
 - aggressive mode [357](#), [361](#)
 - and certificates [362](#)
 - and RADIUS [362](#)
 - and to-ZyWALL security policy [641](#)
 - authentication algorithms [358](#), [359](#)
 - content [360](#)
 - Dead Peer Detection (DPD) [351](#)
 - Diffie-Hellman key group [359](#)
 - encryption algorithms [358](#)
 - extended authentication [362](#)

- ID type [360](#)
 - IP address, remote IPSec router [358](#)
 - IP address, ZyXEL device [358](#)
 - local identity [360](#)
 - main mode [357](#), [361](#)
 - NAT traversal [362](#)
 - negotiation mode [357](#)
 - password [362](#)
 - peer identity [360](#)
 - pre-shared key [360](#)
 - proposal [358](#)
 - see also VPN
 - user name [362](#)
- IMAP** [435](#)
- inbound LB algorithm
 - least connection [293](#)
 - least load [293](#)
 - weighted round robin [293](#)
 - inbound load balancing [291](#)
 - time to live [294](#)
 - incoming bandwidth [179](#), [188](#)
 - ingress bandwidth [179](#), [188](#)
 - interface
 - status [104](#)
 - troubleshooting [637](#)
 - interfaces [140](#)
 - and DNS servers [217](#)
 - and HTTP redirect [265](#)
 - and layer-3 virtualization [141](#)
 - and NAT [258](#)
 - and physical ports [141](#)
 - and policy routes [233](#)
 - and static routes [236](#)
 - and VPN gateways [337](#)
 - and zones [141](#)
 - as DHCP relays [216](#)
 - as DHCP servers [216](#), [538](#)
 - auxiliary, see also auxiliary interfaces.
 - backup, see trunks
 - bandwidth management [216](#), [224](#), [225](#)
 - bridge, see also bridge interfaces.
 - cellular [141](#)
 - DHCP clients [215](#)
 - Ethernet, see also Ethernet interfaces.
 - gateway [216](#)
 - general characteristics [141](#)
 - IP address [215](#)
 - metric [216](#)
 - MTU [216](#)
 - overlapping IP address and subnet mask [215](#)
 - port groups, see also port groups.
 - PPPoE/PPTP, see also PPPoE/PPTP interfaces.
 - prerequisites [142](#)
 - relationships between [142](#)
 - static DHCP [217](#)
 - subnet mask [215](#)
 - trunks, see also trunks.
 - Tunnel, see also Tunnel interfaces.
 - types [141](#)
 - virtual, see also virtual interfaces.
 - VLAN, see also VLAN interfaces.
 - WLAN, see also WLAN interfaces.
- Internet access
 - troubleshooting [636](#), [641](#)
- Internet Control Message Protocol, see ICMP
- Internet Explorer [22](#)
- Internet Message Access Protocol, see IMAP [435](#)
- Internet Protocol Security, see IPSec
- Internet Protocol version 6, see IPv6
- IP policy routing, see policy routes
- IP pool [371](#)
- IP protocols [492](#)
 - and service objects [492](#)
 - ICMP, see ICMP
 - TCP, see TCP
 - UDP, see UDP
- IP static routes, see static routes
- IP/MAC binding [282](#)
 - exempt list [285](#)
 - monitor [111](#)
 - static DHCP [284](#)
- IPSec [318](#), [332](#)
 - active protocol [341](#)
 - AH [341](#)
 - and certificates [337](#)
 - authentication [342](#)
 - basic troubleshooting [640](#)
 - certificates [349](#)
 - connections [337](#)
 - connectivity check [342](#)
 - Default_L2TP_VPN_GW [396](#)
 - encapsulation [341](#)
 - encryption [342](#)
 - ESP [341](#)
 - established in two phases [335](#)
 - L2TP VPN [395](#)
 - local network [332](#)

- local policy [341](#)
 - NetBIOS [340](#)
 - peer [332](#)
 - Perfect Forward Secrecy [342](#)
 - PFS [342](#)
 - phase 2 settings [341](#)
 - policy enforcement [341](#)
 - remote access [340](#)
 - remote IPSec router [332](#)
 - remote network [332](#)
 - remote policy [341](#)
 - replay detection [340](#)
 - SA life time [341](#)
 - SA monitor [122](#)
 - SA see also IPSec SA [363](#)
 - see also VPN
 - site-to-site with dynamic peer [340](#)
 - static site-to-site [340](#)
 - transport encapsulation [341](#)
 - tunnel encapsulation [341](#)
 - VPN gateway [337](#)
- IPSec SA
- active protocol [363](#)
 - and security policy [641](#)
 - and to-ZyWALL security policy [641](#)
 - authentication algorithms [358](#), [359](#)
 - destination NAT for inbound traffic [366](#)
 - encapsulation [363](#)
 - encryption algorithms [358](#)
 - local policy [363](#)
 - NAT for inbound traffic [364](#)
 - NAT for outbound traffic [364](#)
 - Perfect Forward Secrecy (PFS) [364](#)
 - proposal [364](#)
 - remote policy [363](#)
 - search by name [122](#)
 - search by policy [122](#)
 - Security Parameter Index (SPI) (manual keys) [364](#)
 - see also IPSec
 - see also VPN
 - source NAT for inbound traffic [365](#)
 - source NAT for outbound traffic [365](#)
 - status [122](#)
 - transport mode [363](#)
 - tunnel mode [363](#)
 - when IKE SA is disconnected [363](#)
- IPSec VPN
- troubleshooting [640](#)
- IPv6 [143](#)
- link-local address [144](#)
 - prefix [143](#)
 - prefix delegation [144](#)
 - prefix length [143](#)
 - stateless autoconfiguration [144](#)
- IPv6 tunnelings
- 6in4 tunneling [183](#)
 - 6to4 tunneling [183](#)
- IPv6-in-IPv4 tunneling [183](#)
- ISP account
- CHAP [530](#)
 - CHAP/PAP [530](#)
 - MPPE [530](#)
 - MSCHAP [530](#)
 - MSCHAP-V2 [530](#)
 - PAP [530](#)
- ISP accounts [528](#)
- and PPPoE/PPTP interfaces [167](#), [528](#)
 - authentication type [530](#)
 - encryption method [530](#)
 - stac compression [530](#)
- ## J
- Java [429](#)
- permissions [22](#)
- JavaScripts [22](#)
- ## K
- key pairs [513](#)
- ## L
- L2TP VPN [395](#)
- Default_L2TP_VPN_GW [396](#)
 - DNS [398](#)
 - IPSec configuration [395](#)
 - policy routes [396](#)
 - session monitor [124](#)
 - WINS [398](#)
- lastgood.conf [607](#), [610](#)

- Layer 2 Tunneling Protocol Virtual Private Network,
see L2TP VPN [395](#)
 - layer-2 isolation [287](#)
 - example [287](#)
 - IP [288](#)
 - LDAP [502](#)
 - and users [455](#)
 - Base DN [504](#)
 - Bind DN [504](#), [507](#)
 - directory [502](#)
 - directory structure [503](#)
 - Distinguished Name, see DN
 - DN [504](#), [505](#), [507](#)
 - password [507](#)
 - port [507](#), [509](#)
 - search time limit [507](#)
 - SSL [507](#)
 - user attributes [468](#)
 - least connection algorithm [293](#)
 - least load algorithm [293](#)
 - least load first load balancing [219](#)
 - LED troubleshooting [636](#)
 - legitimate e-mail [434](#)
 - licensing [133](#)
 - Lightweight Directory Access Protocol, see LDAP
 - Link Layer Discovery Protocol (LLDP) [116](#)
 - LLDP (Link Layer Discovery Protocol) [116](#)
 - load balancing [218](#)
 - algorithms [219](#), [223](#), [225](#)
 - DNS inbound [291](#)
 - least load first [219](#)
 - round robin [220](#)
 - see also trunks [218](#)
 - session-oriented [219](#)
 - spillover [220](#)
 - weighted round robin [220](#)
 - local user database [503](#)
 - log
 - troubleshooting [643](#)
 - log messages
 - categories [596](#), [598](#), [600](#), [601](#), [602](#)
 - debugging [130](#)
 - regular [130](#)
 - types of [130](#)
 - log options [438](#)
 - login
 - custom page [559](#)
 - SSL user [379](#)
 - logo
 - troubleshooting [643](#)
 - logo in SSL [373](#)
 - logout
 - SSL user [384](#)
 - Web Configurator [25](#)
 - logs
 - and security policy [326](#)
 - e-mail profiles [591](#)
 - e-mailing log messages [595](#)
 - formats [593](#)
 - log consolidation [596](#)
 - settings [591](#)
 - syslog servers [591](#)
 - system [591](#)
 - types of [591](#)
- ## M
- MAC address [466](#)
 - and VLAN [189](#)
 - Ethernet interface [156](#)
 - range [85](#)
 - MAC authentication [480](#)
 - Calling Station ID [480](#)
 - case [480](#)
 - delimiter [480](#)
 - mac role [466](#)
 - mail sessions threshold [436](#)
 - managed web pages [422](#)
 - management access
 - troubleshooting [643](#)
 - Management Information Base (MIB) [577](#)
 - managing the device
 - using SNMP. See SNMP.
 - MD5 [359](#)
 - memory usage [90](#)
 - Message Digest 5, see MD5
 - messages
 - CLI [27](#)
 - metrics, see reports
 - Microsoft
 - Challenge-Handshake Authentication Protocol (MSCHAP) [530](#)

Challenge-Handshake Authentication Protocol
 Version 2 (MSCHAP-V2) [530](#)
 Point-to-Point Encryption (MPPE) [530](#)
 mobile broadband see also cellular [173](#)
 model name [85](#)
 Monitor [583](#)
 monitor [123](#)
 SA [122](#)
 mounting
 rack [20, 46](#)
 wall [46](#)
 MPPE (Microsoft Point-to-Point Encryption) [530](#)
 MSCHAP (Microsoft Challenge-Handshake
 Authentication Protocol) [530](#)
 MSCHAP-V2 (Microsoft Challenge-Handshake
 Authentication Protocol Version 2) [530](#)
 MTU [179, 188](#)
 multicast [474](#)
 multicast rate [474](#)
 My Certificates, see also certificates [516](#)
 myZyXEL.com [133](#)
 accounts, creating [133](#)

N

NAT [237, 255](#)
 ALG, see ALG
 and address objects [234](#)
 and address objects (HOST) [258](#)
 and ALG [266, 268](#)
 and interfaces [258](#)
 and policy routes [227, 234](#)
 and security policy [321](#)
 and to-ZyWALL security policy [259](#)
 and VoIP pass through [268](#)
 and VPN [361](#)
 loopback [260](#)
 port forwarding, see NAT
 port translation, see NAT
 traversal [362](#)
 NAT Port Mapping Protocol [273](#)
 NAT Traversal [273](#)
 NAT-PMP [273](#)
 NBNS [161, 199, 211, 217, 371](#)
 NetBIOS
 Broadcast over IPsec [340](#)

 Name Server, see NBNS.
 NetBIOS Name Server, see NBNS
 NetMeeting [272](#)
 see also H.323
 Netscape Navigator [22](#)
 network access mode [19](#)
 full tunnel [367](#)
 Network Address Translation, see NAT
 network list, see SSL [372](#)
 Network Time Protocol (NTP) [542](#)
 No-IP [249](#)
 NSSA [240](#)

O

objects [368](#)
 AAA server [501](#)
 addresses and address groups [487](#)
 authentication method [510](#)
 certificates [513](#)
 schedules [496](#)
 services and service groups [491](#)
 SSL application [531](#)
 users, user groups [454](#)
 One-Time Password (OTP) [502](#)
 Online Certificate Status Protocol (OCSP) [528](#)
 vs CRL [528](#)
 Open Shortest Path First, see OSPF
 OSPF [240](#)
 and Ethernet interfaces [148](#)
 and RIP [241](#)
 and static routes [241](#)
 and to-ZyWALL security policy [240](#)
 area 0 [241](#)
 areas, see OSPF areas
 authentication method [148](#)
 autonomous system (AS) [240](#)
 backbone [241](#)
 configuration steps [243](#)
 direction [148](#)
 link cost [148](#)
 priority [149](#)
 redistribute [241](#)
 redistribute type (cost) [244](#)
 routers, see OSPF routers
 virtual links [242](#)

- vs RIP [238, 240](#)
 - OSPF areas [240](#)
 - and Ethernet interfaces [148](#)
 - backbone [240](#)
 - Not So Stubby Area (NSSA) [240](#)
 - stub areas [240](#)
 - types of [240](#)
 - OSPF routers [241](#)
 - area border (ABR) [241](#)
 - autonomous system boundary (ASBR) [241](#)
 - backbone (BR) [241](#)
 - backup designated (BDR) [242](#)
 - designated (DR) [242](#)
 - internal (IR) [241](#)
 - link state advertisements
 - priority [242](#)
 - types of [241](#)
 - other documentation [1](#)
 - OTP (One-Time Password) [502](#)
 - outgoing bandwidth [179, 188](#)
- ## P
- packet
 - statistics [101, 102](#)
 - packet capture [617](#)
 - files [616, 620, 621, 622](#)
 - troubleshooting [644](#)
 - packet captures
 - downloading files [617, 620, 621, 622](#)
 - PAP (Password Authentication Protocol) [530](#)
 - Password Authentication Protocol (PAP) [530](#)
 - Peanut Hull [249](#)
 - Peer-to-peer (P2P)
 - calls [268](#)
 - Perfect Forward Secrecy (PFS) [342](#)
 - Diffie-Hellman key group [364](#)
 - Personal Identification Number code, see PIN code
 - PFS (Perfect Forward Secrecy) [342, 364](#)
 - physical ports
 - packet statistics [101, 102](#)
 - PIN code [179](#)
 - PIN generator [502](#)
 - pointer record [548](#)
 - Point-to-Point Protocol over Ethernet, see PPPoE.
 - Point-to-Point Tunneling Protocol, see PPTP
 - policy enforcement in IPsec [341](#)
 - policy route
 - troubleshooting [637](#)
 - policy routes [227](#)
 - actions [228](#)
 - and address objects [233](#)
 - and ALG [268, 271](#)
 - and HTTP redirect [263](#)
 - and interfaces [233](#)
 - and NAT [227](#)
 - and schedules [233, 405, 409](#)
 - and service objects [492](#)
 - and trunks [219, 233](#)
 - and user groups [232, 405, 409](#)
 - and users [232, 405, 409](#)
 - and VoIP pass through [268](#)
 - and VPN connections [233, 641](#)
 - benefits [227](#)
 - BWM [229](#)
 - criteria [228](#)
 - L2TP VPN [396](#)
 - overriding direct routes [229](#)
 - POP
 - POP2 [435](#)
 - POP3 [435](#)
 - pop-up windows [22](#)
 - port forwarding, see NAT
 - port groups [141, 146](#)
 - port roles [145](#)
 - and Ethernet interfaces [145](#)
 - and physical ports [145](#)
 - port translation, see NAT
 - Post Office Protocol, see POP [435](#)
 - power off [635](#)
 - PPP [217](#)
 - troubleshooting [638](#)
 - PPP interfaces
 - subnet mask [215](#)
 - PPPoE [217](#)
 - and RADIUS [217](#)
 - TCP port 1723 [218](#)
 - PPPoE/PPTP interfaces [141, 166](#)
 - and ISP accounts [167, 528](#)
 - basic characteristics [142](#)
 - gateway [167](#)
 - subnet mask [167](#)

-
- PPTP [217](#)
 - and GRE [218](#)
 - as VPN [218](#)
 - prefix delegation [144](#)
 - problems [636](#)
 - proxy servers [262](#)
 - web, see web proxy servers
 - PTR record [548](#)
 - Public-Key Infrastructure (PKI) [514](#)
 - public-private key pairs [513](#)
- Q**
- QoS [227](#), [401](#)
 - Quick Start Guide [1](#)
- R**
- rack-mounting [20](#), [46](#)
 - RADIUS [502](#), [503](#)
 - advantages [502](#)
 - and IKE SA [362](#)
 - and PPPoE [217](#)
 - and users [455](#)
 - user attributes [468](#)
 - RADIUS server [580](#)
 - troubleshooting [642](#)
 - RDP [531](#)
 - Real-time Transport Protocol, see RTP
 - RealVNC [531](#)
 - Reference Guide, CLI [1](#)
 - registration [133](#)
 - and anti-spam [437](#)
 - and content filtering [418](#), [421](#)
 - related documentation [1](#)
 - Relative Distinguished Name (RDN) [504](#), [505](#), [507](#)
 - remote access IPsec [340](#)
 - Remote Authentication Dial-In User Service, see RADIUS
 - remote desktop connections [531](#)
 - Remote Desktop Protocol
 - see RDP
 - remote management
 - FTP, see FTP
 - see also service control [553](#)
 - Telnet [573](#)
 - to-Device security policy [319](#)
 - WWW, see WWW
 - remote network [332](#)
 - remote user screen links [531](#)
 - replay detection [340](#)
 - reports
 - collecting data [106](#)
 - content filtering [125](#)
 - daily [589](#)
 - daily e-mail [589](#)
 - specifications [107](#)
 - traffic statistics [105](#)
 - reset [644](#)
 - RESET button [644](#)
 - RFC
 - 1058 (RIP) [238](#)
 - 1389 (RIP) [238](#)
 - 1587 (OSPF areas) [240](#)
 - 1631 (NAT) [237](#)
 - 1889 (RTP) [272](#)
 - 2131 (DHCP) [216](#)
 - 2132 (DHCP) [216](#)
 - 2328 (OSPF) [240](#)
 - 2402 (AH) [341](#), [363](#)
 - 2406 (ESP) [341](#), [363](#)
 - 2516 (PPPoE) [217](#)
 - 2637 (PPTP) [217](#)
 - 2890 (GRE) [218](#)
 - 3261 (SIP) [272](#)
 - RIP [238](#)
 - and Ethernet interfaces [148](#)
 - and OSPF [238](#)
 - and static routes [238](#)
 - and to-ZyWALL security policy [238](#)
 - authentication [238](#)
 - direction [148](#)
 - redistribute [238](#)
 - RIP-2 broadcasting methods [148](#)
 - versions [148](#)
 - vs OSPF [238](#)
 - Rivest, Shamir and Adleman public-key algorithm (RSA) [519](#)
 - round robin [220](#)
 - routing
 - troubleshooting [639](#)
-

- Routing Information Protocol, see RIP
 - routing protocols [238](#)
 - and authentication algorithms [247](#)
 - and Ethernet interfaces [147](#)
 - RSA [519](#), [521](#), [527](#)
 - RSSI threshold [474](#)
 - RTP [272](#)
 - see also ALG [272](#)
- ## S
- schedule
 - troubleshooting [642](#)
 - schedules [496](#)
 - and content filtering [415](#), [416](#)
 - and current date/time [496](#)
 - and policy routes [233](#), [405](#), [409](#)
 - and security policy [302](#), [325](#), [405](#), [409](#)
 - one-time [496](#)
 - recurring [496](#)
 - types of [496](#)
 - screen resolution [22](#)
 - SecuExtender [391](#)
 - Secure Hash Algorithm, see SHA1
 - Secure Socket Layer, see SSL
 - security associations, see IPSec
 - security policy [318](#)
 - actions [326](#)
 - and address groups [302](#)
 - and address objects [302](#)
 - and ALG [266](#), [268](#)
 - and H.323 (ALG) [267](#)
 - and HTTP redirect [263](#)
 - and IPSec VPN [641](#)
 - and logs [326](#)
 - and NAT [321](#)
 - and schedules [302](#), [325](#), [405](#), [409](#)
 - and service groups [325](#)
 - and service objects [492](#)
 - and services [325](#)
 - and SIP (ALG) [267](#)
 - and user groups [325](#), [329](#)
 - and users [325](#), [329](#)
 - and VoIP pass through [268](#)
 - and zones [318](#), [324](#)
 - asymmetrical routes [320](#), [323](#)
 - global rules [319](#)
 - priority [323](#)
 - rule criteria [319](#)
 - see also to-Device security policy [318](#)
 - session limits [320](#), [326](#)
 - triangle routes [320](#), [323](#)
 - troubleshooting [637](#)
 - security settings
 - troubleshooting [637](#)
 - serial number [85](#)
 - service control [553](#)
 - and to-ZyWALL security policy [553](#)
 - and users [554](#)
 - limitations [553](#)
 - timeouts [554](#)
 - service groups [492](#)
 - and security policy [325](#)
 - service objects [491](#)
 - and IP protocols [492](#)
 - and policy routes [492](#)
 - and security policy [492](#)
 - Service Set [469](#)
 - service subscription status [134](#)
 - services [491](#)
 - and security policy [325](#)
 - Session Initiation Protocol, see SIP
 - session limits [320](#), [326](#)
 - session monitor (L2TP VPN) [124](#)
 - sessions [108](#)
 - sessions usage [90](#)
 - SHA1 [359](#)
 - shell script
 - troubleshooting [644](#)
 - shell scripts [604](#)
 - and users [468](#)
 - downloading [613](#)
 - editing [612](#)
 - how applied [605](#)
 - managing [612](#)
 - syntax [605](#)
 - uploading [614](#)
 - shutdown [635](#)
 - signal quality [114](#)
 - SIM card [179](#)
 - Simple Mail Transfer Protocol, see SMTP [435](#)
 - Simple Network Management Protocol, see SNMP

- Simple Traversal of UDP through NAT, see STUN
- SIP [267](#), [272](#)
 - ALG [266](#)
 - and RTP [272](#)
 - and security policy [267](#)
 - media inactivity timeout [270](#)
 - signaling inactivity timeout [270](#)
 - signaling port [270](#)
- SMTP [435](#)
- SNAT [237](#)
 - troubleshooting [639](#)
- SNMP [21](#), [576](#), [577](#)
 - agents [577](#)
 - and address groups [580](#)
 - and address objects [580](#)
 - and zones [580](#)
 - Get [577](#)
 - GetNext [577](#)
 - Manager [577](#)
 - managers [577](#)
 - MIB [577](#)
 - network components [577](#)
 - Set [577](#)
 - Trap [577](#)
 - traps [577](#)
 - version 3 and security [577](#)
 - versions [576](#)
- Source Network Address Translation, see SNAT
- spam [317](#), [434](#)
- spillover (for load balancing) [220](#)
- SSH [569](#)
 - and address groups [572](#)
 - and address objects [572](#)
 - and certificates [571](#)
 - and zones [572](#)
 - client requirements [571](#)
 - encryption methods [571](#)
 - for secure Telnet [572](#)
 - how connection is established [570](#)
 - versions [571](#)
 - with Linux [573](#)
 - with Microsoft Windows [572](#)
- SSL [367](#), [371](#), [554](#)
 - access policy [367](#)
 - and AAA [507](#)
 - and AD [507](#)
 - and LDAP [507](#)
 - certificates [379](#)
 - client [391](#)
 - client virtual desktop logo [373](#)
 - computer names [371](#)
 - connection monitor [123](#)
 - full tunnel mode [371](#)
 - global setting [372](#)
 - IP pool [371](#)
 - network list [372](#)
 - remote user login [379](#)
 - remote user logout [384](#)
 - SecuExtender [391](#)
 - see also SSL VPN [367](#)
 - troubleshooting [641](#)
 - user application screens [384](#)
 - user file sharing [385](#)
 - user screen bookmarks [383](#)
 - user screens [378](#), [382](#)
 - user screens access methods [378](#)
 - user screens certificates [379](#)
 - user screens login [379](#)
 - user screens logout [384](#)
 - user screens required information [379](#)
 - user screens system requirements [378](#)
 - WINS [371](#)
- SSL application object [531](#)
 - file sharing application [533](#)
 - remote user screen links [531](#)
 - summary [533](#)
 - types [531](#)
 - web-based [531](#), [533](#)
 - web-based example [532](#)
- SSL policy
 - add [369](#)
 - edit [369](#)
 - objects used [368](#)
- SSL VPN [367](#)
 - access policy [367](#)
 - full tunnel mode [367](#)
 - network access mode [19](#)
 - remote desktop connections [531](#)
 - see also SSL [367](#)
 - troubleshooting [641](#)
 - weblink [532](#)
- stac compression [530](#)
- startup-config.conf [610](#)
 - if errors [607](#)
 - missing at restart [607](#)
 - present at restart [607](#)
- startup-config-bad.conf [607](#)

- static DHCP [284](#)
 - static routes [227](#)
 - and interfaces [236](#)
 - and OSPF [241](#)
 - and RIP [238](#)
 - metric [236](#)
 - station [136](#)
 - statistics
 - content filtering [125](#)
 - daily e-mail report [589](#)
 - traffic [105](#)
 - status [82](#)
 - stub area [240](#)
 - STUN [267](#)
 - and ALG [267](#)
 - subscription services
 - SSL VPN [133](#)
 - SSL VPN, see also SSL VPN
 - status [134](#)
 - supported browsers [22](#)
 - SWM [229](#)
 - syslog [593](#), [600](#)
 - syslog servers, see also logs
 - system log, see logs
 - system name [85](#), [538](#)
 - system reports, see reports
 - system uptime [85](#)
 - system-default.conf [610](#)
- ## T
- TCP [492](#)
 - connections [492](#)
 - port numbers [492](#)
 - Telnet [573](#)
 - and address groups [574](#)
 - and address objects [574](#)
 - and zones [574](#)
 - with SSH [572](#)
 - throughput rate
 - troubleshooting [643](#)
 - TightVNC [531](#)
 - time [539](#)
 - time servers (default) [542](#)
 - to-Device security policy
 - and remote management [319](#)
 - global rules [319](#)
 - see also security policy [318](#)
 - token [502](#)
 - to-ZyWALL security policy
 - and NAT [259](#)
 - and NAT traversal (VPN) [641](#)
 - and OSPF [240](#)
 - and RIP [238](#)
 - and service control [553](#)
 - and VPN [641](#)
 - TR-069 protocol [582](#)
 - traffic statistics [105](#)
 - Transmission Control Protocol, see TCP
 - transport encapsulation [341](#)
 - Transport Layer Security (TLS) [575](#)
 - triangle routes [320](#)
 - allowing through the security policy [323](#)
 - vs virtual interfaces [320](#)
 - Triple Data Encryption Standard, see 3DES
 - troubleshooting [615](#), [620](#), [636](#)
 - admin user [642](#)
 - bandwidth limit [639](#)
 - cellular [638](#)
 - certificate [642](#)
 - configuration file [644](#)
 - connection resets [640](#)
 - content filter [637](#)
 - DDNS [639](#)
 - device access [636](#)
 - ext-user [642](#)
 - firmware upload [644](#)
 - HTTP redirect [639](#)
 - interface [637](#)
 - Internet access [636](#), [641](#)
 - IPSec VPN [640](#)
 - LEDs [636](#)
 - logo [643](#)
 - logs [643](#)
 - management access [643](#)
 - packet capture [644](#)
 - policy route [637](#)
 - PPP [638](#)
 - RADIUS server [642](#)
 - routing [639](#)
 - schedules [642](#)
 - security policy [637](#)

- security settings [637](#)
 - shell scripts [644](#)
 - SNAT [639](#)
 - SSL [641](#)
 - SSL VPN [641](#)
 - throughput rate [643](#)
 - VLAN [639](#)
 - VPN [641](#)
 - WLAN [638](#)
 - trunks [141, 218](#)
 - and ALG [271](#)
 - and policy routes [219, 233](#)
 - member interface mode [223, 225](#)
 - member interfaces [223, 225](#)
 - see also load balancing [218](#)
 - Trusted Certificates, see also certificates [523](#)
 - tunnel encapsulation [341](#)
 - Tunnel interfaces [141](#)
- ## U
- UDP [492](#)
 - messages [492](#)
 - port numbers [492](#)
 - UltraVNC [531](#)
 - Universal Plug and Play [273](#)
 - Application [273](#)
 - security issues [274](#)
 - unsafe web pages [421](#)
 - unsolicited commercial e-mail [317, 434](#)
 - upgrading
 - firmware [610](#)
 - uploading
 - configuration files [610](#)
 - firmware [610](#)
 - shell scripts [612](#)
 - UPnP [273](#)
 - usage
 - CPU [90](#)
 - flash [90](#)
 - memory [90](#)
 - onboard flash [90](#)
 - sessions [90](#)
 - user accounts
 - for WLAN [456](#)
 - user authentication [455](#)
 - external [455](#)
 - local user database [503](#)
 - user awareness [456](#)
 - User Datagram Protocol, see UDP
 - user group objects [454](#)
 - user groups [454, 456](#)
 - and content filtering [415](#)
 - and policy routes [232, 405, 409](#)
 - and security policy [325, 329](#)
 - user name
 - rules [457](#)
 - user objects [454](#)
 - user portal
 - links [531](#)
 - logo [373](#)
 - see SSL user screens [378, 382](#)
 - user sessions, see sessions
 - user SSL screens [378, 382](#)
 - access methods [378](#)
 - bookmarks [383](#)
 - certificates [379](#)
 - login [379](#)
 - logout [384](#)
 - required information [379](#)
 - system requirements [378](#)
 - users [454, 455](#)
 - access, see also access users
 - admin (type) [455](#)
 - admin, see also admin users
 - and AAA servers [455](#)
 - and authentication method objects [455](#)
 - and content filtering [415](#)
 - and LDAP [455](#)
 - and policy routes [232, 405, 409](#)
 - and RADIUS [455](#)
 - and security policy [325, 329](#)
 - and service control [554](#)
 - and shell scripts [468](#)
 - attributes for Ext-User [456](#)
 - attributes for LDAP [468](#)
 - attributes for RADIUS [468](#)
 - attributes in AAA servers [468](#)
 - currently logged in [86](#)
 - default lease time [463, 465](#)
 - default reauthentication time [463, 465](#)
 - default type for Ext-User [456](#)
 - ext-group-user (type) [455](#)
 - Ext-User (type) [455](#)

ext-user (type) [455](#)
groups, see user groups
Guest (type) [455](#)
lease time [459](#)
limited-admin (type) [455](#)
lockout [464](#)
reauthentication time [459](#)
types of [455](#)
user (type) [455](#)
user names [457](#)

V

Vantage Report (VRPT) [593, 600](#)
virtual interfaces [141, 213](#)
 basic characteristics [142](#)
 not DHCP clients [215](#)
 types of [213](#)
 vs asymmetrical routes [320](#)
 vs triangle routes [320](#)
Virtual Local Area Network, see VLAN.
Virtual Local Area Network. See VLAN.
Virtual Network Computing
 see VNC
Virtual Private Network, see VPN
VLAN [182, 188](#)
 advantages [189](#)
 and MAC address [189](#)
 ID [189](#)
 troubleshooting [639](#)
VLAN interfaces [141, 190](#)
 and Ethernet interfaces [190, 639](#)
 basic characteristics [142](#)
 virtual [213](#)
VoIP pass through [272](#)
 and NAT [268](#)
 and policy routes [268](#)
 and security policy [268](#)
 see also ALG [266](#)
VPN [332](#)
 active protocol [363](#)
 and NAT [361](#)
 basic troubleshooting [640](#)
 hub-and-spoke, see VPN concentrator
 IKE SA, see IKE SA
 IPSec [318, 332](#)
 IPSec SA
 proposal [358](#)
 security associations (SA) [335](#)
 see also IKE SA
 see also IPSec [318, 332](#)
 see also IPSec SA
 status [86](#)
 troubleshooting [641](#)
 VPN concentrator [353](#)
 advantages [353](#)
 and IPSec SA policy enforcement [355](#)
 disadvantages [353](#)
 VPN connections
 and address objects [337](#)
 and policy routes [233, 641](#)
 VPN gateways
 and certificates [337](#)
 and extended authentication [337](#)
 and interfaces [337](#)
 and to-ZyWALL security policy [641](#)
 VRPT (Vantage Report) [593, 600](#)

W

wall-mounting [46](#)
warranty [659](#)
 note [660](#)
Web Configurator [21](#)
 access [22](#)
 access users [465](#)
 requirements [22](#)
 supported browsers [22](#)
web features
 ActiveX [429](#)
 cookies [429](#)
 Java [429](#)
 web proxy servers [429](#)
web proxy servers [263, 429](#)
 see also HTTP redirect
web-based SSL application [531](#)
 configuration example [532](#)
 create [533](#)
weblink [532](#)
weighted round robin (for load balancing) [220](#)
weighted round robin algorithm [293](#)
WEP (Wired Equivalent Privacy) [469](#)

- white list (anti-spam) [434](#), [438](#), [443](#), [444](#)
- Wi-Fi Protected Access [469](#)
- Windows Internet Naming Service, see WINS
- Windows Internet Naming Service, see WINS.
- Windows Remote Desktop [531](#)
- WINS [161](#), [199](#), [211](#), [217](#), [371](#)
 - in L2TP VPN [398](#)
- WINS server [161](#), [398](#)
- wireless client [136](#)
- Wizard Setup [36](#), [49](#)
- WLAN
 - troubleshooting [638](#)
 - user accounts [456](#)
- WLAN interfaces [141](#)
- WPA [469](#)
- WPA2 [469](#)
- WWW [555](#)
 - and address groups [558](#)
 - and address objects [558](#)
 - and authentication method objects [558](#)
 - and certificates [557](#)
 - and zones [559](#)
 - see also HTTP, HTTPS [555](#)

Z

- ZON Utility [586](#)
- zones [452](#)
 - and FTP [576](#)
 - and interfaces [452](#)
 - and security policy [318](#), [324](#)
 - and SNMP [580](#)
 - and SSH [572](#)
 - and Telnet [574](#)
 - and VPN [452](#)
 - and WWW [559](#)
 - extra-zone traffic [453](#)
 - inter-zone traffic [453](#)
 - intra-zone traffic [452](#)
 - types of traffic [452](#)