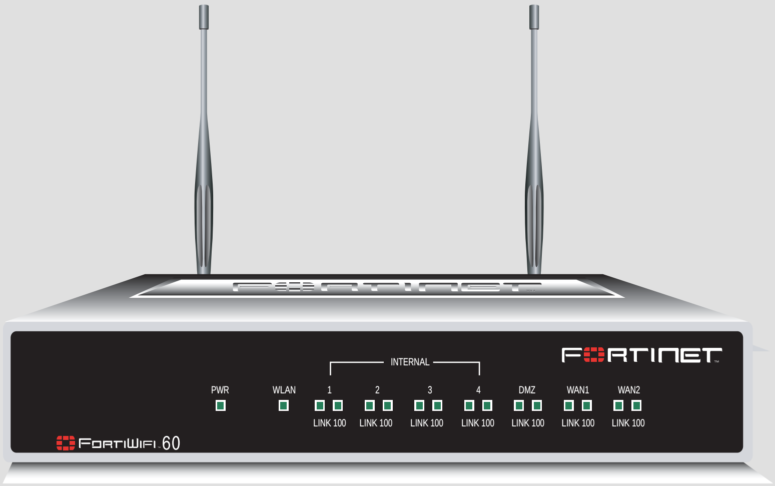
FortiWiFi 60

Installation and Configuration Guide



FortiWiFi User Manual Volume 1

Version 2.50

3 March 2004

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FortiGate-60 Installation and Configuration Guide
Version 2.50 MR2
18 August 2003

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Products mentioned in this document are trademarks or registered t
This device complete with part 15 of the FCC rules. Operations is subject to the following two conditions:
holders.

Regulatory Compliance

This device complies with part 15 of the FCC rules. Operation is subject to the following two condigions:

(1) This Device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause accept any interference received, including interference that may cause undesired operation.

NOTE: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user’s authority to operate the equipment.

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Table of Contents

FortiWiFi-60 Installation and Configuration Guide Version 2.50

Introduction

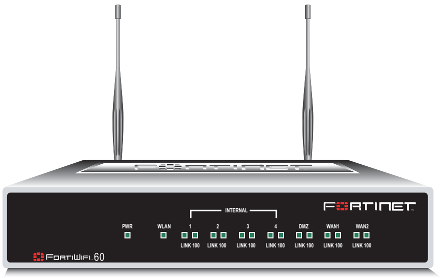
FortiGate and FortiWiFi Antivirus Firewalls support network-based deployment of application-level services, including antivirus protection and full-scan content filtering. FortiGate and FortiWiFi Antivirus Firewalls improve network security, reduce network misuse and abuse, and help you use communications resources more efficiently without compromising the performance of your network. FortiGate and FortiWiFi Antivirus Firewalls are ICSA-certified for firewall, IPSec, and antivirus services.

The FortiWiFi-60 Antivirus Firewall is a dedicated easily managed security device that delivers a full suite of capabilities that include:

- application-level services such as virus protection and content filtering,
- network-level services such as firewall, intrusion detection, VPN, and traffic shaping.

The FortiWiFi-60 Antivirus Firewall uses Fortinet's Accelerated Behavior and Content Analysis System (ABACAS™) technology, which leverages breakthroughs in chip design, networking, security, and content analysis. The unique ASIC-based architecture analyzes content and behavior in real-time, enabling key applications to be deployed right at the network edge, where they are most effective at protecting your networks. The FortiWiFi series complements existing solutions, such as host-based antivirus protection, and enables new applications and services while greatly lowering costs for equipment, administration, and maintenance.

The FortiWiFi-60 model is ideally suited for small businesses, remote offices, retail stores, and broadband telecommuter sites. The FortiWiFi-60 Antivirus Firewall features dual WAN link support for redundant internet connections, and an integrated 4-port switch that eliminates the need for an external hub or switch. Networked devices connect directly to the FortiWiFi-60 unit.



The FortiWiFi-60 provides a secure, wireless LAN solution that combines mobility and flexibility with the enterprise-class FortiWiFi Antivirus Firewall features. The FortiWiFi is a Wi-Fi certified, wireless LAN transceiver that uses a two mini-PCI radios that are IEEE 802.11b and IEEE 802.11g-compliant and that can be upgraded to future radio technologies.

The FortiWiFi serves as the connection point between wireless and wired networks or as the center point of a stand-alone wireless network. FortiWiFi-60 security features include WEP, VPN over the wireless network, and firewall policies that can include user authentication to control access.

Antivirus protection

FortiWiFi ICSA-certified antivirus protection scans web (HTTP), file transfer (FTP), and email (SMTP, POP3, and IMAP) content as it passes through the FortiWiFi unit. If a virus is found, antivirus protection removes the file containing the virus from the content stream and forwards a replacement message to the intended recipient.

For extra protection, you can configure antivirus protection to block specified file types from passing through the FortiWiFi unit. You can use the feature to stop files that might contain new viruses.

If the FortiWiFi unit contains a hard disk, infected or blocked files can be quarantined. The FortiWiFi administrator can download quarantined files so that they can be virus scanned, cleaned, and forwarded to the intended recipient. You can also configure the FortiWiFi unit to automatically delete quarantined files after a specified time.

The FortiWiFi unit can send email alerts to system administrators when it detects and removes a virus from a content stream. The web and email content can be in normal network traffic or encrypted IPSec VPN traffic.

ICSA Labs has certified that FortiGate and FortiWiFi Antivirus Firewalls:

- detect 100% of the viruses listed in the current In The Wild List (www.wildlist.org),
- detect viruses in compressed files using the PKZip format,
- detect viruses in email that has been encoded using uuencode format,
- detect viruses in email that has been encoded using MIME encoding,
- log all actions taken while scanning.

Web content filtering

Web content filtering can scan all HTTP content protocol streams for URLs or web page content. If there is a match between a URL on the URL block list, or a web page contains a word or phrase that is in the content block list, the FortiWiFi unit blocks the web page. The blocked web page is replaced with a message that you can edit using the FortiWiFi web-based manager.

You can configure URL blocking to block all or some of the pages on a web site. Using this feature, you can deny access to parts of a web site without denying access to it completely.

To prevent unintentionally blocking legitimate web pages, you can add URLs to an exempt list that overrides the URL blocking and content blocking lists.

Web content filtering also includes a script filter feature that can block unsecure web content such as Java applets, cookies, and ActiveX.

You can use the Cerberian URL blocking to block unwanted URLs.

Email filtering

Email filtering can scan all IMAP and POP3 email content for unwanted senders or unwanted content. If there is a match between a sender address pattern on the email block list, or an email contains a word or phrase in the banned word list, the FortiWiFi adds an email tag to the subject line of the email. The recipient can use the mail client software to filter messages based on the email tag.

You can configure email blocking to tag email from all or some senders within organizations that are known to send spam email. To prevent unintentionally tagging email from legitimate senders, you can add sender address patterns to an exempt list that overrides the email block and banned words lists.

Firewall

The FortiWiFi ICSA-certified firewall protects your computer networks from Internet threats. ICSA has granted FortiWiFi firewalls version 4.0 firewall certification, providing assurance that FortiWiFi firewalls successfully screen and secure corporate networks against a range of threats from public or other untrusted networks.

After basic installation of the FortiWiFi unit, the firewall allows users on the protected network to access the Internet while blocking Internet access to internal networks. You can configure the firewall to put controls on access to the Internet from the protected networks and to allow controlled access to internal networks.

FortiWiFi policies include a range of options that:

- control all incoming and outgoing network traffic,
- control encrypted VPN traffic,
- apply antivirus protection and web content filtering,
- block or allow access for all policy options,
- control when individual policies are in effect,
- accept or deny traffic to and from individual addresses,
- control standard and user defined network services individually or in groups,
- require users to authenticate before gaining access,
- include traffic shaping to set access priorities and guarantee or limit bandwidth for each policy,
- include logging to track connections for individual policies,
- include Network Address Translation (NAT) mode and Route mode policies,
- include mixed NAT and Route mode policies.

The FortiWiFi firewall can operate in NAT/Route mode or Transparent mode.

NAT/Route mode

In NAT/Route mode, you can create NAT mode policies and Route mode policies.

- NAT mode policies use network address translation to hide the addresses in a more secure network from users in a less secure network.
- Route mode policies accept or deny connections between networks without performing address translation.

Transparent mode

Transparent mode provides the same basic firewall protection as NAT mode. Packets that the FortiWiFi unit receives are forwarded or blocked according to firewall policies. The FortiWiFi unit can be inserted in the network at any point without having to make changes to your network or its components. However, VPN and some advanced firewall features are available only in NAT/Route mode.

Network intrusion detection

The FortiWiFi Network Intrusion Detection System (NIDS) is a real-time network intrusion detection sensor that detects and prevents a variety of suspicious network activity. NIDS uses attack signatures to identify more than 1000 attacks. You can enable and disable the attacks that the NIDS detects. You can also write user-defined detection attack signatures.

NIDS prevention detects and prevents many common denial of service and packet-based attacks. You can enable and disable prevention attack signatures and customize attack signature thresholds and other parameters.

To notify system administrators of the attack, the NIDS records the attack and any suspicious traffic to the attack log, and can be configured to send alert emails.

Fortinet updates NIDS attack definitions periodically. You can download and install updated attack definitions manually or you can configure the FortiWiFi unit to automatically check for and download attack definition updates.

VPN

Using FortiWiFi virtual private networking (VPN), you can provide a secure connection between widely separated office networks or securely link telecommuters or travellers to an office network.

VPN features include the following:

- Industry standard and ICSA-certified IPSec VPN, including:
  - IPSec, ESP security in tunnel mode,
  - DES, 3DES (triple-DES), and AES hardware accelerated encryption,
  - HMAC MD5 and HMAC SHA1 authentication and data integrity,
  - AutoIKE key based on pre-shared key tunnels,
  - IPSec VPN using local or CA certificates,
  - Manual Keys tunnels,
  - Diffie-Hellman groups 1, 2, and 5,
  - Aggressive and Main Mode,
  - Replay Detection,
  - Perfect Forward Secrecy,
  - XAuth authentication,
  - Dead peer detection.
- PPTP for easy connectivity with the VPN standard supported by the most popular operating systems.
- L2TP for easy connectivity with a more secure VPN standard, also supported by many popular operating systems.
- Firewall policy based control of IPSec VPN traffic.
- IPSec NAT traversal so that remote IPSec VPN gateways or clients behind a NAT can connect to an IPSec VPN tunnel.
- VPN hub and spoke using a VPN concentrator to allow VPN traffic to pass from one tunnel to another through the FortiWiFi unit.
- IPSec Redundancy to create a redundant AutoIKE key IPSec VPN connection to a remote network.

Secure installation, configuration, and management

The first time you power on the FortiWiFi unit, it is already configured with default IP addresses and security policies. Connect to the web-based manager, set the operating mode, and use the Setup wizard to customize FortiWiFi IP addresses for your network, and the FortiWiFi unit is ready to protect your network. You can then use the web-based manager to customize advanced FortiWiFi features.

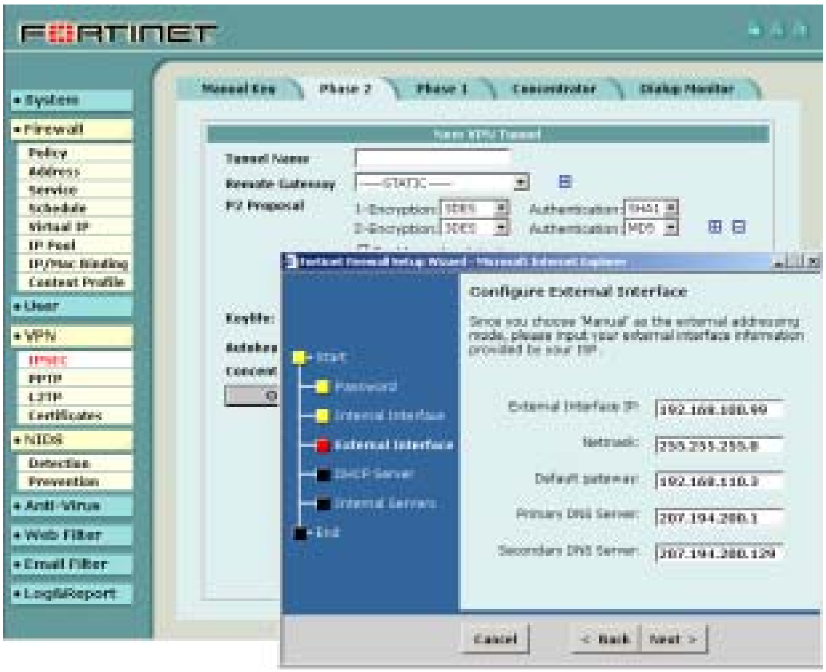
You can also create a basic configuration using the FortiWiFi command line interface (CLI).

Web-based manager

Using HTTP or a secure HTTPS connection from any computer running Internet Explorer, you can configure and manage the FortiWiFi unit. The web-based manager supports multiple languages. You can configure the FortiWiFi unit for HTTP and HTTPS administration from any FortiWiFi interface.

You can use the web-based manager to configure most FortiWiFi settings. You can also use the web-based manager to monitor the status of the FortiWiFi unit. Configuration changes made using the web-based manager are effective immediately without resetting the firewall or interrupting service. Once you are satisfied with a configuration, you can download and save it. The saved configuration can be restored at any time.

Figure 1: The FortiWiFi web-based manager and setup wizard



Configure External Interface

Since you choose 'Manual' as the external addressing mode, please input your external interface information provided by your ISP.

External Interface IP: 192.168.100.99

Netmask: 255.255.255.0

Default gateway: 192.168.110.3

Primary DNS Server: 207.194.200.1

Secondary DNS Server: 207.194.200.129

Command line interface

You can access the FortiWiFi command line interface (CLI) by connecting a management computer serial port to the FortiWiFi RS-232 serial console connector. You can also use Telnet or a secure SSH connection to connect to the CLI from any network that is connected to the FortiWiFi unit, including the Internet.

The CLI supports the same configuration and monitoring functionality as the web-based manager. In addition, you can use the CLI for advanced configuration options that are not available from the web-based manager.

This *Installation and Configuration Guide* contains information about basic and advanced CLI commands. For a more complete description about connecting to and using the FortiWiFi CLI, see the *FortiGate CLI Reference Guide*.

Logging and reporting

The FortiWiFi unit supports logging for various categories of traffic and configuration changes. You can configure logging to:

- report traffic that connects to the firewall,
- report network services used,
- report traffic that was permitted by firewall policies,
- report traffic that was denied by firewall policies,
- report events such as configuration changes and other management events, IPSec tunnel negotiation, virus detection, attacks, and web page blocking,
- report attacks detected by the NIDS,
- send alert email to system administrators to report virus incidents, intrusions, and firewall or VPN events or violations.

Logs can be sent to a remote syslog server or a WebTrends NetIQ Security Reporting Center and Firewall Suite server using the WebTrends enhanced log format. Some models can also save logs to an optional internal hard drive. If a hard drive is not installed, you can configure most FortiWiFi units to log the most recent events and attacks detected by the NIDS to the system memory.

Document conventions

This guide uses the following conventions to describe CLI command syntax.

- angle brackets < > to indicate variable keywords

  For example:

  ```
  execute restore config <filename_str>
  ```

  You enter `restore config myfile.bak`

  `<xxx_str>` indicates an ASCII string variable keyword.

  `<xxx_integer>` indicates an integer variable keyword.

  `<xxx_ip>` indicates an IP address variable keyword.

- vertical bar and curly brackets `{|}` to separate alternative, mutually exclusive required keywords

  For example:

  ```
  set system opmode {nat | transparent}
  ```

  You can enter `set system opmode nat` or `set system opmode transparent`

- square brackets `[ ]` to indicate that a keyword is optional

  For example:

  ```
  get firewall ipmacbinding [dhcpipmac]
  ```

  You can enter `get firewall ipmacbinding` or `get firewall ipmacbinding dhcpipmac`

Fortinet documentation

Information about FortiGate and FortiWiFi products is available from the following User Manual volumes:

- *Volume 1: FortiWiFi-60 Installation and Configuration Guide*

  Describes installation and basic configuration for the FortiWiFi unit. Also describes how to use FortiWiFi firewall policies to control traffic flow through the FortiWiFi unit and how to use firewall policies to apply antivirus protection, web content filtering, and email filtering to HTTP, FTP, and email content passing through the FortiWiFi unit.
- *Volume 2: FortiGate VPN Guide*

  Contains in-depth information about FortiGate IPSec VPN using certificates, pre-shared keys and manual keys for encryption. Also contains basic configuration information for the Fortinet Remote VPN Client, detailed configuration information for FortiGate PPTP and L2TP VPN, and VPN configuration examples.
- *Volume 3: FortiGate Content Protection Guide*

  Describes how to configure antivirus protection, web content filtering, and email filtering to protect content as it passes through the FortiGate unit.
- *Volume 4: FortiGate NIDS Guide*

  Describes how to configure the FortiGate NIDS to detect and protect the FortiGate unit from network-based attacks.
- *Volume 5: FortiGate Logging and Message Reference Guide*

  Describes how to configure FortiGate logging and alert email. Also contains the FortiGate log message reference.
- *Volume 6: FortiGate CLI Reference Guide*

  Describes the FortiGate CLI and contains a reference to all FortiGate CLI commands.

The FortiWiFi online help also contains procedures for using the FortiWiFi web-based manager to configure and manage the FortiWiFi unit.

Comments on Fortinet technical documentation

You can send information about errors or omissions in this document, or any Fortinet technical documentation, to techdoc@fortinet.com.

Customer service and technical support

For antivirus and attack definition updates, firmware updates, updated product documentation, technical support information, and other resources, please visit the Fortinet technical support web site at http://support.fortinet.com.

You can also register FortiWiFi Antivirus Firewalls from http://support.fortinet.com and change your registration information at any time.

Fortinet email support is available from the following addresses:

amer_support@fortinet.com	For customers in the United States, Canada, Mexico, Latin America and South America.
apac_support@fortinet.com	For customers in Japan, Korea, China, Hong Kong, Singapore, Malaysia, all other Asian countries, and Australia.
eu_support@fortinet.com	For customers in the United Kingdom, Scandinavia, Mainland Europe, Africa, and the Middle East.

For information on Fortinet telephone support, see http://support.fortinet.com.

When requesting technical support, please provide the following information:

- Your name
- Company name
- Location
- Email address
- Telephone number
- FortiWiFi unit serial number
- FortiWiFi model
- FortiWiFi FortiOS firmware version
- Detailed description of the problem

Getting started

This chapter describes unpacking, setting up, and powering on a FortiWiFi Antivirus Firewall unit. When you have completed the procedures in this chapter, you can proceed to one of the following:

- If you are going to operate the FortiWiFi unit in NAT/Route mode, go to "NAT/Route mode installation" on page 41.
- If you are going to operate the FortiWiFi unit in Transparent mode, go to "Transparent mode installation" on page 59.

This chapter describes:

- Warnings
- Package contents
- Mounting
- Powering on
- Connecting to the web-based manager
- Connecting to the command line interface (CLI)
- Factory default FortiWiFi configuration settings
- Planning the FortiWiFi configuration
- FortiGate model maximum values matrix
- Next steps

Warnings

Caution: To comply with FCC radio frequency (RF) exposure limits, dipole antennas should be located at a minimum of 7.9 inches (20 cm) or more from the body of all persons.

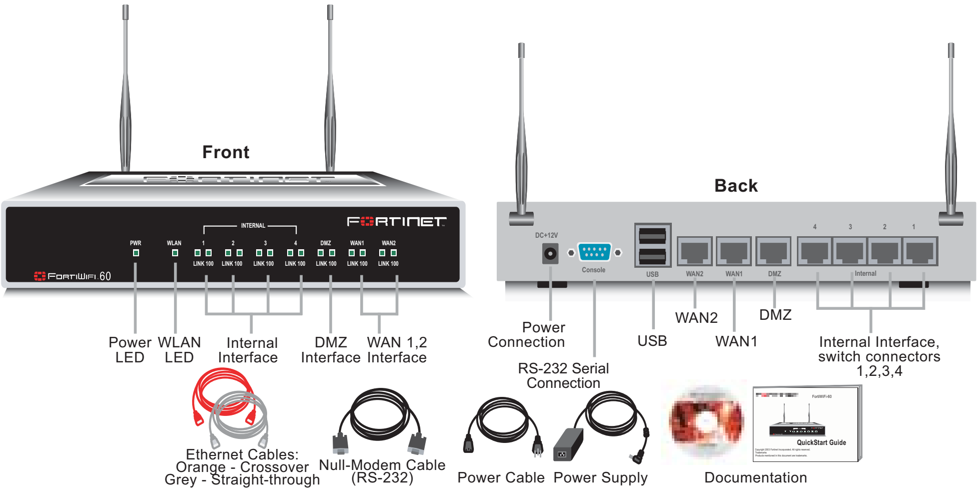
Caution: Do not operate a wireless network device near unshielded blasting caps or in an explosive environment unless the device has been modified to be especially qualified for such use.

Package contents

The FortiWiFi-60 package contains the following items:

- FortiWiFi-60 Antivirus Firewall
- one orange crossover ethernet cable
- one gray regular ethernet cable
- one null modem cable
- FortiWiFi-60 Quick Start Guide
- CD containing the FortiGate and FortiWiFi user documentation
- one power cable and AC adapter

Figure 2: FortiWiFi-60 package contents



Mounting

The FortiWiFi-60 unit can be installed on any stable surface. Make sure that the appliance has at least 1.5 in. (3.75 cm) of clearance on each side to allow for adequate air flow and cooling.

Dimensions

- 8.63 x 6.13 x 1.38 in. (21.9 x 15.6 x 3.5 cm)

Weight

- 1.5 lb. (0.68 kg)

Power requirements

- DC input voltage: 12 V
- DC input current: 3 A

Environmental specifications

- Operating temperature: 32 to 104°F (0 to 40°C)
- Storage temperature: -13 to 158°F (-25 to 70°C)
- Humidity: 5 to 95% non-condensing

Wireless Connectivity

- Antenna type: Dual external fixed antenna
- Antenna range: 802.11b/g:2.4GHz
- Antenna Gain: 5dBi

Basic WiFi installation guidelines

Because the FortiWiFi-60 is a radio device, it is susceptible to common causes of interference that can reduce throughput and range. Follow these basic guidelines to ensure the best possible performance:

- Install the access point in an area where large steel structures such as shelving units, bookcases, and filing cabinets do not block the radio signals to and from the access point.
- Install the access point away from microwave ovens. Microwave ovens operate on the same frequency as the access point and can cause signal interference.

Powering on

To power on the FortiWiFi-60 unit

1. Connect the AC adapter to the power connection at the back of the FortiWiFi-60 unit.
2. Connect the AC adapter to the power cable.
3. Connect the power cable to a power outlet.
   The FortiWiFi-60 unit starts. The Power and WAN LEDS light.

Table 1: FortiWiFi-60 LED indicators

LED	State	Description
Power	Green	The FortiWiFi unit is powered on.
	Off	The FortiWiFi unit is powered off.
WAN	Green	Traffic on WAN link.
Link (Internal DMZ WAN1 WAN2)	Green	The correct cable is in use and the connected equipment has power.
	Flashing Green	Network activity at this interface.
	Off	No link established.
100 (Internal DMZ WAN1 WAN2)	Green	The interface is connected at 100 Mbps.

Connecting to the web-based manager

Use the following procedure to connect to the web-based manager for the first time. Configuration changes made with the web-based manager are effective immediately without resetting the firewall or interrupting service.

To connect to the web-based manager, you need:

- a computer with an ethernet connection,
- Internet Explorer version 4.0 or higher,
- an ethernet cable.
- a crossover cable or an ethernet hub and two ethernet cables.

Note: You can use the web-based manager with recent versions of most popular web browsers. The web-based manager is fully supported for Internet Explorer version 4.0 or higher.

To connect to the web-based manager

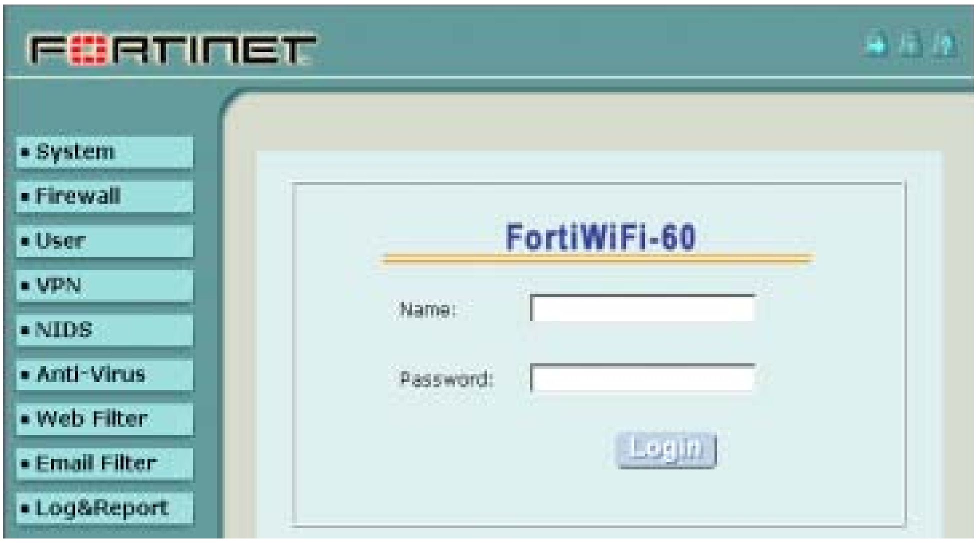
1. Set the IP address of the computer with an ethernet connection to the static IP address 192.168.1.2 and a netmask of 255.255.255.0.

   You can also configure the management computer to obtain an IP address automatically using DHCP. The FortiWiFi DHCP server assigns the management computer an IP address in the range 192.168.1.1 to 192.168.1.254.
2. Using the ethernet cable, connect the internal interface of the FortiWiFi unit to the computer ethernet connection.
3. Start Internet Explorer and browse to the address https://192.168.1.99 (remember to include the “s” in https://).

   The FortiWiFi login is displayed.
4. Type admin in the Name field and select Login.

   The Register Now window is displayed. Use the information in this window to register your FortiWiFi unit so that Fortinet can contact you for firmware updates. You must also register to receive updates to the FortiWiFi virus and attack definitions.

Figure 3: FortiWiFi login



Connecting to the command line interface (CLI)

As an alternative to the web-based manager, you can install and configure the FortiWiFi unit using the CLI. Configuration changes made with the CLI are effective immediately without resetting the firewall or interrupting service.

To connect to the FortiWiFi CLI, you need:

- a computer with an available communications port,
- the null modem cable included in your FortiWiFi package,
- terminal emulation software such as HyperTerminal for Windows.

Note: The following procedure describes how to connect to the CLI using Windows HyperTerminal software. You can use any terminal emulation program.

To connect to the CLI

1. Connect the null modem cable to the communications port of your computer and to the FortiWiFi Console port.
2. Make sure that the FortiWiFi unit is powered on.
3. Start HyperTerminal, enter a name for the connection, and select OK.
4. Configure HyperTerminal to connect directly to the communications port on the computer to which you have connected the null modem cable and select OK.
5. Select the following port settings and select OK.

Bits per second	9600
Data bits	8
Parity	None
Stop bits	1
Flow control	None

6. Press Enter to connect to the FortiWiFi CLI.
   The following prompt is displayed:
   ```
   FortiWiFi-60 login:
   ```
7. Type `admin` and press Enter twice.
   The following prompt is displayed:
   ```
   Type ? for a list of commands.
   ```
   For information about how to use the CLI, see the *FortiGate CLI Reference Guide*.

Factory default FortiWiFi configuration settings

The FortiWiFi unit is shipped with a factory default configuration. The default configuration allows you to connect to and use the FortiWiFi web-based manager to configure the FortiWiFi unit onto the network. To configure the FortiWiFi unit onto the network you add an administrator password, change network interface IP addresses, add DNS server IP addresses, and configure routing, if required.

If you plan to operate the FortiWiFi unit in Transparent mode, you can switch to Transparent mode from the factory default configuration and then configure the FortiWiFi unit onto the network in Transparent mode.

Once the network configuration is complete, you can perform additional configuration tasks such as setting system time, configuring virus and attack definition updates, and registering the FortiWiFi unit.

The factory default firewall configuration includes a single network address translation (NAT) policy that allows users on your internal network to connect to the external network, and stops users on the external network from connecting to the internal network. You can add more policies to provide more control of the network traffic passing through the FortiWiFi unit.

The factory default content profiles can be used to apply different levels of antivirus protection, web content filtering, and email filtering to the network traffic that is controlled by firewall policies.

- Factory default DHCP configuration
- Factory default NAT/Route mode network configuration
- Factory default Transparent mode network configuration
- Factory default firewall configuration
- Factory default content profiles

Factory default DHCP configuration

When the FortiWiFi unit is first powered on, the WAN1 interface is configured to receive its IP address by connecting to a DHCP server. If your ISP provides IP addresses using DHCP, no other configuration is required for this interface.

The FortiWiFi unit can also function as a DHCP server for your internal network. You can configure the TCP/IP settings of the computers on your internal network to obtain an IP address automatically from the FortiWiFi unit DHCP server. For more information about the FortiWiFi DHCP server, see “Configuring DHCP services” on page 126.

Table 2: FortiWiFi Internal interface DHCP Server default configuration

Enable DHCP	☑
Starting IP	192.168.1.101
Ending IP	192.168.1.200
Netmask	255.255.255.0
Lease Duration	7 days
Default Route	192.168.1.99
DNS IP	192.168.1.99
WINS IP	192.168.1.99

Table 3: FortiWiFi WLAN interface DHCP Server default configuration

Enable DHCP	☑
Starting IP	192.168.2.101
Ending IP	192.168.2.200
Netmask	255.255.255.0
Lease Duration	7 days
Default Route	192.168.2.99
DNS IP	192.168.2.99
WINS IP	192.168.2.99

Factory default NAT/Route mode network configuration

When the FortiWiFi unit is first powered on, it is running in NAT/Route mode and has the basic network configuration listed in Table 4. This configuration allows you to connect to the FortiWiFi unit web-based manager and establish the configuration required to connect the FortiWiFi unit to the network. In Table 4 HTTPS management access means you can connect to the web-based manager using this interface. Ping management access means this interface responds to ping requests.

Table 4: Factory default NAT/Route mode network configuration

Administrator account	User name: Password:	admin (none)
Internal interface	IP: Netmask: Management Access:	192.168.1.99 255.255.255.0 HTTPS, Ping
WAN1 interface	Addressing Mode: Management Access:	DHCP Ping
WAN2 interface	IP: Netmask: Management Access:	192.168.101.99 255.255.255.0 Ping

Table 4: Factory default NAT/Route mode network configuration (Continued)

DMZ interface		IP: Netmask: Management Access:	10.10.10.1 255.255.255.0 HTTPS, Ping
WLAN interface		IP: Netmask: Management Access: Geography: Channel: Security: Key: SSID:	192.168.100.99 255.255.255.0 World 5 none none Fortinet

Factory default Transparent mode network configuration

If you switch the FortiWiFi unit to Transparent mode, it has the default network configuration listed in Table 5.

Table 5: Factory default Transparent mode network configuration

Administrator account	User name: Password:	admin (none)
Management IP	IP: Netmask:	10.10.10.1 255.255.255.0
DNS	Primary DNS Server: Secondary DNS Server:	207.194.200.1 207.194.200.129
Management access	Internal WAN1 WAN2 DMZ	HTTPS, Ping Ping Ping HTTPS, Ping
Wireless	Geography	World
	Channel	5
	Security	None
	Key	None
	SSID	fortinet

Factory default firewall configuration

The factory default firewall configuration is the same in NAT/Route and Transparent mode.

Table 6: Factory default firewall configuration

Internal Address	Internal_All	IP: 0.0.0.0	Represents all of the IP addresses on the internal network.
		Mask: 0.0.0.0	
WAN1 Address	WAN1_All	IP: 0.0.0.0	Represents all of the IP addresses on the network connected to the WAN1 interface.
		Mask: 0.0.0.0	
WAN2 Address	WAN2_All	IP: 0.0.0.0	Represents all of the IP addresses on the network connected to the WAN2 interface.
		Mask: 0.0.0.0	
WLAN Address	WLAN_All	IP: 0.0.0.0	Represents all of the IP addresses on the network connected to the WLAN interface.
		Mask: 0.0.0.0	
DMZ Address	DMZ_All	IP: 0.0.0.0	Represents all of the IP addresses on the network connected to the DMZ interface.
		Mask: 0.0.0.0	
Recurring Schedule	Always		The schedule is valid at all times. This means that the firewall policy is valid at all times.
Firewall Policy	**Internal->WAN1**		Firewall policy for connections from the internal network to the WAN1 network.
	Source	Internal_All	The policy source address. Internal_All means that the policy accepts connections from any internal IP address.
	Destination	WAN1_All	The policy destination address. WAN1_All means that the policy accepts connections with a destination address to any IP address on the external (WAN1) network.
Firewall Policy	**Internal->WAN2**		Firewall policy for connections from the internal network to the WAN2 network.
	Source	Internal_All	The policy source address. Internal_All means that the policy accepts connections from any internal IP address.
	Destination	WAN2_All	The policy destination address. WAN2_All means that the policy accepts connections with a destination address to any IP address on the external (WAN2) network.
Firewall Policy	**WLAN->WAN1**		Firewall policy for connections from the WLAN network to the WAN1 network.
	Source	WLAN_All	The policy source address. Internal_All means that the policy accepts connections from any WLAN IP address.
	Destination	WAN1_All	The policy destination address. WAN1_All means that the policy accepts connections from the wireless network with a destination address to any IP address on the external (WAN1) network.

Table 6: Factory default firewall configuration (Continued)

Firewall Policy	**WLAN->WAN2**		Firewall policy for connections from the WLAN network to the WAN2 network.
	Source	WLAN_All	The policy source address. Internal_All means that the policy accepts connections from any WLAN IP address.
	Destination	WAN2_All	The policy destination address. WAN2_All means that the policy accepts connections from the wireless network with a destination address to any IP address on the external (WAN2) network.
General Firewall Policy Options			
	Schedule	Always	The policy schedule. Always means that the policy is valid at any time.
	Service	ANY	The policy service. ANY means that this policy processes connections for all services.
	Action	ACCEPT	The policy action. ACCEPT means that the policy allows connections.
	☑ **NAT**		NAT is selected for the NAT/Route mode default policy so that the policy applies network address translation to the traffic processed by the policy. NAT is not available for Transparent mode policies.
	☐ **Traffic Shaping**		Traffic shaping is not selected. The policy does not apply traffic shaping to the traffic controlled by the policy. You can select this option to control the maximum or minimum amount of bandwidth available to traffic processed by the policy.
	☐ **Authentication**		Authentication is not selected. Users do not have to authenticate with the firewall before connecting to their destination address. You can configure user groups and select this option to require users to authenticate with the firewall before they can connect through the firewall.
	☑ **Antivirus & Web Filter**		Antivirus & Web Filter is selected.
	Content Profile	Scan	The scan content profile is selected. The policy scans all HTTP, FTP, SMTP, POP3, and IMAP traffic for viruses. See “Scan content profile” on page 34 for more information about the scan content profile. You can select one of the other content profiles to apply different levels of content protection to traffic processed by this policy.
	☐ **Log Traffic**		Log Traffic is not selected. This policy does not record messages to the traffic log for the traffic processed by this policy. You can configure FortiWiFi logging and select Log Traffic to record all connections through the firewall that are accepted by this policy.

Factory default content profiles

You can use content profiles to apply different protection settings for content traffic that is controlled by firewall policies. You can use content profiles for:

- Antivirus protection of HTTP, FTP, IMAP, POP3, and SMTP network traffic
- Web content filtering for HTTP network traffic
- Email filtering for IMAP and POP3 network traffic
- Oversized file and email blocking for HTTP, FTP, POP3, SMTP, and IMAP network traffic
- Passing fragmented emails in IMAP, POP3, and SMTP email traffic

Using content profiles, you can build protection configurations that can be applied to different types of firewall policies. This allows you to customize types and levels of protection for different firewall policies.

For example, while traffic between internal and external addresses might need strict protection, traffic between trusted internal addresses might need moderate protection. You can configure policies for different traffic services to use the same or different content profiles.

Content profiles can be added to NAT/Route mode and Transparent mode policies.

Strict content profile

Use the strict content profile to apply maximum content protection to HTTP, FTP, IMAP, POP3, and SMTP content traffic. You do not need to use the strict content profile under normal circumstances, but it is available if you have extreme problems with viruses and require maximum content screening protection.

Table 7: Strict content profile

Options	HTTP	FTP	IMAP	POP3	SMTP
Antivirus Scan	☑	☑	☑	☑	☑
File Block	☑	☑	☑	☑	☑
Web URL Block	☑				
Web Content Block	☑				
Web Script Filter	☑				
Web Exempt List	☑				
Email Block List			☑	☑	
Email Exempt List			☑	☑	
Email Content Block			☑	☑	
Oversized File/Email Block	block	block	block	block	block
Pass Fragmented Emails			□	□	□

Scan content profile

Use the scan content profile to apply antivirus scanning to HTTP, FTP, IMAP, POP3, and SMTP content traffic.

Table 8: Scan content profile

Options	HTTP	FTP	IMAP	POP3	SMTP
Antivirus Scan	☑	☑	☑	☑	☑
File Block	□	□	□	□	□
Web URL Block	□				
Web Content Block	□				
Web Script Filter	□				
Web Exempt List	□				
Email Block List			□	□	
Email Exempt List			□	□	
Email Content Block			□	□	
Oversized File/Email Block	pass	pass	pass	pass	pass
Pass Fragmented Emails			□	□	□

Web content profile

Use the web content profile to apply antivirus scanning and web content blocking to HTTP content traffic. You can add this content profile to firewall policies that control HTTP traffic.

Table 9: Web content profile

Options	HTTP	FTP	IMAP	POP3	SMTP
Antivirus Scan	☑	□	□	□	□
File Block	□	□	□	□	□
Web URL Block	☑				
Web Content Block	☑				
Web Script Filter	□				
Web Exempt List	□				
Email Block List	□		□	□	
Email Exempt List			□	□	
Email Content Block			□	□	
Oversized File/Email Block	pass	pass	pass	pass	pass
Pass Fragmented Emails			□	□	□

Unfiltered content profile

Use the unfiltered content profile if you do not want to apply content protection to traffic. You can add this content profile to firewall policies for connections between highly trusted or highly secure networks where content does not need to be protected.

Table 10: Unfiltered content profile

Options	HTTP	FTP	IMAP	POP3	SMTP
Antivirus Scan	□	□	□	□	□
File Block	□	□	□	□	□
Web URL Block	□				
Web Content Block	□				
Web Script Filter	□				
Web Exempt List	☑				
Email Block List	□		□	□	
Email Exempt List			☑	☑	
Email Content Block			□	□	
Oversized File/Email Block	pass	pass	pass	pass	pass
Pass Fragmented Emails			☑	☑	☑

Planning the FortiWiFi configuration

Before you configure the FortiWiFi unit, you need to plan how to integrate the unit into the network. Among other things, you must decide whether you want the unit to be visible to the network, which firewall functions you want it to provide, and how you want it to control the traffic flowing between its interfaces.

Your configuration plan depends on the operating mode that you select. The FortiWiFi unit can be configured in one of two modes: NAT/Route mode (the default) or Transparent mode.

NAT/Route mode

In NAT/Route mode, the unit is visible to the network. Like a router, all its interfaces are on different subnets. The following interfaces are available in NAT/Route mode:

- WAN1 is the default interface to the external network (usually the Internet).
- WAN2 is the redundant interface to the external network.
- Internal is the interface to the internal network.
- DMZ is the interface to the DMZ network.
- WLAN is the interface to the wireless LAN network.

You must configure routing to support the redundant WAN1 and WAN2 internet connections. Routing can be used to automatically redirect connections from an interface if its connection to the external network fails.

You can add security policies to control whether communications through the FortiWiFi unit operate in NAT or Route mode. Security policies control the flow of traffic based on the source address, destination address, and service of each packet. In NAT mode, the FortiWiFi unit performs network address translation before it sends the packet to the destination network. In Route mode, there is no translation.

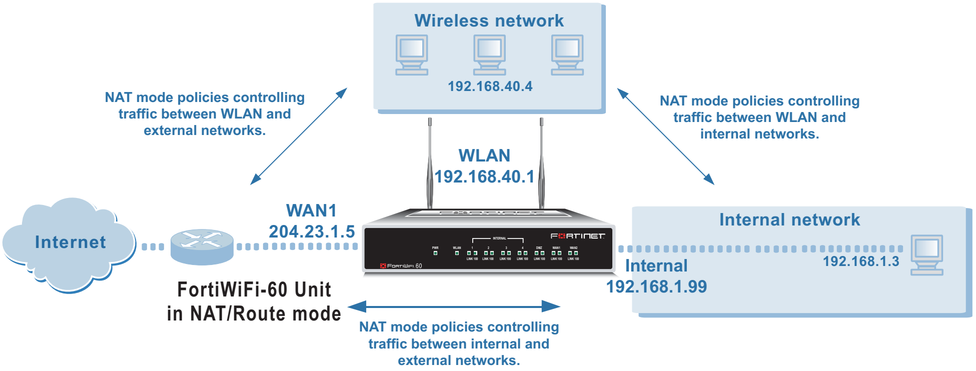
By default, the FortiWiFi unit has a NAT mode security policy that allows users on the internal network to securely download content from the external network. No other traffic is possible until you have configured further security policies.

You typically use NAT/Route mode when the FortiWiFi unit is operating as a gateway between private and public networks. In this configuration, you would create NAT mode policies to control traffic flowing between the internal, private network and the external, public network (usually the Internet).

In addition, you can use NAT/Route mode when the FortiWiFi-60 is operating as a gateway for your wireless network. In this configuration you would create NAT mode policies to control traffic flowing between the wireless network and the Internet as well as between the wireless network and other networks (such as the internal or DMZ networks).

If you have multiple internal networks, such as a DMZ network in addition to the internal, private network, you could create route mode policies for traffic flowing between them.

Figure 4: Example NAT/Route mode network configuration

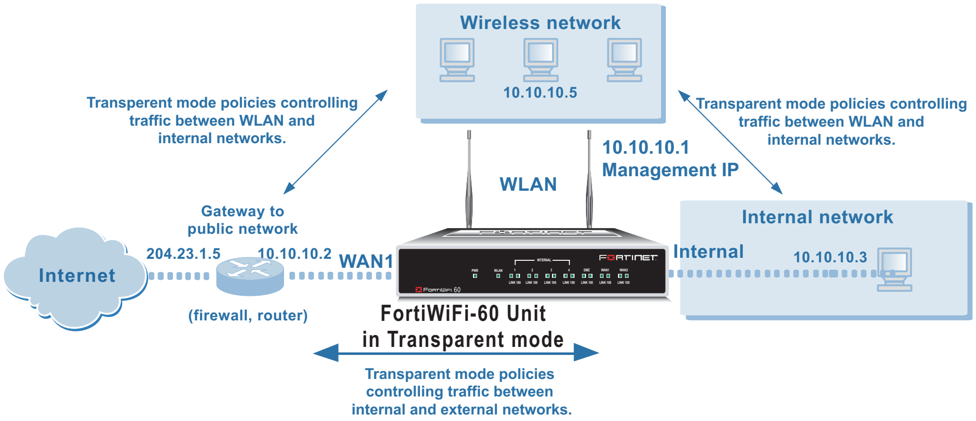

Wireless network
192.168.40.4
NAT mode policies controlling traffic between WLAN and external networks.
NAT mode policies controlling traffic between WLAN and internal networks.
WLAN
192.168.40.1
WAN1
204.23.1.5
Internet
Internal network
192.168.1.3
Internal
192.168.1.99
FortiWiFi-60 Unit
in NAT/Route mode
NAT mode policies controlling traffic between internal and external networks.

Transparent mode

In Transparent mode, the FortiWiFi unit is invisible to the network. Similar to a network bridge, all FortiWiFi interfaces must be on the same subnet. You only have to configure a management IP address so that you can make configuration changes. The management IP address is also used for antivirus and attack definition updates.

You typically use the FortiWiFi unit in Transparent mode on a private network behind an existing firewall or behind a router. The FortiWiFi unit performs firewall functions as well as antivirus and content scanning but not VPN.

Figure 5: Example Transparent mode network configuration


Wireless network
10.10.10.5
Transparent mode policies controlling traffic between WLAN and internal networks.
Transparent mode policies controlling traffic between WLAN and internal networks.
10.10.10.1
Management IP
WLAN
Internal network
Gateway to public network
204.23.1.5
10.10.10.2
WAN1
Internal
10.10.10.3
Internet
(firewall, router)
FortiWiFi-60 Unit
in Transparent mode
Transparent mode policies controlling traffic between internal and external networks.

You can connect up to four network segments to the FortiWiFi unit to control traffic between these network segments.

- WAN1 can connect to the external firewall or router.
- Internal can connect to the internal network.
- DMZ and WAN2 can connect to other network segments.
- WLAN connects to the wireless network.

In Transparent mode the wireless network is on the same subnet as the private network. Using Transparent mode firewall policies you can control the flow of traffic from the wireless network segment to other network segments.

Configuration options

Once you have selected Transparent or NAT/Route mode operation, you can complete the configuration plan and begin to configure the FortiWiFi unit.

You can use the web-based manager setup wizard or the command line interface (CLI) for the basic configuration of the FortiWiFi unit.

Setup wizard

If you are configuring the FortiWiFi unit to operate in NAT/Route mode (the default), the setup wizard prompts you to add the administration password and the internal interface address. The setup wizard also prompts you to choose either a manual (static) or a dynamic (DHCP or PPPoE) address for the WAN1 interface. Using the wizard, you can also add DNS server IP addresses and a default route for the WAN1 interface.

In NAT/Route mode you can also change the configuration of the FortiWiFi DHCP server to supply IP addresses for the computers on your internal network. You can also configure the FortiWiFi to allow Internet access to your internal Web, FTP, or email servers.

Using the web-based manager you can also add a DHCP server configuration to the WLAN interface to supply IP addresses to the computers on your wireless network. You can also add firewall policies to allow Internet access from the wireless network.

If you are configuring the FortiWiFi unit to operate in Transparent mode, you can switch to Transparent mode from the web-based manager and then use the setup wizard to add the administration password, the management IP address and gateway, and the DNS server addresses.

CLI

If you are configuring the FortiWiFi unit to operate in NAT/Route mode, you can add the administration password and all interface addresses. You can also use the CLI to configure the WAN1 interface for either a manual (static) or a dynamic (DHCP or PPPoE) address. Using the CLI, you can also add DNS server IP addresses and a default route for the WAN1 interface.

In NAT/Route mode you can also change the configuration of the FortiWiFi DHCP server to supply IP addresses for the computers on your internal network.

Using the CLI you can also add a DHCP server configuration to the WLAN interface to supply IP addresses to the computers on your wireless network. You can also add firewall policies to allow Internet access from the wireless network.

If you are configuring the FortiWiFi unit to operate in Transparent mode, you can use the CLI to switch to Transparent mode, Then you can add the administration password, the management IP address and gateway, and the DNS server addresses.

FortiGate model maximum values matrix

Table 11: FortiGate maximum values matrix

	FortiGate model											
	50	**60****	**100**	**200**	**300**	**400**	**500**	**800**	**1000**	**3000**	**3600**	**4000**
Routes	500	500	500	500	500	500	500	500	500	500	500	500
Policy routing gateways	500	500	500	500	500	500	500	500	500	500	500	500
Administrative users	500	500	500	500	500	500	500	500	500	500	500	500
VLAN subinterfaces	N/A	N/A	N/A	4096*	4096*	4096*	4096*	4096*	4096*	4096*	4096*	4096*
Zones	N/A	N/A	N/A	100	100	100	100	100	200	300	500	500
Virtual domains	N/A	N/A	N/A	16	32	64	64	64	128	512	512	512
DHCP address scopes	32	32	32	32	32	32	32	32	32	32	32	32
DHCP reserved IP/MAC pairs	10	20	30	30	50	50	100	100	200	200	200	200
Firewall policies	200	500	1000	2000	5000	5000	20000	20000	50000	50000	50000	50000
Firewall addresses	500	500	500	500	3000	3000	6000	6000	10000	10000	10000	10000
Firewall address groups	500	500	500	500	500	500	500	500	500	500	500	500
Firewall custom services	500	500	500	500	500	500	500	500	500	500	500	500
Firewall service groups	500	500	500	500	500	500	500	500	500	500	500	500
Firewall recurring schedules	256	256	256	256	256	256	256	256	256	256	256	256
Firewall onetime schedules	256	256	256	256	256	256	256	256	256	256	256	256
Firewall virtual IPs	500	500	500	500	500	500	500	500	500	500	500	500
Firewall IP pools	50	50	50	50	50	50	50	50	50	50	50	50
IP/MAC binding table entries	500	500	500	500	500	500	500	500	500	500	500	500
Firewall content profiles	32	32	32	32	32	32	32	32	32	32	32	32
User names	20	500	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Radius servers	6	6	6	6	6	6	6	6	6	6	6	6
LDAP servers	6	6	6	6	6	6	6	6	6	6	6	6
User groups	100	100	100	100	100	100	100	100	100	100	100	100
Total number of user group members	300	300	300	300	300	300	300	300	300	300	300	300
* Includes the number of physical interfaces. **FortiGate-60 and FortiWiFi-60.												

Table 11: FortiGate maximum values matrix

	FortiGate model											
	50	**60****	**100**	**200**	**300**	**400**	**500**	**800**	**1000**	**3000**	**3600**	**4000**
IPSec remote gateways (Phase 1)	20	50	80	200	1500	1500	3000	3000	5000	5000	5000	5000
IPSec VPN tunnels (Phase 2)	20	50	80	200	1500	1500	3000	3000	5000	5000	5000	5000
IPSec VPN concentrators	500	500	500	500	500	500	500	500	500	500	500	500
PPTP users	500	500	500	500	500	500	500	500	500	500	500	500
L2TP users	500	500	500	500	500	500	500	500	500	500	500	500
NIDS user-defined signatures	100	100	100	100	100	100	100	100	100	100	100	100
Antivirus file block patterns	56	56	56	56	56	56	56	56	56	56	56	56
Web filter and email filter lists	Limit varies depending on available system memory. Fortinet recommends limiting total size of web and email filter lists to 4 Mbytes or less. If you want to use larger web filter lists, consider using Cerberian web filtering.											
Log setting traffic filter entries	50	50	50	50	50	50	50	50	50	50	50	50
* Includes the number of physical interfaces. **FortiGate-60 and FortiWiFi-60.												

Next steps

Now that your FortiWiFi unit is operating, you can proceed to configure it to connect to networks:

- If you are going to operate the FortiWiFi unit in NAT/Route mode, go to “NAT/Route mode installation” on page 41.
- If you are going to operate the FortiWiFi unit in Transparent mode, go to “Transparent mode installation” on page 59.

NAT/Route mode installation

This chapter describes how to install the FortiWiFi unit in NAT/Route mode. To install the FortiWiFi unit in Transparent mode, see "Transparent mode installation" on page 59.

This chapter describes:

- Installing the FortiWiFi unit using the default configuration
- Preparing to configure NAT/Route mode
- Using the setup wizard
- Using the command line interface
- Connecting the FortiWiFi unit to your networks
- Configuring your networks
- Completing the configuration
- Configuration example: Multiple connections to the Internet

Installing the FortiWiFi unit using the default configuration

Depending on your requirements, you may be able to deploy the FortiWiFi unit without changing its factory default configuration. If the factory default settings in Table 12 are compatible with your requirements, all you need to do is configure your internal network and then connect the FortiWiFi unit.

Table 12: FortiWiFi unit factory default configuration

Firewall Policies	Four NAT policies allow users on the internal network and on the wireless network to access any Internet service through the WAN1 and WAN2 interfaces. No other traffic is allowed. All web, ftp, and email traffic is scanned for viruses.	
WAN1 and WAN2 interfaces	Using DHCP, WAN1 and WAN2 get their IP addresses from your ISP. The FortiWiFi-60 unit also gets DNS server IPs from these interfaces.	
DHCP Server on internal and wireless networks	**Internal**	Starting IP: 192.168.1.10, Ending IP: 192.168.1.200, Default route: 192.168.1.99, DNS server: 192.168.1.99
	WLAN	Starting IP: 192.168.2.10, Ending IP: 192.168.2.200, Default route: 192.168.2.99, DNS server: 192.168.2.99
WLAN	IP: 192.168.2.99, Channel: 5, SSID: fortinet	

To use the factory default configuration, follow these steps to install the FortiWiFi unit:

1. Configure the TCP/IP settings of the computers on your internal network to obtain an IP address automatically using DHCP. Refer to your computer documentation for assistance.
2. Turn on DHCP for the computers on your wireless network as well. If required, configure wireless settings to use channel 5 and SSID fortinet.
3. Complete the procedure in the section “Connecting the FortiWiFi unit to your networks” on page 47.

Changing the default configuration

You can use the procedures in this chapter to change the default configuration. For example, if your ISP assigns IP addresses using PPPoE instead of DHCP, you only need to change the configuration of the WAN1 interface. Use the information in the rest of this chapter to change the default configuration as required.

This chapter also describe how to change your wireless networking channel and SSID, and how to improve the security of your wireless network by enabling WEP and entering a WEP key.

Preparing to configure NAT/Route mode

Use Table 13 to gather the information that you need to customize NAT/Route mode settings.

Table 13: NAT/Route mode settings

Administrator password:		
Internal interface	IP:	______ . ______ . ______ . ______
	Netmask:	______ . ______ . ______ . ______
WAN1 interface	IP:	______ . ______ . ______ . ______
	Netmask:	______ . ______ . ______ . ______
	Default Gateway:	______ . ______ . ______ . ______
	Primary DNS Server:	______ . ______ . ______ . ______
	Secondary DNS Server:	______ . ______ . ______ . ______
WAN2 interface	IP:	______ . ______ . ______ . ______
	Netmask:	______ . ______ . ______ . ______

Table 13: NAT/Route mode settings

Internal servers	Web Server:	______.______.______.______
	SMTP Server:	______.______.______.______
	POP3 Server:	______.______.______.______
	IMAP Server:	______.______.______.______
	FTP Server:	______.______.______.______
	If you provide access from the Internet to a web server, mail server, IMAP server, or FTP server installed on an internal network, add the IP addresses of the servers here.	

Advanced NAT/Route mode settings

Use Table 14 to gather the information that you need to customize advanced FortiWiFi NAT/Route mode settings.

Table 14: Advanced FortiWiFi NAT/Route mode settings

WAN1 interface	DHCP:	If your Internet Service Provider (ISP) supplies you with an IP address using DHCP, no further information is required.	
	PPPoE:	User name:	
		Password:	
	If your ISP supplies you with an IP address using PPPoE, record your PPPoE user name and password.		
WAN2 interface	DHCP:	If your Internet Service Provider (ISP) supplies you with an IP address using DHCP, no further information is required.	
	PPPoE:	User name:	
		Password:	
	If your ISP supplies you with an IP address using PPPoE, record your PPPoE user name and password.		
DHCP server		Starting IP:	______.______.______.______
		Ending IP:	______.______.______.______
		Netmask:	______.______.______.______
		Default Route:	______.______.______.______
		DNS IP:	______.______.______.______
	The FortiWiFi unit contains a DHCP server that you can configure to automatically set the addresses of the computers on your internal network.		

DMZ interface

Use Table 15 to record the IP address and netmask of the FortiWiFi DMZ interface if you are configuring it during installation.

Table 15: DMZ interface (Optional)

DMZ	IP:	______.______.______.______	Netmask:	______.______.______.______

Wireless settings

Use Table 16 to record the IP address and netmask of the FortiWiFi-60 WLAN interface if you are configuring it during installation. If you are configuring wireless networking you should also configure the wireless Service Set ID (SSID) and channel. See “Wireless configuration” on page 120 for more information.

Table 16: Wireless settings (Optional)

WLAN	IP:	______.______.______.______	Netmask:	______.______.______.______
Geography:		World Americas EMEA Japan Israel	**Channel:**	
Security:		None WEP	**Key:**	
SSID:				

Using the setup wizard

From the web-based manager, you can use the setup wizard to create the initial configuration of your FortiWiFi unit. To connect to the web-based manager, see “Connecting to the web-based manager” on page 26.

Starting the setup wizard

1. Select Easy Setup Wizard (the middle button in the upper-right corner of the web-based manager).
2. Use the information that you gathered in Table 13 on page 42 to fill in the wizard fields. Select the Next button to step through the wizard pages.
3. Confirm your configuration settings and then select Finish and Close.

Note: If you use the setup wizard to configure internal server settings, the FortiWiFi unit adds port forwarding virtual IPs and firewall policies for each server. For each server located on your internal network the FortiWiFi unit adds a WAN1->Internal policy. For each server located on your DMZ network, the FortiWiFi unit adds a WAN1->DMZ policy.

Reconnecting to the web-based manager

If you used the setup wizard to change the IP address of the internal interface, you must reconnect to the web-based manager using a new IP address. Browse to https:// followed by the new IP address of the internal interface. Otherwise, you can reconnect to the web-based manager by browsing to https://192.168.1.99.

You have now completed the initial configuration of your FortiWiFi unit, and you can proceed to "Connecting the FortiWiFi unit to your networks" on page 47.

Using the command line interface

As an alternative to using the setup wizard, you can configure the FortiWiFi unit using the command line interface (CLI). To connect to the CLI, see "Connecting to the command line interface (CLI)" on page 27.

Configuring the FortiWiFi unit to operate in NAT/Route mode

Use the information that you gathered in Table 13 on page 42 to complete the following procedures.

Configuring NAT/Route mode IP addresses

1. Log into the CLI if you are not already logged in.
2. Set the IP address and netmask of the internal interface to the internal IP address and netmask that you recorded in Table 13 on page 42. Enter:

   ```
   set system interface internal mode static ip <IP address>
   <netmask>
   ```

   Example

   ```
   set system interface internal mode static ip 192.168.1.1
   255.255.255.0
   ```

3. Set the IP address and netmask of the WAN1 interface to the IP address and netmask that you recorded in Table 13 on page 42.

   To set the manual IP address and netmask, enter:

   ```
   set system interface wan1 mode static ip <IP address> <netmask>
   ```

   Example

   ```
   set system interface wan1 mode static ip 204.23.1.5 255.255.255.0
   ```

   To set the WAN1 interface to use DHCP, enter:

   ```
   set system interface wan1 mode dhcp connection enable
   ```

   To set the WAN1 interface to use PPPoE, enter:

   ```
   set system interface wan1 mode pppoe username <user name>
   password <password> connection enable
   ```

   Example

   ```
   set system interface wan1 mode pppoe username user@domain.com
   password mypass connection enable
   ```

4 Optionally set the IP address and netmask of the WAN2 interface to the IP address and netmask that you recorded in Table 13 on page 42.

To set the manual IP address and netmask, enter:

```
set system interface wan2 mode static ip <IP address> <netmask>
```

Example

```
set system interface wan2 mode static ip 34.3.21.35 255.255.255.0
```

To set the WAN2 interface to use DHCP, enter:

```
set system interface wan2 mode dhcp connection enable
```

To set the WAN2 interface to use PPPoE, enter:

```
set system interface wan2 mode pppoe username <user name>
password <password> connection enable
```

Example

```
set system interface wan2 mode pppoe username user@domain.com
password mypass connection enable
```

5 Optionally set the IP address and netmask of the DMZ interface to the DMZ IP address and netmask that you recorded in Table 15 on page 44. Enter:

```
set system interface dmz mode static ip <IP address> <netmask>
```

Example

```
set system interface dmz mode static ip 10.10.10.2
255.255.255.0
```

6 Optionally set the IP address and netmask of the WLAN interface to the WLAN IP address and netmask that you recorded in Table 16 on page 44. Enter:

```
set system interface wlan mode static ip <IP address> <netmask>
```

Example

```
set system interface wlan mode static ip 192.168.40.1
255.255.255.0
```

7 Optionally set the wireless configuration using the information that you recorded in Table 16 on page 44. Enter:

```
set system interface wlan wireless geography {World | Americas
| EMEA | Israel | Japan} channel <channel_number> ssid
<ssid_name> security WEP key <WEP_key>
```

Example

```
set system interface wlan wireless geography Americas channel
10 ssid My_SSID security WEP key My_Wep_Key
```

8 Confirm that the addresses are correct. Enter:

```
get system interface
```

The CLI lists the IP address, netmask and other settings for each of the FortiWiFi interfaces.

9 Set the primary DNS server IP addresses. Enter

```
set system dns primary <IP address>
```

Example

```
set system dns primary 293.44.75.21
```

10 Optionally, set the secondary DNS server IP addresses. Enter

```
set system dns secondary <IP address>
```

Example

```
set system dns secondary 293.44.75.22
```

11 Set the default route to the Default Gateway IP address (not required for DHCP and PPPoE).

```
set system route number <route_no> dst 0.0.0.0 0.0.0.0 gw1
<gateway_ip>
```

Example

```
set system route number 0 dst 0.0.0.0 0.0.0.0 gw1 204.23.1.2
```

Connecting the FortiWiFi unit to your networks

When you have completed the initial configuration, you can connect the FortiWiFi unit between your internal network and the Internet.

There are seven 10/100 BaseTX connectors on the back of the FortiWiFi-60 unit:

- Four Internal ports for connecting to your internal network,
- One WAN1 port for connecting to your public switch or router and the Internet,
- One WAN 2 port for connecting to a second public switch or router and the Internet for a redundant Internet connection,
- One DMZ port for connecting to a DMZ network.

Note: You can also connect the WAN1 and WAN2 interfaces to different Internet connections to provide a redundant connection to the Internet.

To connect the FortiWiFi unit:

1 Connect the Internal interface connectors to PCs and other network devices in your internal network.

The Internal interface functions as a switch, allowing up to four devices to be connected to the internal network and the internal interface.

2 Connect the WAN1 interface to the Internet.

Connect to the public switch or router provided by your Internet Service Provider. If you are a DSL or cable subscriber, connect the WAN1 interface to the internal or LAN connection of your DSL or cable modem.

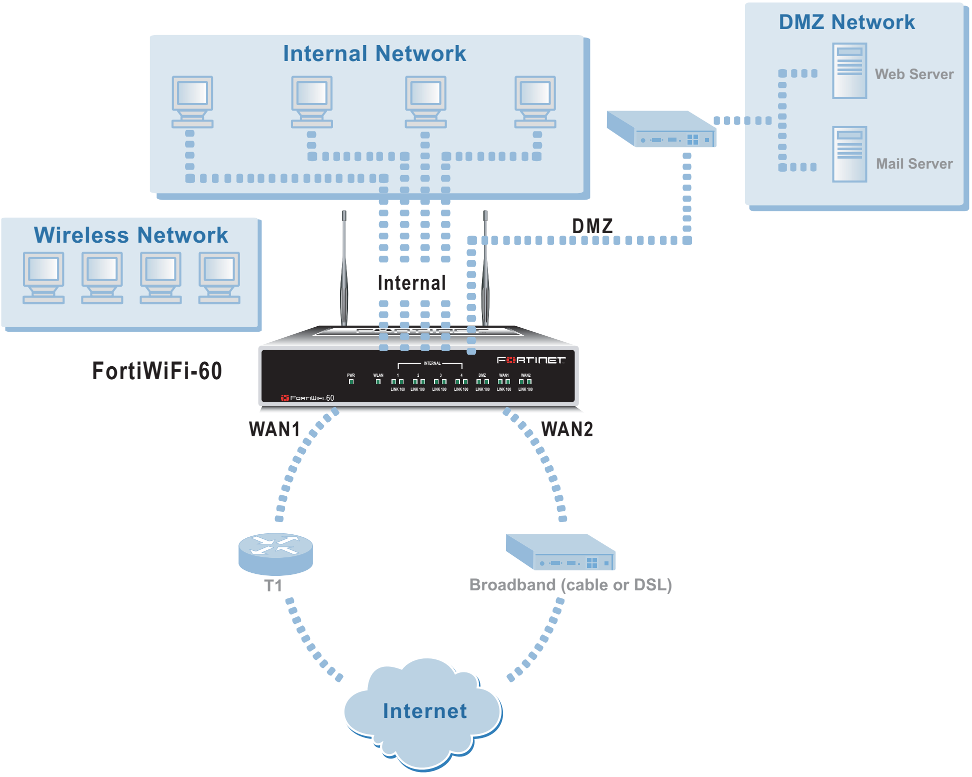
3 Optionally connect the WAN2 interface to the Internet.

Connect to the public switch or router, usually provided by a different Internet Service Provider. If you are a DSL or cable subscriber, connect the WAN2 interface to the internal or LAN connection of your DSL or cable modem.

4 Optionally, connect the DMZ interface to your DMZ network.

You can use a DMZ network to provide access from the Internet to a web server or other server without installing the servers on your internal network.

Figure 6: FortiWiFi-60 NAT/Route mode connections



Configuring your networks

If you are operating the FortiWiFi unit in NAT/Route mode, your networks must be configured to route all Internet traffic to the IP address of the FortiWiFi interface to which they are connected. For your internal network, change the default gateway address of all computers and routers connected directly to your internal network to the IP address of the FortiWiFi internal interface. For the wireless network, change the default gateway address of all computers on the wireless network to the IP address of the wlan interface. For your DMZ network, change the default gateway address of all computers and routers connected directly to your DMZ network to the IP address of the FortiWiFi DMZ interface. For the external network, route all packets to the FortiWiFi WAN1 or WAN 2 interface.

If you are using the FortiWiFi unit as the DHCP server for your internal network, configure the computers on your internal network for DHCP.

Make sure that the connected FortiWiFi unit is functioning properly by connecting to the Internet from a computer on your internal network. You should be able to connect to any Internet address.

Completing the configuration

Use the information in this section to complete the initial configuration of the FortiWiFi unit.

Configuring the DMZ interface

If you are planning to configure a DMZ network, you might want to change the IP address of the DMZ interface. Use the following procedure to configure the DMZ interface using the web-based manager.

1. Log into the web-based manager.
2. Go to **System > Network > Interface**.
3. For the dmz interface, select Modify.
4. Change the IP address and Netmask as required.
5. Select Apply.

Configuring the WLAN interface

If you are planning to configure a wireless network, you might want to change the IP address of the WLAN interface and configure your wireless settings. Use the information in “Wireless configuration” on page 120 to complete the FortiWiFi-60 wireless configuration.

1. Log into the web-based manager.
2. Go to **System > Network > Interface**.
3. For the wlan interface, select Modify.
4. Change the IP address and Netmask as required.
5. Set Geography to your location and select a channel.
6. Set Security to WEP (recommended) and enter a WEP key.
7. Change the SSID if required.
8. Select OK.

Configuring the WAN2 interface

If you are planning to configure a second internet connection using the WAN2 interface, you might want to change the IP address of the WAN2 interface. Use the following procedure to configure the WAN2 interface using the web-based manager.

1. Log into the web-based manager.
2. Go to **System > Network > Interface**.
3. For the wan2 interface, select Modify.
4. Change the IP address and Netmask as required.
5. Select Apply.

Setting the date and time

For effective scheduling and logging, the FortiWiFi system date and time should be accurate. You can either manually set the system date and time or you can configure the FortiWiFi unit to automatically keep its time correct by synchronizing with a Network Time Protocol (NTP) server.

To set the FortiWiFi system date and time, see “Setting system date and time” on page 143.

Changing antivirus protection

By default, the FortiWiFi unit scans all web and email content for viruses. You can use the following procedure to change the antivirus configuration. To change the antivirus configuration:

1. Go to **Firewall > Policy > Internal->WAN1**.
2. Select Edit to edit this policy.
3. For Anti-Virus & Web Filter you can select a different Content Profile.
   See “Factory default content profiles” on page 33 for descriptions of the default content profiles.
4. Select OK to save your changes.

You can also add you own content profiles. See “Adding content profiles” on page 190.

Registering your FortiWiFi unit

After purchasing and installing a new FortiWiFi unit, you can register the unit by going to System > Update > Support, or using a web browser to connect to http://support.fortinet.com and selecting Product Registration.

Registration consists of entering your contact information and the serial numbers of the FortiWiFi units you or your organization have purchased. Registration is quick and easy. You can register multiple FortiWiFi units in a single session without re-entering your contact information.

For more information about registration, see “Registering FortiGate and FortiWiFi units” on page 104.

Configuring virus and attack definition updates

You can go to System > Update to configure the FortiWiFi unit to automatically check to see if new versions of the virus definitions and attack definitions are available. If it finds new versions, the FortiWiFi unit automatically downloads and installs the updated definitions.

The FortiWiFi unit uses HTTPS on port 8890 to check for updates. The FortiWiFi WAN1 interface must have a path to the FortiResponse Distribution Network (FDN) using port 8890.

To configure automatic virus and attack updates, see “Updating antivirus and attack definitions” on page 93.

Configuration example: Multiple connections to the Internet

This section describes some basic routing and firewall policy configuration examples for a FortiWiFi unit with multiple connections to the Internet (see Figure 7). In this topology, the organization operating the FortiWiFi unit uses two Internet service providers to connect to the Internet. The FortiWiFi unit is connected to the Internet using the WAN1 and WAN2 interfaces. The WAN1 interface connects to gateway 1, operated by ISP1 and the WAN2 interface connects to gateway 2, operated by ISP2.

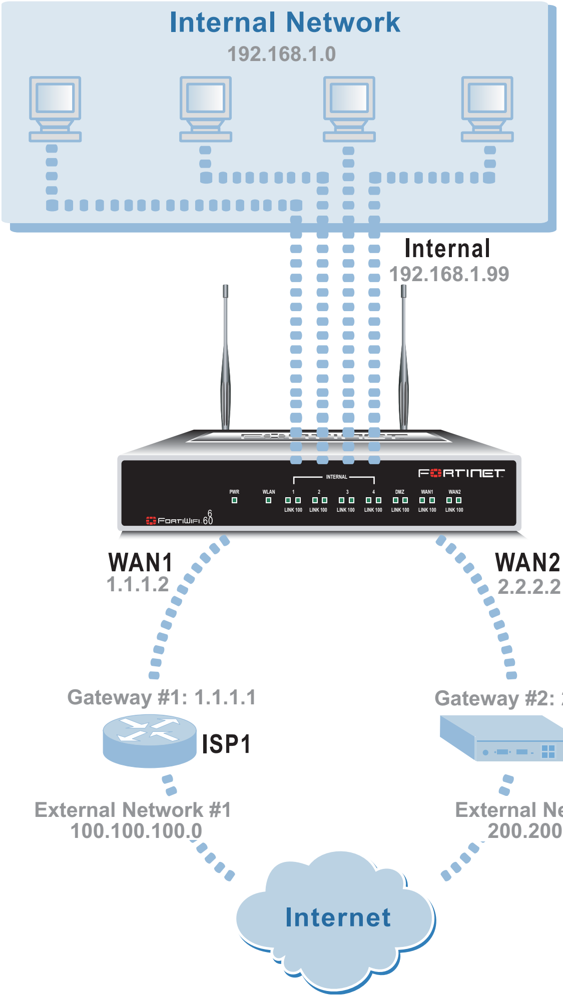
By adding ping servers to interfaces, and by configuring routing you can control how traffic uses each Internet connection. With this routing configuration is place you can proceed to create firewall policies to support multiple internet connections.

This section provides some examples of routing and firewall configurations to configure the FortiWiFi unit for multiple internet connections. To use the information in this section you should be familiar with FortiWiFi routing (see “Configuring routing” on page 122) and FortiWiFi firewall configuration (see “Firewall configuration” on page 159).

The examples below show how to configure destination-based routing and policy routing to control different traffic patterns.

- Configuring Ping servers
- Destination based routing examples
- Policy routing examples
- Firewall policy example

Figure 7: Example multiple Internet connection configuration



Configuring Ping servers

Use the following procedure to make Gateway 1 the ping server for the WAN1 interface and Gateway 2 the ping server for the WAN2 interface.

1 Go to **System > Network > Interface**.

2 For the WAN1 interface, select Modify.
- Ping Server: 1.1.1.1
- Select Enable Ping Server
- Select OK

3 For the WAN2 interface, select Modify.
- Ping Server: 2.2.2.1
- Select Enable Ping Server
- Select OK

Using the CLI

1 Add a ping server to the WAN1 interface.

```
set system interface wan1 config detectserver 1.1.1.1 gwdetect
enable
```

2 Add a ping server to the WAN2 interface.

```
set system interface wan2 config detectserver 2.2.2.1 gwdetect
enable
```

Destination based routing examples

This section describes the following destination-based routing examples:

- Primary and backup links to the Internet
- Load sharing
- Load sharing and primary and secondary connections

Primary and backup links to the Internet

Use the following procedure to add a default destination-based route that directs all outgoing traffic to Gateway 1. If Gateway 1 fails, all connections are re-directed to Gateway 2. Gateway 1 is the primary link to the Internet and Gateway 2 is the backup link.

1 Go to **System > Network > Routing Table**.

2 Select New.

- Destination IP: 0.0.0.0
- Mask: 0.0.0.0
- Gateway #1: 1.1.1.1
- Gateway #2: 2.2.2.1
- Device #1: wan1
- Device #2: wan2
- Select OK.

Using the CLI

1 Add the route to the routing table.

```
set system route number 0 dst 0.0.0.0 0.0.0.0 gw1 1.1.1.1
dev1 wan1 gw2 2.2.2.1 dev2 wan2
```

Table 17: Route for primary and backup links

Destination IP‘	Mask	Gateway #1	Device #1	Gateway #2	Device #2
0.0.0.0	0.0.0.0	1.1.1.1	wan1	2.2.2.1	wan2

Load sharing

You can also configure destination routing to direct traffic through both gateways at the same time. If users on your internal network connect to the networks of ISP1 and ISP2, you can add routes for each of these destinations. Each route can include a backup destination to the network of the other ISP.

Table 18: Load sharing routes

Destination IP'	Mask	Gateway #1	Device #1	Gateway #2	Device #2
100.100.100.0	255.255.255.0	1.1.1.1	wan1	2.2.2.1	wan2
200.200.200.0	255.255.255.0	2.2.2.1	wan2	1.1.1.1	wan1

The first route directs all traffic destined for the 100.100.100.0 network to gateway 1 with the IP address 1.1.1.1. If this router is down, traffic destined for the 100.100.100.0 network is re-directed to gateway 2 with the IP address 2.2.2.1.

Load sharing and primary and secondary connections

You can combine these routes into a more complete multiple internet connection configuration. In the topology shown in Figure 7 on page 52, users on the Internal network would connect to the Internet to access web pages and other Internet resources. However, they may also connect to services, such as email, provided by their ISPs. You can combine the routes described in the previous examples to provide users with a primary and backup connection to the Internet, while at the same time routing traffic to each ISP network as required.

The routing described below allows a user on the internal network to connect to the Internet through gateway 1 and ISP1. At the same time, this user can also connect through the DMZ interface to gateway 2 to access a mail server maintained by ISP2.

Adding the routes using the web-based manager

1. Go to **System > Network > Routing Table**.
2. Select New to add the default route for primary and backup links to the Internet.
   - Destination IP: 0.0.0.0
   - Mask: 0.0.0.0
   - Gateway #1: 1.1.1.1
   - Gateway #2: 2.2.2.1
   - Device #1: wan1
   - Device #2: wan2
   - Select OK.

3 Select New to add a route for connections to the network of ISP1.

- Destination IP: 100.100.100.0
- Mask: 255.255.255.0
- Gateway #1: 1.1.1.1
- Gateway #2: 2.2.2.1
- Device #1: wan1
- Device #2: wan2

4 Select New to add a route for connections to the network of ISP2.

- Destination IP: 200.200.200.0
- Mask: 255.255.255.0
- Gateway #1: 2.2.2.1
- Gateway #2: 1.1.1.1
- Device #1: wan1
- Device #2: wan2
- Select OK.

5 Change the order of the routes in the routing table to move the default route below the other two routes.

- For the default route select Move to ➡.
- Type a number in the Move to field to move this route to the bottom of the list.

  If there are only 3 routes, type 3.
- Select OK.

Adding the routes using the CLI

1 Add the route for connections to the network of ISP2.

```
set system route number 1 dst 100.100.100.0 255.255.255.0 gw1
1.1.1.1 dev1 wan1 gw2 2.2.2.1 dev2 wan2
```

1 Add the route for connections to the network of ISP1.

```
set system route number 2 dst 200.200.200.0 255.255.255.0 gw1
2.2.2.1 dev1 wan2 gw2 1.1.1.1 dev2 wan1
```

2 Add the default route for primary and backup links to the Internet.

```
set system route number 3 dst 0.0.0.0 0.0.0.0 gw1 1.1.1.1
dev1 wan1 gw2 2.2.2.1 dev2 wan2
```

The routing table should have routes arranged as shown in Table 19.

Table 19: Example combined routing table

Destination IP‘	Mask	Gateway #1	Device #1	Gateway #2	Device #2
100.100.100.0	255.255.255.0	1.1.1.1	wan1	2.2.2.1	wan2
200.200.200.0	255.255.255.0	2.2.2.1	wan2	1.1.1.1	wan1
0.0.0.0	0.0.0.0	1.1.1.1	wan1	2.2.2.1	wan2

Policy routing examples

Policy routing can be added to increase the control you have over how packets are routed. Policy routing works on top of destination-based routing. This means you should configure destination-based routing first and then build policy routing on top to increase the control provided by destination-based routing.

For example, if you have used destination-based routing to configure routing for dual internet connections, you can use policy routing to apply more control to which traffic is sent to which destination route. This section describes the following policy routing examples, based on topology similar to that shown in Figure 7 on page 52. Differences are noted in each example.

The policy routes described in these examples only work if you have already defined destination routes similar to those described in the previous section.

- Routing traffic from internal subnets to different external networks
- Routing a service to an external network

For more information about policy routing, see “Policy routing” on page 125.

Routing traffic from internal subnets to different external networks

If the FortiWiFi unit provides internet access for multiple internal subnets, you can use policy routing to control the route that traffic from each network takes to the Internet. For example, if the internal network includes the subnets 192.168.10.0 and 192.168.20.0 you can enter the following policy routes:

1. Enter the following command to route traffic from the 192.168.10.0 subnet to the 100.100.100.0 external network:

```
set system route policy 1 src 192.168.10.0 255.255.255.0 dst
100.100.100.0 255.255.255.0 gw 1.1.1.1
```

2. Enter the following command to route traffic from the 192.168.20.0 subnet to the 200.200.200.0 external network:

```
set system route policy 2 src 192.168.20.0 255.255.255.0 dst
200.200.200.0 255.255.255.0 gw 2.2.2.1
```

Routing a service to an external network

You can use the following policy routes to direct all HTTP traffic (using port 80) to one external network and all other traffic to the other external network.

1. Enter the following command to route all HTTP traffic using port 80 to the next hop gateway with IP address 1.1.1.1.

```
set system route policy 1 src 0.0.0.0 0.0.0.0 dst 0.0.0.0
0.0.0.0 protocol 6 port 80 80 gw 1.1.1.1
```

2. Enter the following command to route all other traffic to the next hop gateway with IP address 2.2.2.1.

```
Set system route policy 2 src 0.0.0.0 0.0.0.0 dst 0.0.0.0
0.0.0.0 gw 2.2.2.1
```

Firewall policy example

Firewall policies control how traffic flows through the FortiWiFi unit. Once routing for multiple internet connections has been configured you must create firewall policies to control which traffic is allowed through the FortiWiFi unit and the interfaces through which this traffic can connect.

For traffic originating on the Internal network to be able to connect to the Internet through both Internet connections, you must add redundant policies from the internal interface to each interface that connects to the Internet. Once these policies have been added, the routing configuration controls which internet connection is actually used.

Adding a redundant default policy

Figure 7 on page 52 shows a FortiWiFi unit connected to the Internet using its internal and DMZ interfaces. The default policy allows all traffic from the internal network to connect to the Internet through the WAN1 interface. If you add a similar policy to the internal to WAN2 policy list, this policy will allow all traffic from the internal network to connect to the Internet through the WAN2 interface. With both of these policies added to the firewall configuration, the routing configuration will determine which Internet connection the traffic from the internal network actually uses. For more information about the default policy, see “Default firewall configuration” on page 160.

To add a redundant default policy

1. Go to **Firewall > Policy > Int->WAN2**.
2. Select New.
3. Configure the policy to match the default policy.

Source	Internal_All
Destination	WAN2_All
Schedule	Always
Service	ANY
Action	Accept
NAT	Select NAT.

4. Select OK to save your changes.

Adding more firewall policies

In most cases your firewall configuration includes more than just the default policy. However, the basic premise of creating redundant policies applies even as the firewall configuration becomes more complex. To configure the FortiWiFi unit to use multiple Internet connections you must add duplicate policies for connections between the internal network and both interfaces connected to the Internet. As well, as you add redundant policies, you must arrange them in both policy lists in the same order.

Restricting access to a single Internet connection

In some cases you might want to limit some traffic to only being able to use one Internet connection. For example, in the topology shown in Figure 7 on page 52 the organization might want its mail server to only be able to connect to the SMTP mail server of ISP1. To do this, you add a single Internal->WAN1 firewall policy for SMTP connections. Because redundant policies have not been added, SMTP traffic from the Internet network is always connected to ISP1. If the connection to ISP1 fails the SMTP connection is not available.

Transparent mode installation

This chapter describes how to install your FortiWiFi unit in Transparent mode. If you want to install the FortiWiFi unit in NAT/Route mode, see “NAT/Route mode installation” on page 41.

This chapter describes:

- Preparing to configure Transparent mode
- Using the setup wizard
- Using the command line interface
- Connecting the FortiWiFi unit to your networks
- Completing the configuration
- Transparent mode configuration examples

Preparing to configure Transparent mode

Use Table 20 to gather the information that you need to customize Transparent mode settings.

Table 20: Transparent mode settings

Administrator Password:		
Management IP	IP:	______.______.______.______
	Netmask:	______.______.______.______
	Default Gateway:	______.______.______.______
	The management IP address and netmask must be valid for the network from which you will manage the FortiWiFi unit. Add a default gateway if the FortiWiFi unit must connect to a router to reach the management computer.	
DNS Settings	Primary DNS Server:	______.______.______.______
	Secondary DNS Server:	______.______.______.______

Wireless settings

If you are configuring wireless networking Use Table 21 to record the wireless Service Set ID (SSID) and channel. See “Wireless configuration” on page 120 for more information.

Table 21: Wireless settings (Optional)

Geography:	World Americas EMEA Japan Israel	**Channel:**	
Security:	None WEP	**Key:**	
SSID:			

Using the setup wizard

From the web-based manager, you can use the setup wizard to create the initial configuration of your FortiWiFi unit. To connect to the web-based manager, see “Connecting to the web-based manager” on page 26.

Changing to Transparent mode

The first time that you connect to the FortiWiFi unit, it is configured to run in NAT/Route mode. To switch to Transparent mode using the web-based manager:

1. Go to **System > Status**.
2. Select Change to Transparent Mode.
3. Select Transparent in the Operation Mode list.
4. Select OK.
   The FortiWiFi unit changes to Transparent mode.

   To reconnect to the web-based manager, change the IP address of your management computer to 10.10.10.2. Connect to the internal or DMZ interface and browse to https:// followed by the Transparent mode management IP address. The default FortiWiFi Transparent mode management IP address is 10.10.10.1.

Starting the setup wizard

1. Select Easy Setup Wizard (the middle button in upper-right corner of the web-based manager).
2. Use the information that you gathered in Table 20 on page 59 to fill in the wizard fields. Select the Next button to step through the wizard pages.
3. Confirm your configuration settings and then select Finish and Close.

Reconnecting to the web-based manager

If you changed the IP address of the management interface while you were using the setup wizard, you must reconnect to the web-based manager using the new IP address. Browse to https:// followed by the new IP address of the management interface. Otherwise, you can reconnect to the web-based manager by browsing to https://10.10.10.1. If you connect to the management interface through a router, make sure that you have added a default gateway for that router to the management IP default gateway field.

Using the command line interface

As an alternative to the setup wizard, you can configure the FortiWiFi unit using the command line interface (CLI). To connect to the CLI, see "Connecting to the command line interface (CLI)" on page 27. Use the information that you gathered in Table 20 on page 59 to complete the following procedures.

Changing to Transparent mode

1. Log into the CLI if you are not already logged in.
2. Switch to Transparent mode. Enter:

   ```
   set system opmode transparent
   ```

   After a few seconds, the login prompt appears.
3. Type `admin` and press Enter.

   The following prompt appears:

   ```
   Type ? for a list of commands.
   ```
4. Confirm that the FortiWiFi unit has switched to Transparent mode. Enter:

   ```
   get system status
   ```

   The CLI displays the status of the FortiWiFi unit. The last line shows the current operation mode.

   ```
   Operation mode: Transparent
   ```

Configuring the Transparent mode management IP address

1. Log into the CLI if you are not already logged in.
2. Set the management IP address and netmask to the IP address and netmask that you recorded in Table 20 on page 59. Enter:

   ```
   set system management ip <IP address> <netmask>
   ```

   Example

   ```
   set system management ip 10.10.10.2 255.255.255.0
   ```
3. Confirm that the address is correct. Enter:

   ```
   get system management
   ```

   The CLI lists the management IP address and netmask.

Configure the Transparent mode default gateway

1. Log into the CLI if you are not already logged in.
2. Set the default route to the default gateway that you recorded in Table 20 on page 59. Enter:

   ```
   set system route number <number> gateway <IP address>
   ```

   Example

   ```
   set system route number 1 gw1 204.23.1.2
   ```

   You have now completed the initial configuration of the FortiWiFi unit.

Configuring wireless settings

1. Log into the CLI if you are not already logged in.
2. Set the wireless configuration using the SSID and channel that you recorded in Table 21 on page 60. Enter:

   ```
   set system interface wlan wireless geography {World | Americas
   | EMEA | Israel | Japan} channel <channel_number> ssid
   <ssid_name> security WEP key <WEP_key>
   ```

   Example

   ```
   set system interface wlan wireless geography Americas channel
   10 ssid My_SSID security WEP key My_Wep_Key
   ```

Connecting the FortiWiFi unit to your networks

When you have completed the initial configuration, you can connect the FortiWiFi unit between your internal network and the Internet using the Internal and WAN1 interfaces. You can also connect networks to the DMZ interface and the WAN2 interface.

There are seven 10/100Base-TX connectors on the FortiWiFi-60:

- Four Internal ports for connecting to your internal network,
- WAN1 for connecting to the Internet,
- DMZ and WAN2 which can be connected to networks.

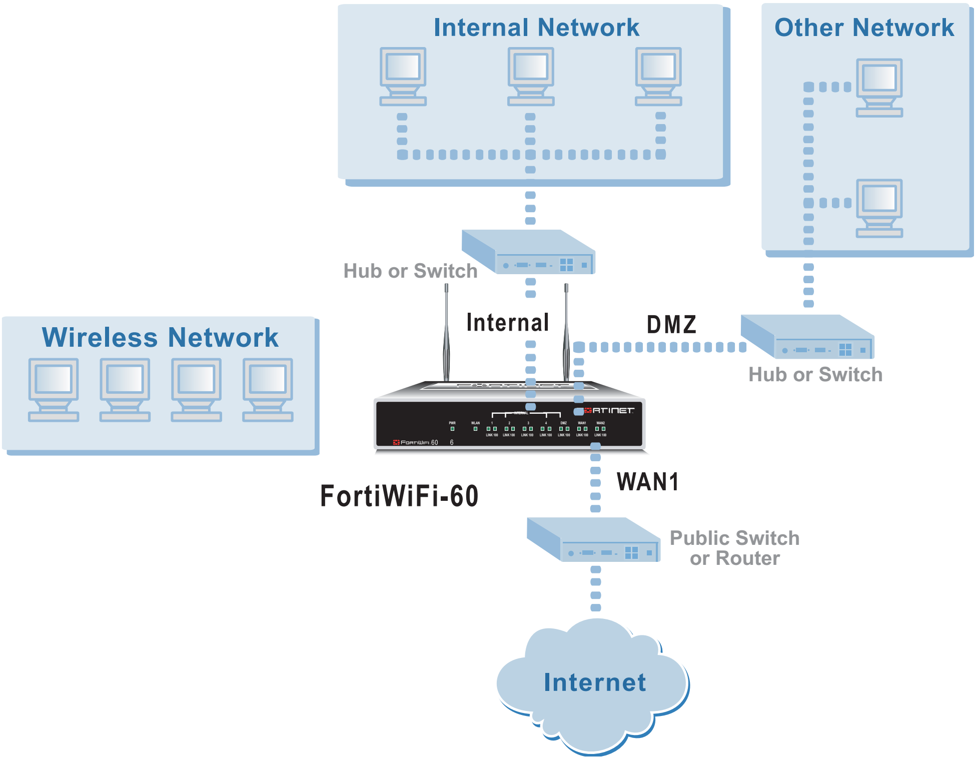
To connect the FortiWiFi unit running in Transparent mode:

1. Connect the Internal interface connectors to PCs and other network devices in your internal network.

   The Internal interface functions as a switch, allowing up to four devices to be connected to the internal network and the internal interface.
2. Connect the WAN1 interface to the Internet.

   Connect to the public switch or router provided by your Internet Service Provider. If you are a DSL or cable subscriber, connect the WAN1 interface to the internal or LAN connection of your DSL or cable modem.
3. Optionally connect the WAN2 and DMZ interfaces to other networks.

Figure 8: FortiWiFi-60 Transparent mode connections



In Transparent mode, the FortiWiFi unit does not change the layer 3 topology. This means that all of its interfaces are on the same IP subnet and that it appears to other devices as a bridge. Typically, the FortiWiFi unit would be deployed in Transparent mode when it is intended to provide antivirus and content scanning behind an existing firewall solution.

A FortiWiFi unit in Transparent mode can also perform firewalling. Even though it takes no part in the layer 3 topology, it can examine layer 3 header information and make decisions on whether to block or pass traffic.

Wireless configuration

Use the information in "Wireless configuration" on page 120 to complete the FortiWiFi-60 wireless configuration.

Completing the configuration

Use the information in this section to complete the initial configuration of the FortiWiFi unit.

Setting the date and time

For effective scheduling and logging, the FortiWiFi system date and time should be accurate. You can either manually set the date and time or you can configure the FortiWiFi unit to automatically keep its date and time correct by synchronizing with a Network Time Protocol (NTP) server.

To set the FortiWiFi system date and time, see “Setting system date and time” on page 143.

Enabling antivirus protection

To enable antivirus protection to protect users on your internal network from downloading a virus from the Internet:

1. Go to **Firewall > Policy > Internal->WAN1**.
2. Select Edit ✎ to edit this policy.
3. Select Anti-Virus & Web filter to enable antivirus protection for this policy.
4. Select the Scan Content Profile.
5. Select OK to save your changes.

Registering your FortiWiFi

After purchasing and installing a new FortiWiFi unit, you can register the unit by going to System > Update > Support, or using a web browser to connect to http://support.fortinet.com and selecting Product Registration.

Registration consists of entering your contact information and the serial numbers of the FortiWiFi units you or your organization have purchased. Registration is quick and easy. You can register multiple FortiWiFi units in a single session without re-entering your contact information.

For more information about registration, see “Registering FortiGate and FortiWiFi units” on page 104.

Configuring virus and attack definition updates

You can configure the FortiWiFi unit to automatically check to see if new versions of the virus definitions and attack definitions are available. If it finds new versions, the FortiWiFi unit automatically downloads and installs the updated definitions.

The FortiWiFi unit uses HTTPS on port 8890 to check for updates. The FortiWiFi WAN1 interface must have a path to the FortiResponse Distribution Network (FDN) using port 8890.

To configure automatic virus and attack updates, see “Updating antivirus and attack definitions” on page 93.

Transparent mode configuration examples

A FortiWiFi unit operating in Transparent mode still requires a basic configuration to operate as a node on the IP network. As a minimum, the FortiWiFi unit must be configured with an IP address and subnet mask. These are used for management access and to allow the unit to receive antivirus and definitions updates. Also, the unit must have sufficient route information to reach:

- the management computer,
- The FortiResponse Distribution Network (FDN),
- a DNS server.

A route is required whenever the FortiWiFi unit connects to a router to reach a destination. If all of the destinations are located on the external network, you may be required to enter only a single default route. If, however, the network topology is more complex, you may be required to enter one or more static routes in addition to the default route.

This section describes:

- Default routes and static routes
- Example default route to an external network
- Example static route to an external destination
- Example static route to an internal destination

Default routes and static routes

To create a route to a destination, you need to define an IP prefix which consists of an IP network address and a corresponding netmask value. A default route matches any prefix and forwards traffic to the next hop router (otherwise known as the default gateway). A static route matches a more specific prefix and forwards traffic to the next hop router.

Default route example:

IP Prefix	0.0.0.0 (IP address)
	0.0.0.0 (Netmask)
Next Hop	192.168.1.2

Static Route example:

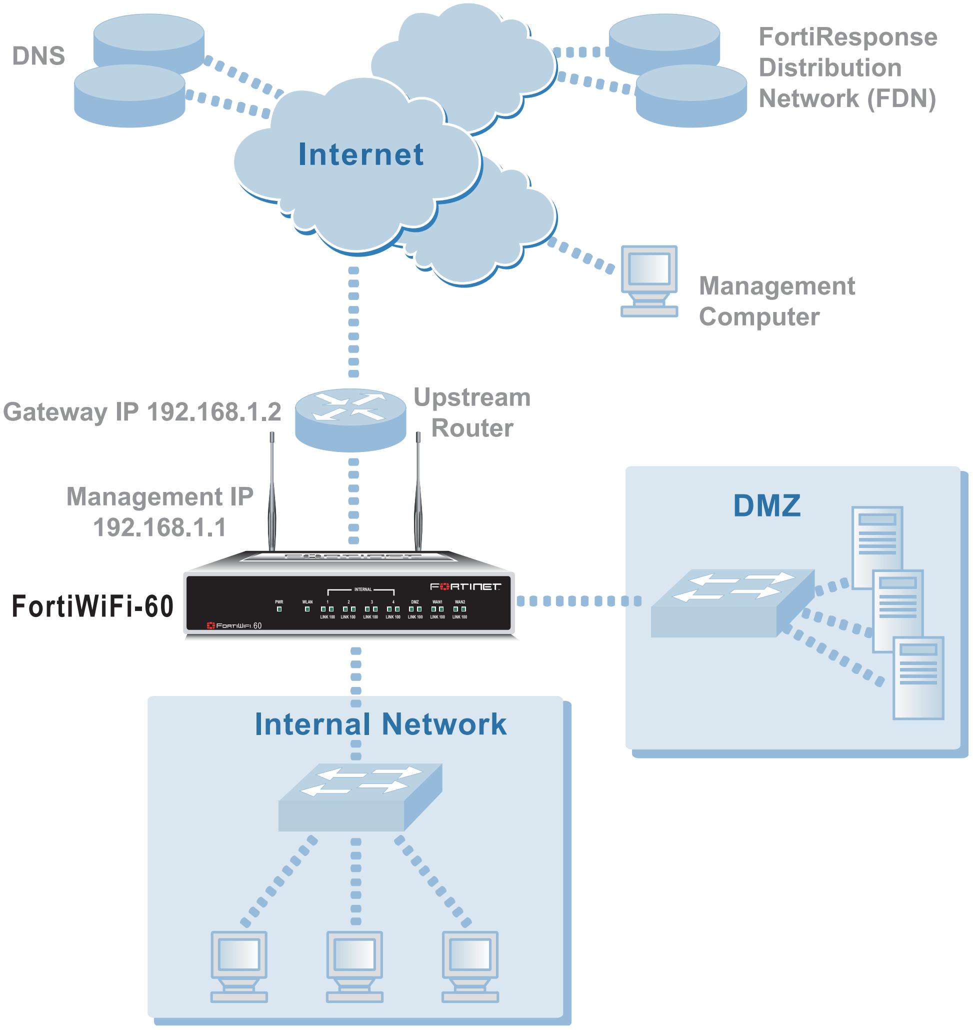
IP Prefix	172.100.100.0 (IP address)
	255.255.255.0 (Netmask)
Next Hop	192.168.1.2

Note: When adding routes to the FortiWiFi unit, add the default route last so that it appears on the bottom of the route list. This ensures that the unit will attempt to match more specific routes before selecting the default route.

Example default route to an external network

Figure 9 shows a FortiWiFi unit where all destinations, including the management computer, are located on the external network. To reach these destinations, the FortiWiFi unit must connect to the “upstream” router leading to the external network. To facilitate this connection, you must enter a single default route that points to the upstream router as the next hop/default gateway.

Figure 9: Default route to an external network



General configuration steps

1 Set the FortiWiFi unit to operate in Transparent mode.

2 Configure the Management IP address and Netmask of the FortiWiFi unit.

3 Configure the default route to the external network.

Web-based manager example configuration steps

To configure basic Transparent mode settings and a default route using the web-based manager:

1 Go to **System > Status**.

- Select Change to Transparent Mode.
- Select Transparent in the Operation Mode list.
- Select OK.

  The FortiWiFi unit changes to Transparent mode.

2 Go to **System > Network > Management**.

- Change the Management IP and Netmask:

  IP: 192.168.1.1

  Mask: 255.255.255.0
- Select Apply.

3 Go to **System > Network > Routing**.

- Select New to add the default route to the external network.

  Destination IP: 0.0.0.0

  Mask: 0.0.0.0

  Gateway: 192.168.1.2
- Select OK.

CLI configuration steps

To configure the Fortinet basic settings and a default route using the CLI:

1 Change the system to operate in Transparent Mode.

```
set system opmode transparent
```

2 Add the Management IP address and Netmask.

```
set system management ip 192.168.1.1 255.255.255.0
```

3 Add the default route to the external network.

```
set system route number 1 gw1 192.168.1.2
```

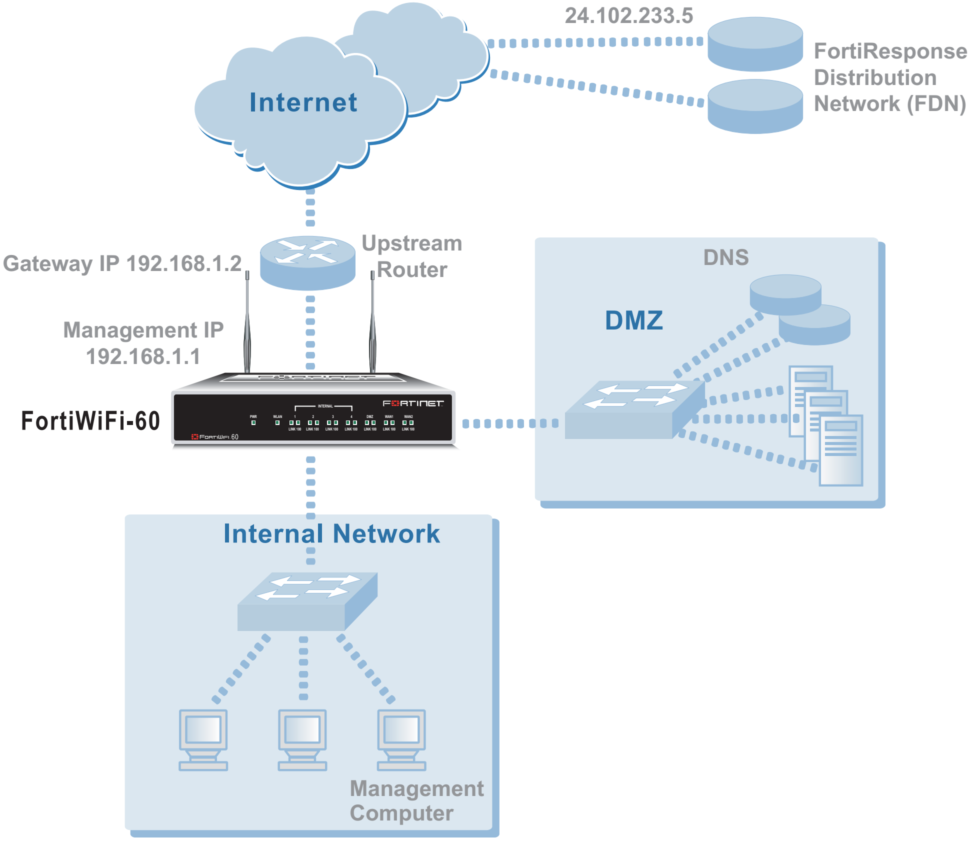
Example static route to an external destination

Figure 10 shows a FortiWiFi unit that requires routes to the FDN located on the external network. The FortiWiFi unit does not require routes to the DNS servers or management computer because they are located on the internal network.

To connect to the FDN, you would typically enter a single default route to the external network. However, to provide an extra degree of security, you could enter static routes to a specific FortiResponse server in addition to a default route to the external network. If the static route becomes unavailable (perhaps because the IP address of the FortiResponse server changes) the FortiWiFi unit will still be able to receive antivirus and NIDS updates from the FDN using the default route.

Note: This is an example configuration only. To configure a static route, you require a destination IP address.

Figure 10: Static route to an external destination



General configuration steps

1 Set the FortiWiFi unit to operate in Transparent mode.

2 Configure the Management IP address and Netmask of the FortiWiFi unit.

3 Configure the static route to the FortiResponse server.

4 Configure the default route to the external network.

Web-based manager example configuration steps

To configure the basic FortiWiFi settings and a static route using the web-based manager:

1 Go to **System > Status**.

- Select Change to Transparent Mode.
- Select Transparent in the Operation Mode list.
- Select OK.

  The FortiWiFi unit changes to Transparent mode.

2 Go to **System > Network > Management**.

- Change the Management IP and Netmask:

  IP: 192.168.1.1

  Mask: 255.255.255.0
- Select Apply.

3 Go to **System > Network > Routing**.

- Select New to add the static route to the FortiResponse server.

  Destination IP: 24.102.233.5

  Mask: 255.255.255.0

  Gateway: 192.168.1.2
- Select OK.
- Select New to add the default route to the external network.

  Destination IP: 0.0.0.0

  Mask: 0.0.0.0

  Gateway: 192.168.1.2
- Select OK.

CLI configuration steps

To configure the Fortinet basic settings and a static route using the CLI:

1 Set the system to operate in Transparent Mode.

```
set system opmode transparent
```

2 Add the Management IP address and Netmask.

```
set system management ip 192.168.1.1 255.255.255.0
```

3 Add the static route to the primary FortiResponse server.

```
set system route number 1 dst 24.102.233.5 255.255.255.0 gw1
   192.168.1.2
```

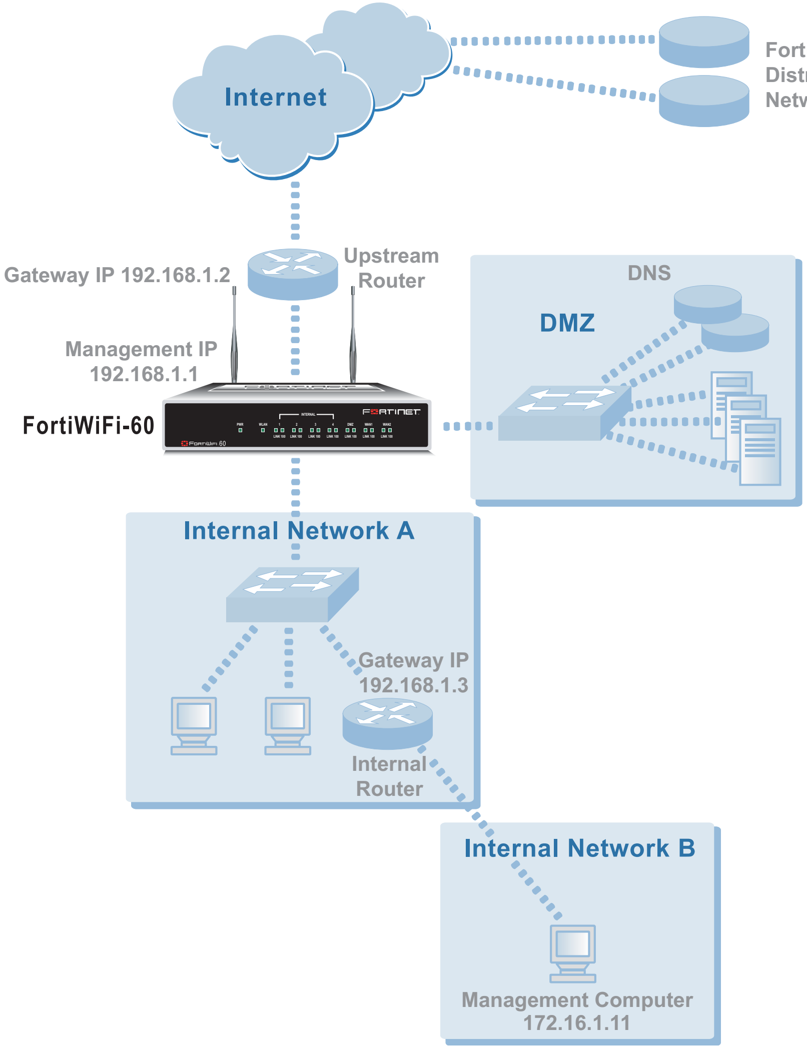
4 Add the default route to the external network.

```
set system route number 2 gw1 192.168.1.2
```

Example static route to an internal destination

Figure 11 shows a FortiWiFi unit where the FDN is located on an external subnet and the management computer is located on a remote, internal subnet. To reach the FDN, you need to enter a single default route that points to the upstream router as the next hop/default gateway. To reach the management computer, you need to enter a single static route that leads directly to it. This route will point to the internal router as the next hop. (No route is required for the DNS servers because they are on the same layer 3 subnet as the FortiWiFi unit.)

Figure 11: Static route to an internal destination



General configuration steps

1. Set the unit to operate in Transparent mode.
2. Configure the Management IP address and Netmask of the FortiWiFi unit.
3. Configure the static route to the management computer on the internal network.

4 Configure the default route to the external network.

Web-based manager example configuration steps

To configure the FortiWiFi basic settings, a static route, and a default route using the web-based manager:

1 Go to **System > Status**.

- Select Change to Transparent Mode.
- Select Transparent in the Operation Mode list.
- Select OK.

  The FortiWiFi unit changes to Transparent mode.

2 Go to **System > Network > Management**.

- Change the Management IP and Netmask:

  IP: 192.168.1.1

  Mask: 255.255.255.0
- Select Apply.

3 Go to **System > Network > Routing**.

- Select New to add the static route to the management computer.

  Destination IP: 172.16.1.11

  Mask: 255.255.255.0

  Gateway: 192.168.1.3
- Select OK.
- Select New to add the default route to the external network.

  Destination IP: 0.0.0.0

  Mask: 0.0.0.0

  Gateway: 192.168.1.2
- Select OK.

CLI configuration steps

To configure the FortiWiFi basic settings, a static route, and a default route using the CLI:

1 Set the system to operate in Transparent Mode.

```
set system opmode transparent
```

2 Add the Management IP address and Netmask.

```
set system management ip 192.168.1.1 255.255.255.0
```

3 Add the static route to the management computer.

```
set system route number 1 dst 172.16.1.11 255.255.255.0 gw1
  192.168.1.3
```

4 Add the default route to the external network.

```
set system route number 2 gw1 192.168.1.2
```

System status

You can connect to the web-based manager and view the current system status of the FortiWiFi unit. The status information that is displayed includes the current firmware version, the current virus and attack definitions, and the FortiWiFi unit serial number.

If you log into the web-based manager using the admin administrator account, you can make any of the following changes to the FortiWiFi system settings:

- Changing the FortiWiFi host name
- Changing the FortiWiFi firmware
- Manual virus definition updates
- Manual attack definition updates
- Backing up system settings
- Restoring system settings
- Restoring system settings to factory defaults
- Changing to Transparent mode
- Changing to NAT/Route mode
- Restarting the FortiWiFi unit
- Shutting down the FortiWiFi unit

If you log into the web-based manager with another administrator account, you can view the system settings including:

- Displaying the FortiWiFi serial number
- Displaying the FortiWiFi up time

All administrative users can also go to the Monitor page and view FortiWiFi system status. System status displays FortiWiFi system health monitoring information, including CPU and memory status, session and network status.

- System status

All administrative users can also go to the Session page and view the active communication sessions to and through the FortiWiFi unit.

- Session list

Changing the FortiWiFi host name

The FortiWiFi host name appears on the Status page and in the FortiWiFi CLI prompt. The host name is also used as the SNMP system name. For information about the SNMP system name, see “Configuring SNMP” on page 147.

The default host name is FortiWiFi-60.

To change the FortiWiFi host name

1. Go to **System > Status**.
2. Select Edit Host Name.
3. Type a new host name.
4. Select OK.
   The new host name is displayed on the Status page, and in the CLI prompt, and is added to the SNMP System Name.

Changing the FortiWiFi firmware

After you download a FortiWiFi firmware image from Fortinet, you can use the procedures listed in Table 1 to install the firmware image on your FortiWiFi unit.

Table 1: Firmware upgrade procedures

Procedure	Description
Upgrading to a new firmware version	Commonly-used web-based manager and CLI procedures to upgrade to a new FortiOS firmware version or to a more recent build of the same firmware version.
Reverting to a previous firmware version	Use the web-based manager or CLI procedure to revert to a previous firmware version. This procedure reverts the FortiWiFi unit to its factory default configuration.
Installing firmware images from a system reboot using the CLI	Use this procedure to install a new firmware version or revert to a previous firmware version. You must run this procedure by connecting to the CLI using the FortiWiFi console port and a null-modem cable. This procedure reverts the FortiWiFi unit to its factory default configuration.
Testing a new firmware image before installing it	Use this procedure to test a new firmware image before installing it. You must run this procedure by connecting to the CLI using the FortiWiFi console port and a null-modem cable. This procedure temporarily installs a new firmware image using your current configuration. You can test the firmware image before installing it permanently. If the firmware image works correctly you can use one of the other procedures listed in this table to install it permanently.

Upgrading to a new firmware version

Use the following procedures to upgrade the FortiWiFi unit to a newer firmware version.

Upgrading the firmware using the web-based manager

Note: Installing firmware replaces the current antivirus and attack definitions with the definitions included with the firmware release that you are installing. After you install new firmware, use the procedure "Manually initiating antivirus and attack definitions updates" on page 95 to make sure that antivirus and attack definitions are up to date.

To upgrade the firmware using the web-based manager

1 Copy the firmware image file to your management computer.

2 Log into the web-based manager as the admin administrative user.

3 Go to **System > Status**.

4 Select Firmware Upgrade .

5 Type the path and filename of the firmware image file, or select Browse and locate the file.

6 Select OK.

The FortiWiFi unit uploads the firmware image file, upgrades to the new firmware version, restarts, and displays the FortiWiFi login. This process takes a few minutes.

7 Log into the web-based manager.

8 Go to **System > Status** and check the Firmware Version to confirm that the firmware upgrade is successfully installed.

9 Update antivirus and attack definitions. For information about antivirus and attack definitions, see "Manually initiating antivirus and attack definitions updates" on page 95.

Upgrading the firmware using the CLI

To use the following procedure you must have a TFTP server that the FortiWiFi unit can connect to.

Note: Installing firmware replaces your current antivirus and attack definitions with the definitions included with the firmware release that you are installing. After you install new firmware, use the procedure "Manually initiating antivirus and attack definitions updates" on page 95 to make sure that antivirus and attack definitions are up to date. You can also use the CLI command `execute updatecenter updatenow` to update the antivirus and attack definitions.

To upgrade the firmware using the CLI

1 Make sure that the TFTP server is running.

2 Copy the new firmware image file to the root directory of the TFTP server.

3 Log into the CLI as the admin administrative user.

4 Make sure the FortiWiFi unit can connect to the TFTP server.

You can use the following command to ping the computer running the TFTP server. For example, if the IP address of the TFTP server is 192.168.1.168:

```
execute ping 192.168.1.168
```

5 Enter the following command to copy the firmware image from the TFTP server to the FortiWiFi unit:

```
execute restore image <name_str> <tftp_ip>
```

Where `<name_str>` is the name of the firmware image file on the TFTP server and `<tftp_ip>` is the IP address of the TFTP server. For example, if the firmware image file name is `FGT_300-v250-build045-FORTINET.out` and the IP address of the TFTP server is 192.168.1.168, enter:

```
execute restore image FGT_300-v250-build045-FORTINET.out
192.168.1.168
```

The FortiWiFi unit uploads the firmware image file, upgrades to the new firmware version, and restarts. This process takes a few minutes.

6 Reconnect to the CLI.

7 To confirm that the new firmware image is successfully installed, enter:

```
get system status
```

8 Use the procedure "Manually initiating antivirus and attack definitions updates" on page 95 to update antivirus and attack definitions, or from the CLI, enter:

```
execute updatecenter updatenow
```

9 To confirm that the antivirus and attack definitions are successfully updated, enter the following command to display the antivirus engine, virus and attack definitions version, contract expiry, and last update attempt information.

```
get system objver
```

Reverting to a previous firmware version

Use the following procedures to revert your FortiWiFi unit to a previous firmware version.

Reverting to a previous firmware version using the web-based manager

The following procedures revert the FortiWiFi unit to its factory default configuration and delete NIDS user-defined signatures, web content lists, email filtering lists, and changes to replacement messages.

Before beginning this procedure you can:

- Back up the FortiWiFi unit configuration. For information, see "Backing up system settings" on page 84.
- Back up the NIDS user-defined signatures. For information, see the *FortiGate NIDS Guide*
- Back up web content and email filtering lists. For information, see the *FortiGate Content Protection Guide*.

If you are reverting to a previous FortiOS version (for example, reverting from FortiOS v2.50 to FortiOS v2.36) you might not be able to restore the previous configuration from the backup configuration file.

Note: Installing firmware replaces the current antivirus and attack definitions with the definitions included with the firmware release that you are installing. After you install new firmware, use the procedure "Manually initiating antivirus and attack definitions updates" on page 95 to make sure that antivirus and attack definitions are up to date.

To revert to a previous firmware version using the web-based manager

1. Copy the firmware image file to your management computer.
2. Log into the FortiWiFi web-based manager as the admin administrative user.
3. Go to **System > Status**.
4. Select Firmware Upgrade .
5. Type the path and filename of the previous firmware image file, or select Browse and locate the file.
6. Select OK.

   The FortiWiFi unit uploads the firmware image file, reverts to the old firmware version, resets the configuration, restarts, and displays the FortiWiFi login. This process takes a few minutes.
7. Log into the web-based manager.
8. Go to **System > Status** and check the Firmware Version to confirm that the firmware is successfully installed.
9. Restore your configuration.

   For information about restoring your configuration, see "Restoring system settings" on page 84.
10. Update antivirus and attack definitions. For information about antivirus and attack definitions, see "Manually initiating antivirus and attack definitions updates" on page 95.

Reverting to a previous firmware version using the CLI

This procedure reverts your FortiWiFi unit to its factory default configuration and deletes NIDS user-defined signatures, web content lists, email filtering lists, and changes to replacement messages.

Before beginning this procedure you can:

- Back up the FortiWiFi unit configuration using the command `execute backup config`.
- Back up the NIDS user defined signatures using the command `execute backup nidsuserdefsig`
- Back up web content and email filtering lists. For information, see the *FortiGate Content Protection Guide*.

If you are reverting to a previous FortiOS version (for example, reverting from FortiOS v2.50 to FortiOS v2.36) you might not be able to restore your previous configuration from the backup configuration file.

Note: Installing firmware replaces the current antivirus and attack definitions with the definitions included with the firmware release that you are installing. After you install new firmware, use the procedure "Manually initiating antivirus and attack definitions updates" on page 95 to make sure that antivirus and attack definitions are up to date. You can also use the CLI command `execute updatecenter updatenow` to update the antivirus and attack definitions.

To use the following procedure you must have a TFTP server that the FortiWiFi unit can connect to.

To revert to a previous firmware version using the CLI

1 Make sure that the TFTP server is running.

2 Copy the new firmware image file to the root directory of the TFTP server.

3 Log into the FortiWiFi CLI as the admin administrative user.

4 Make sure the FortiWiFi unit can connect to the TFTP server.

You can use the following command to ping the computer running the TFTP server. For example, if the TFTP server's IP address is 192.168.1.168:

```
execute ping 192.168.1.168
```

5 Enter the following command to copy the firmware image from the TFTP server to the FortiWiFi unit:

```
execute restore image <name_str> <tftp_ip>
```

Where `<name_str>` is the name of the firmware image file on the TFTP server and `<tftp_ip>` is the IP address of the TFTP server. For example, if the firmware image file name is `FGT_300-v250-build045-FORTINET.out` and the IP address of the TFTP server is 192.168.1.168, enter:

```
execute restore image FGT_300-v250-build045-FORTINET.out
192.168.1.168
```

The FortiWiFi unit uploads the firmware image file. After the file uploads, a message similar to the following is displayed:

```
Get image from tftp server OK.
This operation will downgrade the current firmware version!
Do you want to continue? (y/n)
```

6 Type Y.

7 The FortiWiFi unit reverts to the old firmware version, resets the configuration to factory defaults, and restarts. This process takes a few minutes.

8 Reconnect to the CLI.

9 To confirm that the new firmware image has been loaded, enter:

```
get system status
```

10 Restore your previous configuration. Use the following command:

```
execute restore config
```

11 Update antivirus and attack definitions. For information, see "Manually initiating antivirus and attack definitions updates" on page 95, or from the CLI, enter:

```
execute updatecenter updatenow
```

12 To confirm that the antivirus and attack definitions have been updated, enter the following command to display the antivirus engine, virus and attack definitions version, contract expiry, and last update attempt information.

```
get system objver
```

Installing firmware images from a system reboot using the CLI

This procedure installs a specified firmware image and resets the FortiWiFi unit to default settings. You can use this procedure to upgrade to a new firmware version, revert to an older firmware version, or re-install the current firmware version.

To perform this procedure you:

- access the CLI by connecting to the FortiWiFi console port using a null-modem cable,
- install a TFTP server that you can connect to from the FortiWiFi internal interface. The TFTP server should be on the same subnet as the internal interface.

Before beginning this procedure you can:

- Back up the FortiWiFi unit configuration. For information, see “Backing up system settings” on page 84.
- Back up the NIDS user defined signatures. For information, see the *FortiGate NIDS Guide.*
- Back up web content and email filtering lists. For information, see the *FortiGate Content Protection Guide*.

If you are reverting to a previous FortiOS version (for example, reverting from FortiOS v2.50 to FortiOS v2.36) you might not be able to restore your previous configuration from the backup configuration file.

Note: Installing firmware replaces the current antivirus and attack definitions with the definitions included with the firmware release that you are installing. After you install new firmware, use the procedure “Manually initiating antivirus and attack definitions updates” on page 95 to make sure that antivirus and attack definitions are up to date.

To install firmware from a system reboot

1 Connect to the CLI using the null-modem cable and FortiWiFi console port.

2 Make sure that the TFTP server is running.

3 Copy the new firmware image file to the root directory of the TFTP server.

4 Make sure that the internal interface is connected to the same network as the TFTP server.

5 To confirm that the FortiWiFi unit can connect to the TFTP server, use the following command to ping the computer running the TFTP server. For example, if the IP address of the TFTP server is 192.168.1.168, enter:

```
execute ping 192.168.1.168
```

6 Enter the following command to restart the FortiWiFi unit:

```
execute reboot
```

As the FortiWiFi unit starts, a series of system startup messages is displayed.

When the following message appears:

```
Press any key to enter configuration menu.....
......
```

7 Immediately press any key to interrupt the system startup.

Note: You have only 3 seconds to press any key. If you do not press a key soon enough, the FortiWiFi unit reboots and you must log in and repeat the `execute reboot` command.

If you successfully interrupt the startup process, the following message appears:

```
[G]:  Get firmware image from TFTP server.
[F]:  Format boot device.
[B]:  Boot with backup firmware and set as default.
[Q]:  Quit menu and continue to boot with default firmware.
[H]:  Display this list of options.

Enter G,F,B,Q,or H:
```

8 Type G to get the new firmware image from the TFTP server.

9 Type the address of the TFTP server and press Enter.

The following message appears:

```
Enter Local Address [192.168.1.188]:
```

10 Type the address of the internal interface of the FortiWiFi unit and press Enter.

Note: The local IP address is used only to download the firmware image. After the firmware is installed, the address of this interface is changed back to the default IP address for this interface.

The following message appears:

```
Enter File Name [image.out]:
```

11 Enter the firmware image filename and press Enter.

The TFTP server uploads the firmware image file to the FortiWiFi unit and messages similar to the following are displayed:

```
Save as Default firmware/Run image without saving:[D/R]
Save as Default firmware/Backup firmware/Run image without
saving:[D/B/R]
```

12 Type D.

The FortiWiFi unit installs the new firmware image and restarts. The installation might take a few minutes to complete.

Restoring the previous configuration

Change the internal interface addresses if required. You can do this from the CLI using the command:

```
set system interface
```

After changing the interface addresses, you can access the FortiWiFi unit from the web-based manager and restore the configuration.

- To restore the FortiWiFi unit configuration, see “Restoring system settings” on page 84.
- To restore NIDS user defined signatures, see “Adding user-defined signatures” on page 240.
- To restore web content filtering lists, see “Restoring the Banned Word list” on page 256 and “Uploading a URL block list” on page 258
- To restore email filtering lists, see “Uploading the email banned word list” on page 269 and “Uploading an email block list” on page 271.

If you are reverting to a previous firmware version (for example, reverting from FortiOS v2.50 to FortiOS v2.36) you might not be able to restore your previous configuration from the backup up configuration file.

Update the virus and attack definitions to the most recent version, see “Manually initiating antivirus and attack definitions updates” on page 95.

Testing a new firmware image before installing it

You can test a new firmware image by installing the firmware image from a system reboot and saving it to system memory. After completing this procedure the FortiWiFi unit operates using the new firmware image with the current configuration. This new firmware image is not permanently installed. The next time the FortiWiFi unit restarts, it operates with the originally installed firmware image using the current configuration. If the new firmware image operates successfully, you can install it permanently using the procedure “Upgrading to a new firmware version” on page 74.

To run this procedure you:

- access the CLI by connecting to the FortiWiFi console port using a null-modem cable,
- install a TFTP server that you can connect to from the FortiWiFi internal interface. The TFTP server should be on the same subnet as the internal interface.

To test a new firmware image

1. Connect to the CLI using a null-modem cable and FortiWiFi console port.
2. Make sure the TFTP server is running.
3. Copy the new firmware image file to the root directory of the TFTP server.

   You can use the following command to ping the computer running the TFTP server. For example, if the TFTP server's IP address is 192.168.1.168:

   ```
   execute ping 192.168.1.168
   ```
4. Enter the following command to restart the FortiWiFi unit:

   ```
   execute reboot
   ```
5. As the FortiWiFi unit reboots, press any key to interrupt the system startup.

   As the FortiWiFi units starts, a series of system startup messages are displayed.

   When the following message appears:

   ```
   Press any key to enter configuration menu.....
   ......
   ```

6 Immediately press any key to interrupt the system startup.

Note: You have only 3 seconds to press any key. If you do not press a key soon enough, the FortiWiFi unit reboots and you must log in and repeat the `execute reboot` command.

If you successfully interrupt the startup process, the following message appears:

```
[G]:  Get firmware image from TFTP server.
[F]:  Format boot device.
[Q]:  Quit menu and continue to boot with default firmware.
[H]:  Display this list of options.

Enter G,F,Q,or H:
```

7 Type G to get the new firmware image from the TFTP server.

8 Type the address of the TFTP server and press Enter.

The following message appears:

```
Enter Local Address [192.168.1.188]:
```

9 Type the address of the internal interface of the FortiWiFi unit and press Enter.

Note: The local IP address is used only to download the firmware image. After the firmware is installed, the address of this interface is changed back to the default IP address for this interface.

The following message appears:

```
Enter File Name [image.out]:
```

10 Enter the firmware image file name and press Enter.

The TFTP server uploads the firmware image file to the FortiWiFi unit and messages similar to the following appear.

```
Save as Default firmware/Run image without saving:[D/R]
```

11 Type R.

The FortiWiFi image is installed to system memory and the FortiWiFi unit starts running the new firmware image but with its current configuration.

12 You can log into the CLI or the web-based manager using any administrative account.

13 To confirm that the new firmware image has been loaded, from the CLI enter:

```
get system status
```

You can test the new firmware image as required.

Manual virus definition updates

The Status page of the FortiWiFi web-based manager displays the current installed versions of the FortiWiFi antivirus definitions.

Note: For information about configuring the FortiWiFi unit for automatic antivirus definitions updates, see “Virus and attack definitions updates and registration” on page 93. You can also manually start an antivirus definitions update by going to **System > Update** and selecting Update Now.

To update the antivirus definitions manually

1. Download the latest antivirus definitions update file from Fortinet and copy it to the computer that you use to connect to the web-based manager.
2. Start the web-based manager and go to **System > Status**.
3. In the Antivirus Definitions Version section, select Definitions Update.
4. Type the path and filename for the antivirus definitions update file, or select Browse and locate the antivirus definitions update file.
5. Select OK to copy the antivirus definitions update file to the FortiWiFi unit.
   The FortiWiFi unit updates the antivirus definitions. This takes about 1 minute.
6. Go to **System > Status** to confirm that the Antivirus Definitions Version information has updated.

Manual attack definition updates

The Status page of the FortiWiFi web-based manager displays the current installed versions of the FortiWiFi Attack Definitions used by the Network Intrusion Detection System (NIDS).

Note: For information about configuring the FortiWiFi unit for automatic attack definitions updates, see “Virus and attack definitions updates and registration” on page 93. You can also manually start an attack definitions update by going to **System > Update** and selecting Update Now.

To update the attack definitions manually

1. Download the latest attack definitions update file from Fortinet and copy it to the computer that you use to connect to the web-based manager.
2. Start the web-based manager and go to **System > Status**.
3. In the Attack Definitions Version section, select Definitions Update.
4. Type the path and filename for the attack definitions update file, or select Browse and locate the attack definitions update file.
5. Select OK to copy the attack definitions update file to the FortiWiFi unit.
   The FortiWiFi unit updates the attack definitions. This takes about 1 minute.
6. Go to **System > Status** to confirm that the Attack Definitions Version information has updated.

Displaying the FortiWiFi serial number

1 Go to **System > Status**.

The serial number is displayed on the System Status page of the web-based manager. The serial number is specific to the FortiWiFi unit and does not change with firmware upgrades.

Displaying the FortiWiFi up time

1 Go to **System > Status**.

The FortiWiFi up time displays the time in days, hours, and minutes since the FortiWiFi unit was last started.

Backing up system settings

You can back up system settings by downloading them to a text file on the management computer.

To back up system settings

1 Go to **System > Status**.

2 Select System Settings Backup.

3 Select Backup System Settings.

4 Type a name and location for the file.

The system settings file is backed up to the management computer.

5 Select Return to go back to the Status page.

Restoring system settings

You can restore system settings by uploading a previously downloaded system settings text file.

To restore system settings

1 Go to **System > Status**.

2 Select System Settings Restore.

3 Enter the path and filename of the system settings file, or select Browse and locate the file.

4 Select OK to restore the system settings file to the FortiWiFi unit.

The FortiWiFi unit restarts, loading the new system settings.

5 Reconnect to the web-based manager and review your configuration to confirm that the uploaded system settings have taken effect.

Restoring system settings to factory defaults

Use the following procedure to restore system settings to the values set at the factory. This procedure does not change the firmware version or the antivirus or attack definitions.

Caution: This procedure deletes all changes that you have made to the FortiWiFi configuration and reverts the system to its original configuration, including resetting interface addresses.

To restore system settings to factory defaults

1. Go to **System > Status**.
2. Select Restore Factory Defaults.
3. Select OK to confirm.
   The FortiWiFi unit restarts with the configuration that it had when it was first powered on.
4. Reconnect to the web-based manager and review the system configuration to confirm that it has been reset to the default settings.

   For information about restoring system settings, see "Restoring system settings" on page 84.

Changing to Transparent mode

Use the following procedure to change the FortiWiFi unit from NAT/Route mode to Transparent mode. After you change the FortiWiFi unit to Transparent mode, most of the configuration resets to Transparent mode factory defaults.

The following items are not set to Transparent mode factory defaults:

- The admin administrator account password (see "Adding and editing administrator accounts" on page 145)
- Custom replacement messages (see "Replacement messages" on page 155)

To change to Transparent mode

1. Go to **System > Status**.
2. Select Change to Transparent Mode.
3. Select Transparent in the operation mode list.
4. Select OK.
   The FortiWiFi unit changes operation mode.
5. To reconnect to the web-based manager, connect to the interface configured for Transparent mode management access and browse to https:// followed by the Transparent mode management IP address.
   By default in Transparent mode, you can connect to the internal or DMZ interface. The default Transparent mode management IP address is 10.10.10.1.

Changing to NAT/Route mode

Use the following procedure to change the FortiWiFi unit from Transparent mode to NAT/Route mode. After you change the FortiWiFi unit to NAT/Route mode, most of the configuration resets to NAT/Route mode factory defaults.

The following items are not set to NAT/Route mode factory defaults:

- The admin administrator account password (see “Adding and editing administrator accounts” on page 145)
- Custom replacement messages (see “Replacement messages” on page 155)

To change to NAT/Route mode

1. Go to **System > Status**.
2. Select Change to NAT Mode.
3. Select NAT/Route in the operation mode list.
4. Select OK.
   The FortiWiFi unit changes operation mode.
5. To reconnect to the web-based manager you must connect to the interface configured by default for management access.
   By default in NAT/Route mode, you can connect to the internal or DMZ interface. The default Transparent mode management IP address is 192.168.1.99.

Restarting the FortiWiFi unit

1. Go to **System > Status**.
2. Select Restart.
   The FortiWiFi unit restarts.

Shutting down the FortiWiFi unit

You can restart the FortiWiFi unit after shutdown only by turning the power off and then on.

1. Go to **System > Status**.
2. Select Shutdown.
   The FortiWiFi unit shuts down and all traffic flow stops.

System status

You can use the system status monitor to display FortiWiFi system health information. The system health information includes memory usage, the number of active communication sessions, and the amount of network bandwidth currently in use. The web-based manager displays current statistics as well as statistics for the previous minute.

You can also view current virus and intrusion status. The web-based manager displays the current number of viruses and attacks as well as a graph of virus and attack levels over the previous 20 hours.

In each case you can set an automatic refresh interval that updates the display every 5 to 30 seconds. You can also refresh the display manually.

- Viewing CPU and memory status
- Viewing sessions and network status
- Viewing virus and intrusions status

Viewing CPU and memory status

Current CPU and memory status indicates how close the FortiWiFi unit is to running at full capacity. The web-based manager displays CPU and memory usage for core processes only. CPU and memory use for management processes (for example, for HTTPS connections to the web-based manager) is excluded.

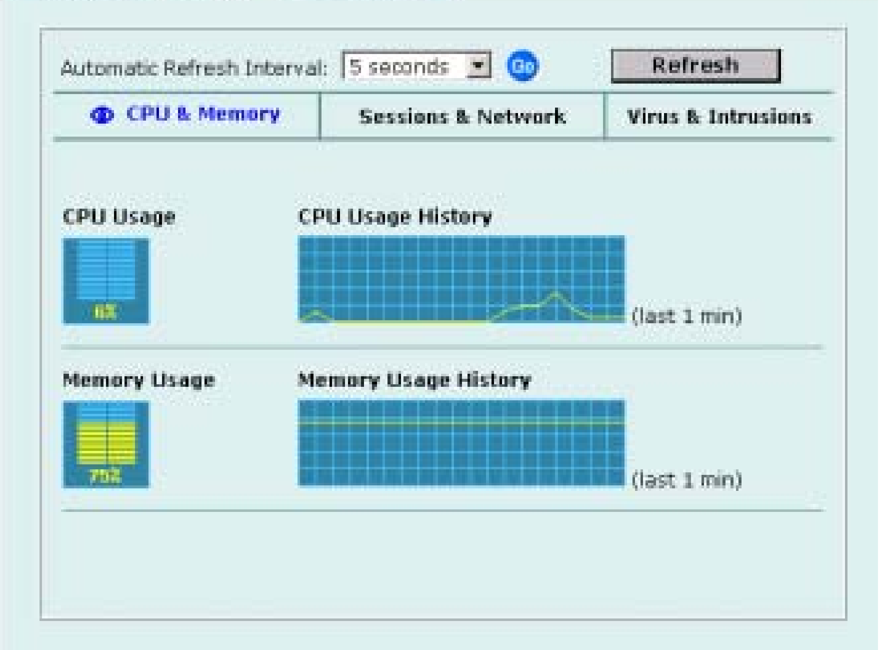
If CPU and memory use is low, the FortiWiFi unit is able to process much more network traffic than is currently running. If CPU and memory use is high, the FortiWiFi unit is performing near its full capacity. Putting additional demands on the system might cause traffic processing delays.

CPU and memory intensive processes, such as encrypting and decrypting IPSec VPN traffic, virus scanning, and processing high levels of network traffic containing small packets, increase CPU and memory usage.

To view CPU and memory status

1. Go to **System > Status > Monitor**.
   CPU & Memory status is displayed. The display includes bar graphs of current CPU and memory usage as well as line graphs of CPU and memory usage for the previous minute.
2. Set the automatic refresh interval and select Go to control how often the web-based manager updates the display.
   More frequent updates use system resources and increase network traffic. However, this occurs only when you are viewing the display using the web-based manager.
3. Select Refresh to manually update the information displayed.

Figure 1: CPU and memory status monitor



Automatic Refresh Interval: 5 seconds

Viewing sessions and network status

Use the session and network status display to track how many network sessions the FortiWiFi unit is processing and to see what effect the number of sessions has on the available network bandwidth. Also, by comparing CPU and memory usage with session and network status you can see how much demand network traffic is putting on system resources.

The Sessions section displays the total number of sessions being processed by the FortiWiFi unit on all interfaces. It also displays the sessions as a percentage of the maximum number of sessions that the FortiWiFi unit is designed to support.

The Network utilization section displays the total network bandwidth being used through all FortiWiFi interfaces. It also displays network utilization as a percentage of the maximum network bandwidth that can be processed by the FortiWiFi unit.

To view sessions and network status

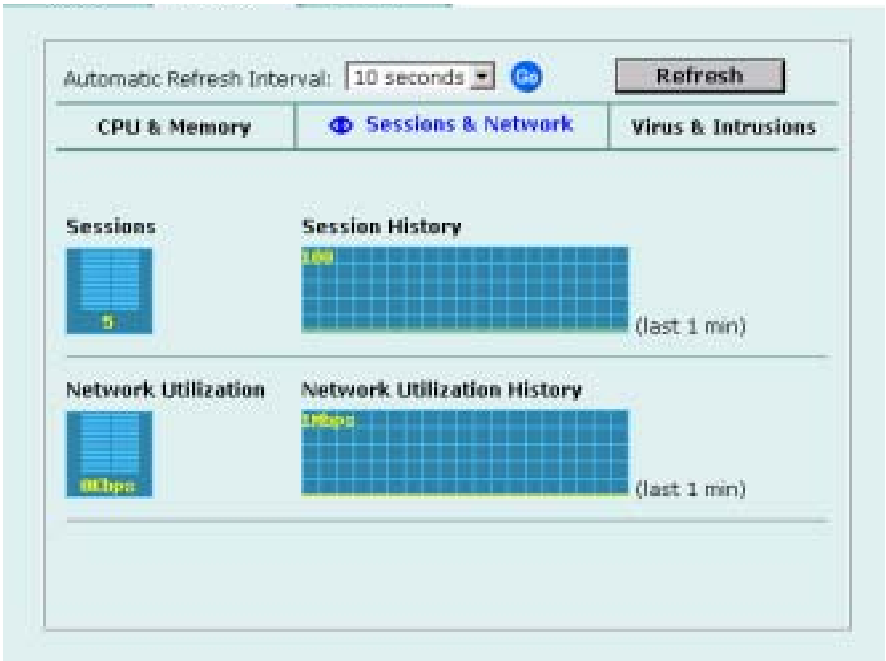
1. Go to **System > Status > Monitor**.
2. Select Sessions & Network.

   Sessions and network status is displayed. The display includes bar graphs of the current number of sessions and current network utilization as well as line graphs of session and network utilization usage for the last minute. The line graph scales are shown in the upper left corner of the graph.
3. Set the automatic refresh interval and select Go to control how often the web-based manager updates the display.

   More frequent updates use system resources and increase network traffic. However, this only occurs when you are viewing the display using the web-based manager.

4 Select Refresh to manually update the information displayed.

Figure 2: Sessions and network status monitor



Viewing virus and intrusions status

Use the virus and intrusions status display to track when viruses are found by the FortiWiFi antivirus system and to track when the NIDS detects a network-based attack.

To view virus and intrusions status

1 Go to **System > Status > Monitor**.

2 Select Virus & Intrusions.

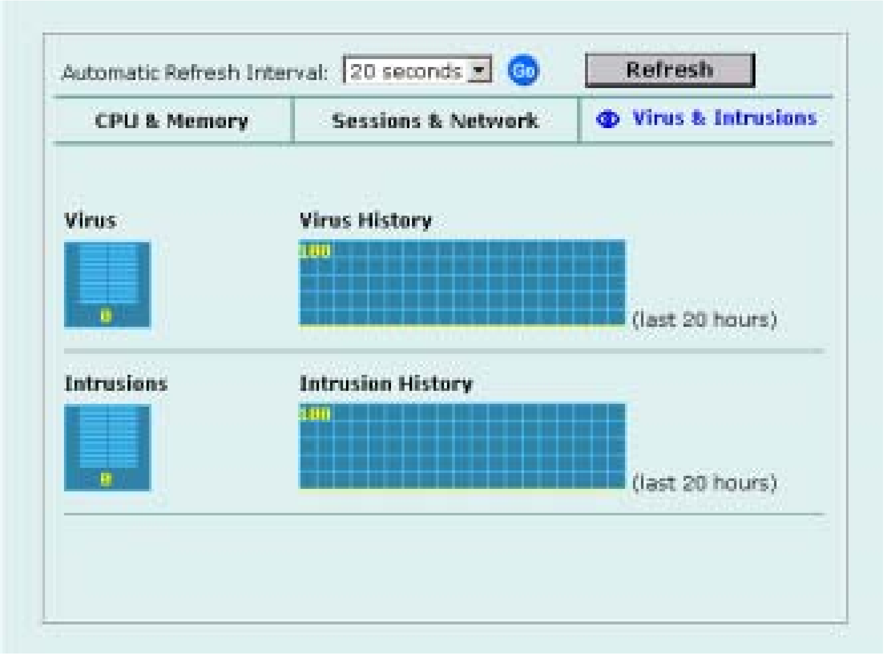
Virus and intrusions status is displayed. The display includes bar graphs of the number viruses and intrusions detected per hour as well as line graphs of the number of viruses and intrusions detected for the last 20 hours.

3 Set the automatic refresh interval and select Go to control how often the web-based manager updates the display.

More frequent updates use system resources and increase network traffic. However, this only occurs when you are viewing the display using the web-based manager. The line graph scales are shown on the upper right corner of the graph.

4 Select Refresh to manually update the information displayed.

Figure 3: Sessions and network status monitor



Session list

The session list displays information about the communications sessions currently being processed by the FortiWiFi unit. You can use the session list to view current sessions. FortiWiFi administrators with read and write permission and the FortiWiFi admin user can also stop active communication sessions.

To view the session list

1 Go to **System > Status > Session**.
The web-based manager displays the total number of active sessions in the FortiWiFi unit session table and lists the top 16.

2 To navigate the list of sessions, select Page Up or Page Down.

3 Select Refresh to update the session list.

4 If you are logged in as an administrative user with read and write privileges or as the admin user, you can select Clear to stop an active session.

Each line of the session list displays the following information.

Protocol The service protocol of the connection, for example, udp, tcp, or icmp.

From IP The source IP address of the connection.

From Port The source port of the connection.

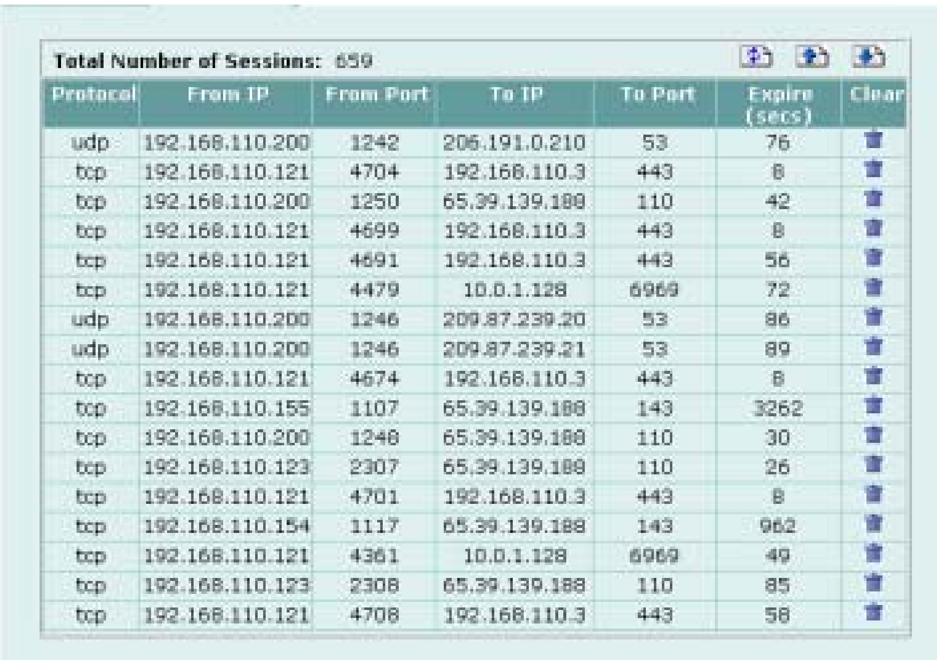
To IP The destination IP address of the connection.

To Port The destination port of the connection.

Expire The time, in seconds, before the connection expires.

Clear Stop an active communication session.

Figure 4: Example session list



Total Number of Sessions: 659

Protocol	From IP	From Port	To IP	To Port	Expire (secs)	Clear
udp	192.168.110.200	1242	206.191.0.210	53	76	🗑
tcp	192.168.110.121	4704	192.168.110.3	443	8	🗑
tcp	192.168.110.200	1250	65.39.139.188	110	42	🗑
tcp	192.168.110.121	4699	192.168.110.3	443	8	🗑
tcp	192.168.110.121	4691	192.168.110.3	443	56	🗑
tcp	192.168.110.121	4479	10.0.1.128	6969	72	🗑
udp	192.168.110.200	1246	209.87.239.20	53	86	🗑
udp	192.168.110.200	1246	209.87.239.21	53	89	🗑
tcp	192.168.110.121	4674	192.168.110.3	443	8	🗑
tcp	192.168.110.155	1107	65.39.139.188	143	3262	🗑
tcp	192.168.110.200	1248	65.39.139.188	110	30	🗑
tcp	192.168.110.123	2307	65.39.139.188	110	26	🗑
tcp	192.168.110.121	4701	192.168.110.3	443	8	🗑
tcp	192.168.110.154	1117	65.39.139.188	143	962	🗑
tcp	192.168.110.121	4361	10.0.1.128	6969	49	🗑
tcp	192.168.110.123	2308	65.39.139.188	110	85	🗑
tcp	192.168.110.121	4708	192.168.110.3	443	58	🗑

Virus and attack definitions updates and registration

You can configure the FortiWiFi unit to connect to the FortiResponse Distribution Network (FDN) to update the antivirus and attack definitions and the antivirus engine. You have the following update options:

- Request updates from the FDN,
- Schedule updates to automatically request the latest versions hourly, daily, or weekly,
- Set Push updates so that the FDN contacts your FortiWiFi unit when a new update is available.

To receive scheduled updates and push updates, you must register the FortiWiFi unit on the Fortinet support web page.

This chapter describes:

Updating antivirus and attack definitions

You can configure the FortiWiFi unit to connect to the FortiResponse Distribution Network (FDN) to automatically receive the latest antivirus and attack definitions and antivirus engine updates. The FortiWiFi unit supports the following antivirus and attack definition update features:

- User-initiated updates from the FDN,
- Hourly, daily, or weekly scheduled antivirus and attack definition and antivirus engine updates from the FDN,
- Push updates from the FDN,
- Update status including version numbers, expiry dates, and update dates and times,
- Push updates through a NAT device.

The Update page on the web-based manager displays the following antivirus and attack definition update information.

Version	Current antivirus engine, virus definition, and attack definition version numbers.
Expiry date	Expiry date of your license for antivirus engine, virus definition, and attack definition updates.
Last update attempt	Date and time on which the FortiWiFi unit last attempted to download antivirus engine, virus definition, and attack definition updates.
Last update status	Success or failure of the last update attempt. No updates means the last update attempt was successful but no new updates were available. Update succeeded or similar messages mean the last update attempt was successful and new updates were installed. Other messages can indicate that the FortiWiFi was not able to connect to the FDN and other error conditions.

This section describes:

- Connecting to the FortiResponse Distribution Network
- Manually initiating antivirus and attack definitions updates
- Configuring update logging

Connecting to the FortiResponse Distribution Network

Before the FortiWiFi unit can receive antivirus and attack updates, it must be able to connect to the FortiResponse Distribution Network (FDN). The FortiWiFi unit uses HTTPS on port 8890 to connect to the FDN. The FortiWiFi WAN1 interface must have a path to the Internet using port 8890. For information about configuring scheduled updates, see “Scheduling updates” on page 96.

You can also configure the FortiWiFi unit to allow push updates. Push updates are provided to the FortiWiFi unit from the FDN using HTTPS on UDP port 9443. To receive push updates, the FDN must have a path to the FortiWiFi WAN1 interface using UDP port 9443. For information about configuring push updates, see “Enabling push updates” on page 98.

The FDN is a world-wide network of FortiResponse Distribution Servers (FDSs). When the FortiWiFi unit connects to the FDN it connects to the nearest FDS. To do this, all FortiWiFi units are programmed with a list of FDS addresses sorted by nearest time zone according to the time zone configured for the FortiWiFi unit. To make sure the FortiWiFi unit receives updates from the nearest FDS, check that you have selected the correct time zone for your area.

To make sure the FortiWiFi unit can connect to the FDN

1. Go to **System > Config > Time** and make sure the time zone is set to the time zone for the region in which your FortiWiFi unit is located.
2. Go to **System > Update**.
3. Select Refresh.

The FortiWiFi unit tests its connection to the FDN. The test results are displayed at the top of the System Update page.

Table 1: Connections to the FDN

Connections	Status	Comments
FortiResponse Distribution Network	Available	The FortiWiFi unit can connect to the FDN. You can configure the FortiWiFi unit for scheduled updates. See "Scheduling updates" on page 96.
	Not available	The FortiWiFi unit cannot connect to the FDN. You must configure your FortiWiFi unit and your network so that the FortiWiFi unit can connect to the Internet and to the FDN. For example, you may need to add routes to the FortiWiFi routing table or configure your network to allow the FortiWiFi unit to use HTTPS on port 8890 to connect to the Internet. You may also have to connect to an override FortiResponse server to receive updates. See "Adding an override server" on page 97.
Push Update	Available	The FDN can connect to the FortiWiFi unit to send push updates. You can configure the FortiWiFi unit to receive push updates. See "Enabling push updates" on page 98.
	Not available	The FDN cannot connect to the FortiWiFi unit to send push updates. Push updates may not be available if you have not registered the FortiWiFi unit (see "Registering the FortiWiFi unit" on page 105), if there is a NAT device installed between the FortiWiFi unit and the FDN (see "Enabling push updates through a NAT device" on page 100), or if your FortiWiFi unit connects to the Internet using a proxy server (see "Enabling scheduled updates through a proxy server" on page 98).

Manually initiating antivirus and attack definitions updates

You can use the following procedure to update the antivirus and attack definitions at any time. The FortiWiFi unit must be able to connect to the FDN or to an override FortiResponse server.

To update antivirus and attack definitions

1. Go to **System > Update**.
2. Select Update Now to update the antivirus and attack definitions.

   If the connection to the FDN or override server is successful, the web-based manager displays a message similar to the following:

   ```
   Your update request has been sent. Your database will be updated
   in a few minutes. Please check your update page for the status
   of the update.
   ```

   After a few minutes, if an update is available, the System Update page lists new version information for antivirus definitions, the antivirus engine, or attack definitions. The System Status page also displays new dates and version numbers for antivirus and attack definitions. Messages are recorded to the event log indicating whether the update was successful or not.

Configuring update logging

Use the following procedure to configure FortiWiFi logging to record log messages when the FortiWiFi unit updates antivirus and attack definitions. The update log messages are recorded on the FortiWiFi Event log.

To configure update logging

1. Go to **Log&Report > Log Setting**.
2. Select Config Policy for the type of logs that the FortiWiFi unit is configured to record.
   For information about recording logs, see “Recording logs” on page 273.
3. Select Update to record log messages when the FortiWiFi unit updates antivirus and attack definitions.
4. Select any of the following update log options.

Failed Update	Records a log message whenever an update attempt fails.
Successful Update	Records a log message whenever an update attempt is successful.
FDN error	Records a log message whenever it cannot connect to the FDN or whenever it receives an error message from the FDN.

5. Select OK.

Scheduling updates

The FortiWiFi unit can check for and download updated definitions hourly, daily, or weekly, according to a schedule that you specify.

This section describes:

- Enabling scheduled updates
- Adding an override server
- Enabling scheduled updates through a proxy server

Enabling scheduled updates

To enable scheduled updates

1. Go to **System > Update**.
2. Select the Scheduled Update check box.
3. Select one of the following to check for and download updates.

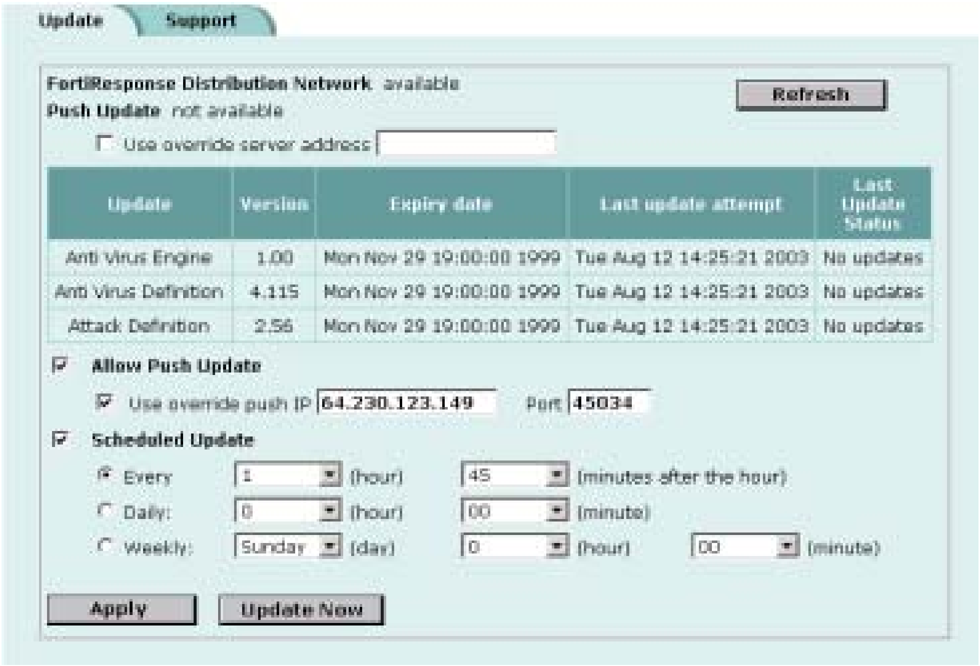
Hourly	Once every 1 to 23 hours. Select the number of hours and minutes between each update request.
Daily	Once a day. You can specify the time of day to check for updates.
Weekly	Once a week. You can specify the day of the week and the time of day to check for updates.

4 Select Apply.

The FortiWiFi unit starts the next scheduled update according to the new update schedule.

Whenever the FortiWiFi unit runs a scheduled update, the event is recorded in the FortiWiFi event log.

Figure 1: Configuring automatic antivirus and attack definitions updates



FortiResponse Distribution Network available

Push Update not available

□ Use override server address

Update	Version	Expiry date	Last update attempt	Last Update Status
Anti Virus Engine	1.00	Mon Nov 29 19:00:00 1999	Tue Aug 12 14:25:21 2003	No updates
Anti Virus Definition	4.115	Mon Nov 29 19:00:00 1999	Tue Aug 12 14:25:21 2003	No updates
Attack Definition	2.56	Mon Nov 29 19:00:00 1999	Tue Aug 12 14:25:21 2003	No updates

☑ **Allow Push Update**

☑ Use override push IP 64.230.123.149 Port 45034

☑ **Scheduled Update**

● Every 1 (hour) 45 (minutes after the hour)

○ Daily: 0 (hour) 00 (minute)

○ Weekly: Sunday (day) 0 (hour) 00 (minute)

Adding an override server

If you cannot connect to the FDN, or if your organization provides antivirus and attack updates using their own FortiResponse server, you can use the following procedure to add the IP address of an override FortiResponse server.

To add an override server

1 Go to **System > Update**.

2 Select the Use override server address check box.

3 Type the IP address of a FortiResponse server.

4 Select Apply.

The FortiWiFi unit tests the connection to the override server.

If the FortiResponse Distribution Network setting changes to available, the FortiWiFi unit has successfully connected to the override server.

If the FortiResponse Distribution Network stays set to not available, the FortiWiFi unit cannot connect to the override server. Check the FortiWiFi configuration and network configuration for settings that would prevent the FortiWiFi unit connecting to the override FortiResponse server.

Enabling scheduled updates through a proxy server

If your FortiWiFi unit must connect to the Internet through a proxy server, you can use the `set system autoupdate tunneling` command to allow the FortiWiFi unit to connect (or tunnel) to the FDN using the proxy server. Using this command you can specify the IP address and port of the proxy server. As well, if the proxy server requires authentication, you can add the user name and password required for the proxy server to the autoupdate configuration. The full syntax for enabling updates through a proxy server is:

```
set system autoupdate tunneling enable [address
<proxy-address_ip> [port <proxy-port> [username <username_str>
[password <password_str>]]]]
```

For example, if the IP address of the proxy server is 64.23.6.89 and its port is 8080, enter the following command:

```
set system autouopdate tunneling enable address 64.23.6.89
port 8080
```

For more information about the `set system autoupdate` command, see *Volume 6, FortiGate CLI Reference Guide.*

The FortiWiFi unit connects to the proxy server using the HTTP CONNECT method, as described in RFC 2616. The FortiWiFi unit sends an HTTP CONNECT request to the proxy server (optionally with authentication information) specifying the IP address and port required to connect to the FDN. The proxy server establishes the connection to the FDN and passes information between the FortiWiFi unit and the FDN.

The CONNECT method is used mostly for tunneling SSL traffic. Some proxy servers do not allow the CONNECT to connect to any port; they restrict the allowed ports to the well known ports for HTTPS and perhaps some other similar services. Because FortiWiFi autoupdates use HTTPS on port 8890 to connect to the FDN, your proxy server might have to be configured to allow connections on this port.

There are no special tunneling requirements if you have configured an override server address to connect to the FDN.

Enabling push updates

The FDN can push updates to FortiWiFi units to provide the fastest possible response to critical situations. You must register the FortiWiFi unit before it can receive push updates. See “Registering the FortiWiFi unit” on page 105.

When you configure a FortiWiFi unit to allow push updates, the FortiWiFi unit sends a SETUP message to the FDN. The next time a new antivirus engine, new antivirus definitions, or new attack definitions are released, the FDN notifies all FortiWiFi units that are configured for push updates that a new update is available. Within 60 seconds of receiving a push notification, the FortiWiFi unit requests an update from the FDN.

Note: Push updates are not supported if the FortiWiFi unit must use a proxy server to connect to the FDN. For more information, see “Enabling scheduled updates through a proxy server” on page 98.

When the network configuration permits, configuring push updates is recommended in addition to configuring scheduled updates. On average the FortiWiFi unit receives new updates sooner through push updates than if the FortiWiFi unit receives only scheduled updates. However, scheduled updates make sure that the FortiWiFi unit receives the latest updates.

Enabling push updates is not recommended as the only method for obtaining updates. The FortiWiFi unit might not receive the push notification. Also, when the FortiWiFi unit receives a push notification it makes only one attempt to connect to the FDN and download updates.

This section describes:

- Enabling push updates
- Push updates when FortiWiFi IP addresses change
- Enabling push updates through a NAT device

Enabling push updates

To enable push updates

1. Go to **System > Update**.
2. Select Allow Push Update.
3. Select Apply.

Push updates when FortiWiFi IP addresses change

The SETUP message that the FortiWiFi unit sends when you enable push updates includes the IP address of the FortiWiFi interface that the FDN connects to. If your FortiWiFi unit is running in NAT/Route mode, the SETUP message includes the FortiWiFi WAN1 IP address. If your FortiWiFi unit is running in Transparent mode, the SETUP message includes the FortiWiFi management IP address. The FDN must be able to connect to this IP address for your FortiWiFi unit to be able to receive push update messages. If your FortiWiFi unit is behind a NAT device, see “Enabling push updates through a NAT device” on page 100.

Whenever the WAN1 IP address of the FortiWiFi unit changes, the FortiWiFi unit sends a new SETUP message to notify the FDN of the address change. As long as the FortiWiFi unit sends this SETUP message and the FDN receives it, the FDN can maintain the most up-to-date WAN1 IP address for the FortiWiFi unit.

The FortiWiFi unit sends the SETUP message if you change the WAN1 IP address manually or if you have set the WAN1 interface addressing mode to DHCP or PPPoE and your DHCP or PPPoE server changes the IP address.

If you have redundant connections to the Internet, the FortiWiFi unit also sends the SETUP message when one Internet connection goes down and the FortiWiFi unit fails over to the other Internet connection.

In Transparent mode if you change the management IP address, the FortiWiFi unit also sends the SETUP message to notify the FDN of the address change.

Enabling push updates through a NAT device

If the FDN can connect to the FortiWiFi unit only through a NAT device, you must configure port forwarding on the NAT device and add the port forwarding information to the push update configuration. Using port forwarding, the FDN connects to the FortiWiFi unit using either port 9443 or an override push port that you specify.

Note: You cannot receive push updates through a NAT device if the external IP address of the NAT device is dynamic (for example, set using PPPoE or DHCP).

Example: push updates through a NAT device

This example describes how to configure a FortiWiFi NAT device to forward push updates to a FortiWiFi unit installed on its internal network. For the FortiWiFi unit on the internal network to receive push updates, the FortiWiFi NAT device must be configured with a port forwarding virtual IP. This virtual IP maps the IP address of the external interface of the FortiWiFi NAT device and a custom port to the IP address of the FortiWiFi unit on the internal network. This IP address can either be the external IP address of the FortiWiFi unit if it is operating in NAT/Route mode, or the Management IP address of the FortiWiFi unit if it is operating in Transparent mode.

Note: This example describes the configuration for a FortiWiFi NAT device. However, you can use any NAT device with a static external IP address that can be configured for port forwarding.

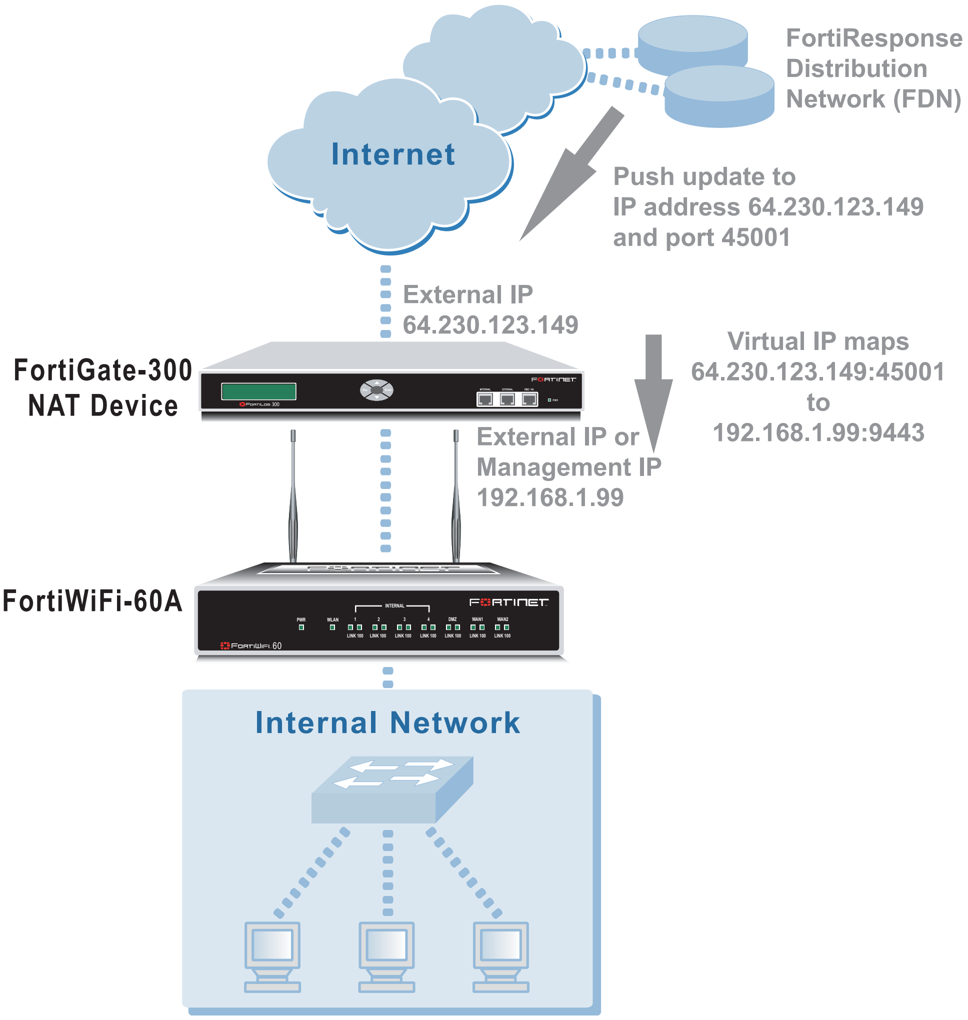
General procedure

Use the following steps to configure the FortiWiFi NAT device and the FortiWiFi unit on the internal network so that the FortiWiFi unit on the internal network can receive push updates:

1. Add a port forwarding virtual IP to the FortiWiFi NAT device.
2. Add a firewall policy to the FortiWiFi NAT device that includes the port forwarding virtual IP.
3. Configure the FortiWiFi unit on the internal network with an override push IP and port.

Note: Before completing the following procedure, you should register the internal network FortiWiFi unit so that it can receive push updates.

Figure 2: Example network topology: Push updates through a NAT device


FortiResponse Distribution Network (FDN)
Internet
Push update to IP address 64.230.123.149 and port 45001
External IP 64.230.123.149
FortiGate-300 NAT Device
Virtual IP maps 64.230.123.149:45001 to 192.168.1.99:9443
External IP or Management IP 192.168.1.99
FortiWiFi-60A
Internal Network

Adding a port forwarding virtual IP to the FortiWiFi NAT device

Use the following procedure to configure a FortiWiFi NAT device to use port forwarding to forward push update connections from the FDN to a FortiWiFi unit on the internal network.

To configure the FortiWiFi NAT device

1 Go to **Firewall > Virtual IP**.

2 Select New.

3 Type a name for the virtual IP.

4 In the External Interface section, select the external interface that the FDN connects to.
For the example topology, select the external interface.

5 In the Type section, select Port Forwarding.

6 In the External IP Address section, type the external IP address that the FDN connects to.

For the example topology, enter 64.230.123.149.

7 Type the External Service Port that the FDN connects to.

For the example topology, enter 45001.

8 In the Map to IP section, type the IP address of the FortiWiFi unit on the internal network.

If the FortiWiFi unit is operating in NAT/Route mode, enter the IP address of the external interface.

If the FortiWiFi unit is operating in Transparent mode, enter the management IP address.

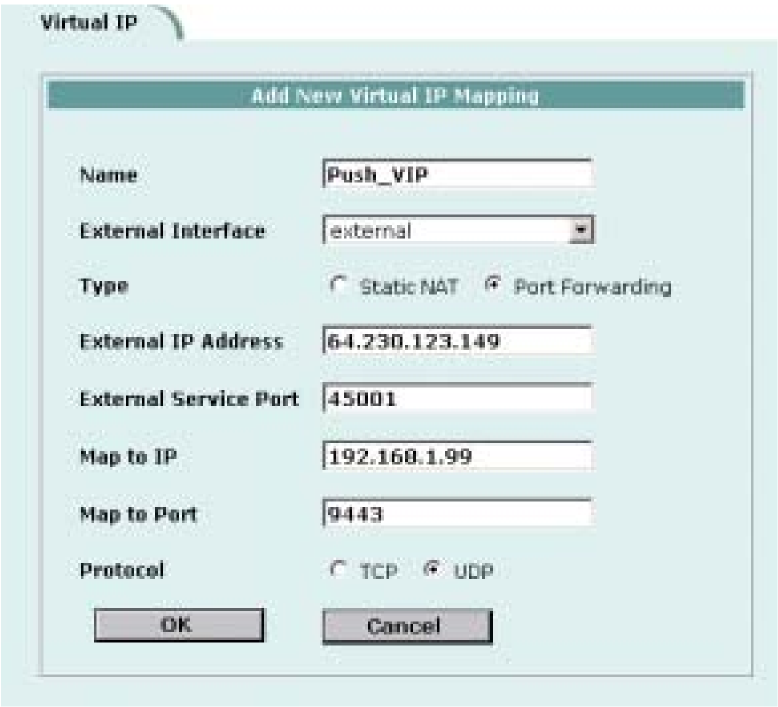
For the example topology, enter 192.168.1.99.

9 Set the Map to Port to 9443.

10 Set Protocol to UDP.

11 Select OK.

Figure 3: Push update port forwarding virtual IP



Add New Virtual IP Mapping

Name: Push_VIP

External Interface: external

Type: ○ Static NAT ● Port Forwarding

External IP Address: 64.230.123.149

External Service Port: 45001

Map to IP: 192.168.1.99

Map to Port: 9443

Protocol: ○ TCP ● UDP

Adding a firewall policy for the port forwarding virtual IP

To configure the FortiWiFi NAT device

1 Add a new external to internal firewall policy.

2 Configure the policy with the following settings:

Source	External_All
Destination	The virtual IP added above.
Schedule	Always
Service	ANY
Action	Accept
NAT	Selected.

3 Select OK.

Configuring the FortiWiFi unit with an override push IP and port

To configure the FortiWiFi unit on the internal network

1 Go to **System > Update**.

2 Select the Allow Push Update check box.

3 Select the Use override push check box.

4 Set IP to the external IP address added to the virtual IP.

For the example topology, enter 64.230.123.149.

5 Set Port to the external service port added to the virtual IP.

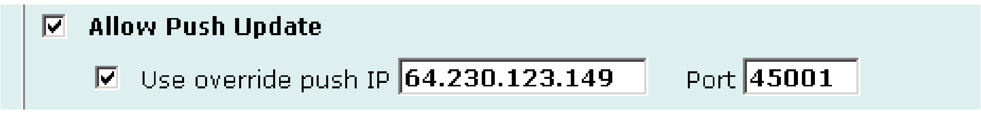
For the example topology, enter 45001.

6 Select Apply.

The FortiWiFi unit sends the override push IP address and port to the FDN. The FDN now uses this IP address and port for push updates to the FortiWiFi unit on the internal network.

If the external IP address or external service port change, add the changes to the Use override push configuration and select Apply to update the push information on the FDN.

Figure 4: Example push update configuration



☑ Allow Push Update

☑ Use override push IP 64.230.123.149 Port 45001

7 Select Apply.

8 You can select Refresh to make sure that push updates work.

Push Update changes to Available.

Registering FortiGate and FortiWiFi units

After purchasing and installing a new FortiWiFi unit, you can register the unit using the web-based manager by going to System Update Support page, or by using a web browser to connect to http://support.fortinet.com and selecting Product Registration.

Registration consists of entering your contact information and the serial numbers of the FortiGate and FortiWiFi units that you or your organization purchased. You can register multiple FortiGate and FortiWiFiunits in a single session without re-entering your contact information.

Once registration is completed, Fortinet sends a Support Login user name and password to your email address. You can use this user name and password to log on to the Fortinet support web site to:

- View your list of registered FortiGate and FortiWiFi units
- Register additional FortiGate and FortiWiFi units
- Add or change FortiCare Support Contract numbers for each FortiGate and FortiWiFi unit
- View and change registration information
- Download virus and attack definitions updates
- Download firmware upgrades
- Modify registration information after an RMA

Soon you will also be able to:

- Access Fortinet user documentation
- Access the Fortinet knowledge base

All registration information is stored in the Fortinet Customer Support database. This information is used to make sure that your registered FortiGate and FortiWiFi units can be kept up to date. All information is strictly confidential. Fortinet does not share this information with any third-party organizations for any reason.

This section describes:

- FortiCare Service Contracts
- Registering the FortiWiFi unit

FortiCare Service Contracts

Owners of a new FortiGate and FortiWiFi unit are entitled to 90 days of technical support services. To continue receiving support services after the 90-day expiry date, you must purchase a FortiCare Support Contract from an authorized Fortinet reseller or distributor. Different levels of service are available so you can purchase the support that you need. For maximum network protection, Fortinet strongly recommends that all customers purchase a service contract that covers antivirus and attack definition updates. See your Fortinet reseller or distributor for details of packages and pricing.

To activate the FortiCare Support Contract, you must register the FortiGate and FortiWiFi unit and add the FortiCare Support Contract number to the registration information. You can also register the FortiGate and FortiWiFi unit without purchasing a FortiCare Support Contract. In that case, when you purchase a FortiCare Support Contract you can update the registration information to add the support contract number.

A single FortiCare Support Contract can cover multiple FortiGate and FortiWiFi units. You must enter the same service contract number for each of the FortiGate and FortiWiFi models covered by the service contract.

Registering the FortiWiFi unit

Before registering a FortiWiFi unit, you require the following information:

- Your contact information including:
    - First and last name
    - Company name
    - Email address (Your Fortinet support login user name and password will be sent to this email address.)
    - Address
    - Contact phone number
- A security question and an answer to the security question.

  This information is used for password recovery. The security question should be a simple question that only you know the answer to. The answer should not be easy to guess.
- The product model and serial number for each FortiWiFi unit that you want to register.

  The serial number is located on a label on the bottom of the FortiWiFi unit.

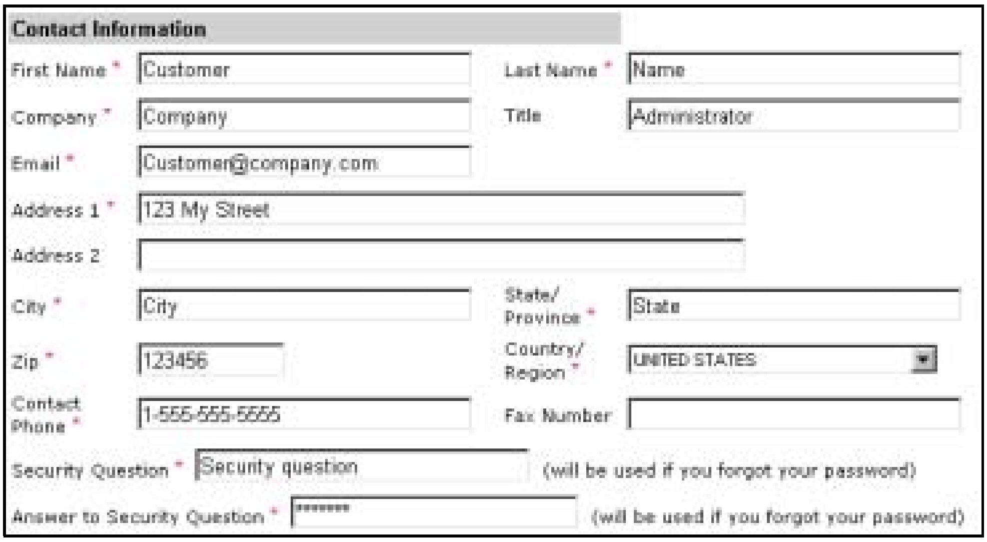
  You can view the Serial number from the web-based manager by going to System > Status.

  The serial number is also available from the CLI using the `get system status` command.
- FortiCare Support Contract numbers, if you purchased FortiCare Support Contracts for the FortiWiFi units that you want to register.

To register one or more FortiWiFi units

1. Go to **System > Update > Support**.
2. Enter your contact information on the product registration form.

Figure 5: Registering a FortiWiFi unit (contact information and security question)



Contact Information

First Name *	Customer	Last Name *	Name
Company *	Company	Title	Administrator
Email *	Customer@company.com		
Address 1 *	123 My Street		
Address 2			
City *	City	State/ Province *	State
Zip *	123456	Country/ Region *	UNITED STATES
Contact Phone *	1-555-555-5555	Fax Number	

Security Question * Security question (will be used if you forgot your password)

Answer to Security Question * ******* (will be used if you forgot your password)

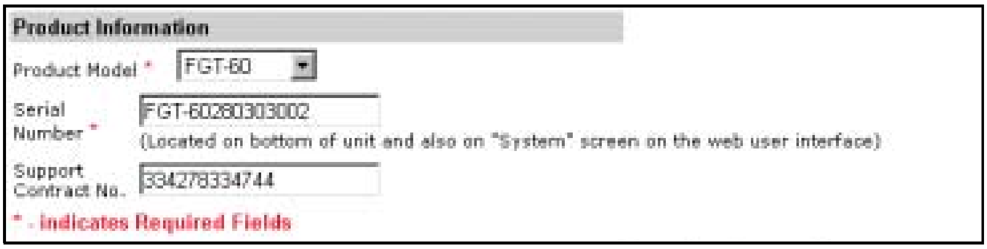
3 Provide a security question and an answer to the security question.

4 Select the model number of the Product Model to register.

5 Enter the Serial Number of the FortiWiFi unit.

6 If you have purchased a FortiCare Support Contract for this FortiWiFi unit, enter the support contract number.

Figure 6: Registering a FortiGate unit (product information)



Product Information

Product Model * FGT-60

Serial Number * FGT-60280303002
(Located on bottom of unit and also on "System" screen on the web user interface)

Support Contract No. 334278334744

* - Indicates Required Fields

7 Select Finish.

If you have not entered a FortiCare Support Contract number (SCN) you can return to the previous page to enter the number. If you do not have a FortiCare Support Contract, you can select Continue to complete the registration.

If you have entered a support contract number, a real-time validation is performed to verify that the SCN information matches the FortiWiFi unit. If the information does not match you can try entering it again.

A web page is displayed that contains detailed information about the Fortinet technical support services available to you for the registered FortiWiFi unit.

Your Fortinet support user name and password is sent to the email address provided with your contact information.

Updating registration information

You can use your Fortinet support user name and password to log on to the Fortinet Support web site at any time to view or update your Fortinet support information.

This section describes:

- Recovering a lost Fortinet support password
- Viewing the list of registered FortiGate and FortiWiFi units
- Registering a new FortiWiFi unit
- Adding or changing a FortiCare Support Contract number
- Changing your Fortinet support password
- Changing your contact information or security question
- Downloading virus and attack definitions updates

Recovering a lost Fortinet support password

If you provided a security question and answer when you registered on the Fortinet support web site, you can use the following procedure to receive a replacement password. If you did not provide a security question and answer, contact Fortinet technical support.

To recover a lost Fortinet support password

1. Go to **System > Update > Support**.
2. Select Support Login.
3. Enter your Fortinet support user name.
4. Select Forgot your password?
5. Enter your email address and select Submit.

   The security question that you entered when you registered is displayed.
6. Enter the answer to your security question and select Get Password.

   If you entered the correct answer to the security question, an email containing a new password is sent to your email address. You can use your current user name and this password to log into the Fortinet support web site.
7. Select Support Login.
8. When you receive your new password, enter your user name and new password to log into the Fortinet support web site.

Viewing the list of registered FortiGate and FortiWiFi units

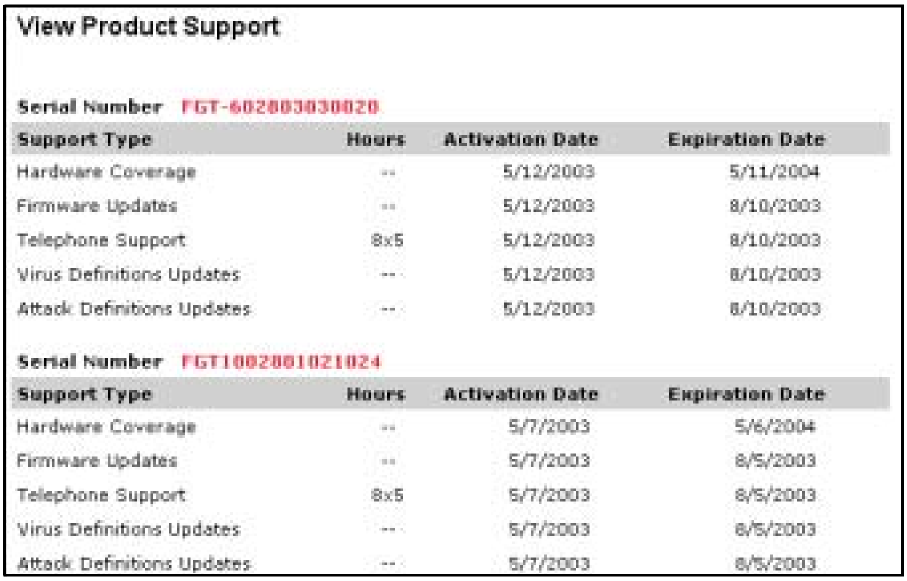
To view the list of registered FortiGate units

1. Go to **System > Update > Support**.
2. Select Support Login.
3. Enter your Fortinet support user name and password.
4. Select Login.

5 Select View Products.

The list of FortiGate products that you have registered is displayed. For each FortiGate unit, the list includes the serial number and current support options for that unit.

Figure 7: Sample list of registered FortiGate units



View Product Support

Serial Number FGT-602803030020

Support Type	Hours	Activation Date	Expiration Date
Hardware Coverage	--	5/12/2003	5/11/2004
Firmware Updates	--	5/12/2003	8/10/2003
Telephone Support	8x5	5/12/2003	8/10/2003
Virus Definitions Updates	--	5/12/2003	8/10/2003
Attack Definitions Updates	--	5/12/2003	8/10/2003

Serial Number FGT1002801021024

Support Type	Hours	Activation Date	Expiration Date
Hardware Coverage	--	5/7/2003	5/6/2004
Firmware Updates	--	5/7/2003	8/5/2003
Telephone Support	8x5	5/7/2003	8/5/2003
Virus Definitions Updates	--	5/7/2003	8/5/2003
Attack Definitions Updates	--	5/7/2003	8/5/2003

Registering a new FortiWiFi unit

To register a new FortiWiFi unit

1 Go to **System > Update > Support**.

2 Select Support Login.

3 Enter your Fortinet support user name and password.

4 Select Login.

5 Select Add Registration.

6 Select the model number of the product model that you want to register.

7 Enter the serial number of the FortiWiFi unit.

8 If you have purchased a FortiCare Support Contract for this FortiWiFi unit, enter the support contract number.

9 Select Finish.

The list of FortiWiFi products that you have registered is displayed. The list now includes the new FortiWiFi unit.

Adding or changing a FortiCare Support Contract number

To add or change a FortiCare Support Contract number

1 Go to **System > Update > Support**.

2 Select Support Login.

3 Enter your Fortinet support user name and password.

4 Select Login.

5 Select Add/Change Contract number.

6 Select the Serial Number of the FortiWiFi unit for which to add or change a FortiCare Support Contract number.

7 Add the new Support Contract number.

8 Select Finish.

The list of FortiGate products that you have registered is displayed. The list now includes the new support contract information.

Changing your Fortinet support password

To change your Fortinet support password

1 Go to **System > Update > Support**.

2 Select Support Login.

3 Enter your Fortinet support user name and password.

4 Select Login.

5 Select My Profile.

6 Select Change Password.

7 Enter your current password.

8 Enter and confirm a new password.

An email is sent to your email address confirming that your password has been changed. Use your current user name and new password the next time you log into the Fortinet technical support web site.

Changing your contact information or security question

To change your contact information or security question

1 Go to **System > Update > Support**.

2 Select Support Login.

3 Enter your Fortinet support user name and password.

4 Select Login.

5 Select My Profile.

6 Select Edit Profile.

7 Make the required changes to your contact information.

8 Make the required changes to your security question and answer.

9 Select Update Profile.

Your changes are saved to the Fortinet technical support database. If you changed your contact information, the changes are displayed.

Downloading virus and attack definitions updates

Use the following procedure to manually download virus and attack definitions updates. This procedure also describes how to install the attack definitions updates on your FortiWiFi unit.

To download virus and attack definitions updates

1 Go to **System > Update > Support**.

2 Select Support Login.

3 Enter your Fortinet support user name and password.

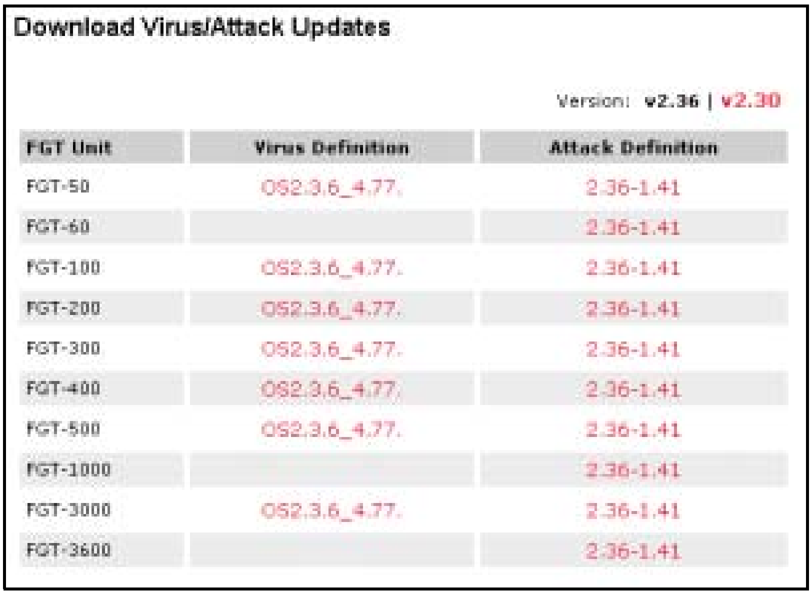
4 Select Login.

5 Select Download Virus/Attack Update.

6 If required, select the FortiOS version.

7 Select the virus and attack definitions to download.

Figure 8: Downloading virus and attack definition updates



Download Virus/Attack Updates

Version: **v2.36** | v2.30

FGT Unit	Virus Definition	Attack Definition
FGT-50	OS2.3.6_4.77.	2.36-1.41
FGT-60		2.36-1.41
FGT-100	OS2.3.6_4.77.	2.36-1.41
FGT-200	OS2.3.6_4.77.	2.36-1.41
FGT-300	OS2.3.6_4.77.	2.36-1.41
FGT-400	OS2.3.6_4.77.	2.36-1.41
FGT-500	OS2.3.6_4.77.	2.36-1.41
FGT-1000		2.36-1.41
FGT-3000	OS2.3.6_4.77.	2.36-1.41
FGT-3600		2.36-1.41

For information about how to install the downloaded files, see “Manual virus definition updates” on page 82 and “Manual attack definition updates” on page 83.

Registering a FortiWiFi unit after an RMA

The Return Material Authorization (RMA) process starts when a registered FortiWiFi unit does not work properly because of a hardware failure. If this happens while the FortiWiFi unit is protected by hardware coverage, you can return the FortiWiFi unit that is not functioning to your reseller or distributor.

The RMA is recorded and you will receive a replacement unit. Fortinet adds the RMA information to the Fortinet support database. When you receive the replacement unit you can use the following procedure to update your product registration information.

To register a FortiWiFi unit after an RMA

1. Go to **System > Update > Support**.
2. Select Support Login.
3. Enter your Fortinet support user name and password to log in.
4. Select Add Registration.
5. Select the link to replace a unit with a new unit from an RMA.
6. Select Finish.
   The list of FortiGate products that you have registered is displayed. The list now includes the replacement FortiGate unit. All support levels are transferred to the replacement unit.

Network configuration

You can use the System Network page to change any of the following FortiWiFi network settings:

- Configuring interfaces
- Adding DNS server IP addresses
- Configuring routing
- Configuring DHCP services
- Configuring the modem interface
- Wireless configuration

Configuring interfaces

Use the following procedures to configure FortiWiFi interfaces:

- Viewing the interface list
- Changing the administrative status of an interface
- Configuring an interface with a manual IP address
- Configuring an interface for DHCP
- Configuring an interface for PPPoE
- Adding a secondary IP address to an interface
- Adding a ping server to an interface
- Controlling administrative access to an interface
- Changing the MTU size to improve network performance
- Configuring traffic logging for connections to an interface
- Configuring the management interface in Transparent mode
- Wireless configuration

For information about configuring the modem interface, see “Configuring the modem interface” on page 129.

Viewing the interface list

To view the interface list

1 Go to **System > Network > Interface**.

The interface list is displayed. The interface list shows the following status information for all the FortiWiFi interfaces and VLAN subinterfaces:

- The name of the interface
- The IP address of the interface
- The netmask of the interface
- The administrative access configuration for the interface

  See "Controlling administrative access to an interface" on page 117 for information about administrative access options.
- The administrative status for the interface

  If the administrative status is a green arrow, the interface is up and can accept network traffic. If the administrative status is a red arrow, the interface is administratively down and cannot accept traffic. To change the administrative status, see "Changing the administrative status of an interface" on page 114.

  For the modem interface, status indicates whether or not the modem is connected to a dialup account. If status is a green arrow, the modem is connected. If status is a red arrow, the modem is not connected. For more information about the modem interface, see "Configuring the modem interface" on page 129.

Changing the administrative status of an interface

You can use the following procedures to start an interface that is administratively down and stop and interface that is administratively up.

You cannot use the following procedures for the modem interface.

To start up an interface that is administratively down

1 Go to **System > Network > Interface**.

The interface list is displayed.

2 Select Bring Up for the interface that you want to start.

To stop an interface that is administratively up

1 From the FortiWiFi CLI, enter the command:

```
set system interface <intf_str> config status down
```

You can only stop an interface that is administratively up from the FortiWiFi command line interface (CLI).

Configuring an interface with a manual IP address

You can change the static IP address of any FortiWiFi interface.

To change an interface with a manual IP address

1 Go to **System > Network > Interface**.

2 Choose an interface and select Modify.

3 Set Addressing Mode to Manual.

4 Change the IP address and Netmask as required.

The IP address of the interface must be on the same subnet as the network the interface is connecting to.

Two interfaces cannot have the same IP address and cannot have IP addresses on the same subnet.

5 Select OK to save your changes.

If you changed the IP address of the interface to which you are connecting to manage the FortiWiFi unit, you must reconnect to the web-based manager using the new interface IP address.

Configuring an interface for DHCP

You can configure any FortiWiFi interface to use DHCP.

If you configure the interface to use DHCP, the FortiWiFi unit automatically broadcasts a DHCP request. You can disable connect to server if you are configuring the FortiWiFi unit offline and you do not want the FortiWiFi unit to send the DHCP request.

By default, the FortiWiFi unit also retrieves a default gateway IP address and DNS server IP addresses from the DHCP server. You can disable the option Retrieve default gateway and DNS from server if you do not want the DHCP server to configure these FortiWiFi settings.

To configure an interface for DHCP

1 Go to **System > Network > Interface**.

2 Choose an interface and select Modify ✎.

3 In the Addressing Mode section, select DHCP.

4 Clear the Retrieve default gateway and DNS from server check box if you do not want the FortiWiFi unit to obtain a default gateway IP address and DNS server IP addresses from the DHCP server.

By default, this option is enabled.

5 Clear the Connect to Server check box if you do not want the FortiWiFi unit to connect to the DHCP server.

By default, this option is enabled.

6 Select Apply.

The FortiWiFi unit attempts to contact the DHCP server from the interface to set the IP address, netmask, default gateway IP address, and DNS server IP addresses.

7 Select Status to refresh the addressing mode status message.

initializing	No activity
connecting	The FortiWiFi unit is attempting to connect to the DHCP server.
connected	The FortiWiFi unit retrieves an IP address, netmask, and other settings from the DHCP server.
failed	The FortiWiFi unit was unable to retrieve an IP address and other information from the DHCP server.

8 Select OK.

Configuring an interface for PPPoE

Use the following procedure to configure any FortiWiFi interface to use PPPoE.

If you configure the interface to use PPPoE, the FortiWiFi unit automatically broadcasts a PPPoE request. You can disable connect to server if you are configuring the FortiWiFi unit offline and you do not want the FortiWiFi unit to send the PPPoE request.

By default, the FortiWiFi unit also retrieves a default gateway IP address and DNS server IP addresses from the PPPoE server. You can disable the option Retrieve default gateway and DNS from server if you do not want the PPPoE server to configure these FortiWiFi settings.

To configure an interface for PPPoE

1 Go to **System > Network > Interface**.

2 Choose an interface and select Modify ✎.

3 In the Addressing Mode section, select PPPoE.

4 Enter your PPPoE account User Name and Password.

5 Clear the Retrieve default gateway and DNS from server check box if you do not want the FortiWiFi unit to obtain a default gateway IP address and DNS server IP addresses from the PPPoE server.
By default, this option is enabled.

6 Clear the Connect to Server check box if you do not want the FortiWiFi unit to connect to the PPPoE server.
By default, this option is enabled.

7 Select Apply.
The FortiWiFi unit attempts to contact the PPPoE server from the interface to set the IP address, netmask, default gateway IP address, and DNS server IP addresses.

8 Select Status: to refresh the addressing mode status message. Possible messages:

initializing	No activity
connecting	The FortiWiFi unit is attempting to connect to the DHCP server.
connected	The FortiWiFi unit retrieves an IP address, netmask, and other settings from the PPPoE server.
failed	The FortiWiFi unit was unable to retrieve an IP address and other information from the PPPoE server.

9 Select OK.

Adding a secondary IP address to an interface

You can use the CLI to add a secondary IP address to any FortiWiFi interface. The secondary IP address cannot be the same as the primary IP address but it can be on the same subnet.

To add a secondary IP address from the CLI enter the command:

```
set system interface <intf_str> config secip <second_ip>
<netmask_ip>
```

You can also configure management access and add a ping server to the secondary IP address.

```
set system interface <intf_str> config secallowaccess ping
https ssh snmp http telnet
set system interface <intf_str> config secgwdetect enable
```

Adding a ping server to an interface

Add a ping server to an interface if you want the FortiWiFi unit to confirm connectivity with the next hop router on the network connected to the interface. Adding a ping server is required for routing failover. See “Adding destination-based routes to the routing table” on page 123.

To add a ping server to an interface

1 Go to **System > Network > Interface**.

2 Choose an interface and select Modify ✎.

3 Set Ping Server to the IP address of the next hop router on the network connected to the interface.

4 Select the Enable check box.

The FortiWiFi unit uses dead gateway detection to ping the Ping Server IP address to make sure that the FortiWiFi unit can connect to this IP address. To configure dead gateway detection, see “Modifying the Dead Gateway Detection settings” on page 145.

5 Select OK to save the changes.

Controlling administrative access to an interface

For a FortiWiFi unit running in NAT/Route mode, you can control administrative access to an interface to control how administrators access the FortiWiFi unit and the FortiWiFi interfaces to which administrators can connect.

Controlling administrative access for an interface connected to the Internet allows remote administration of the FortiWiFi unit from any location on the Internet. However, allowing remote administration from the Internet could compromise the security of your FortiWiFi unit. You should avoid allowing administrative access for an interface connected to the Internet unless this is required for your configuration. To improve the security of a FortiWiFi unit that allows remote administration from the Internet:

- Use secure administrative user passwords,
- Change these passwords regularly,
- Enable secure administrative access to this interface using only HTTPS or SSH,
- Do not change the system idle timeout from the default value of 5 minutes (see “To set the system idle timeout” on page 144).

To configure administrative access in Transparent mode, see “Configuring the management interface in Transparent mode” on page 119.

To control administrative access to an interface

1 Go to **System > Network > Interface**.

2 Choose an interface and select Modify.

3 Select the Administrative Access methods for the interface.

HTTPS To allow secure HTTPS connections to the web-based manager through this interface.

PING If you want this interface to respond to pings. Use this setting to verify your installation and for testing.

HTTP To allow HTTP connections to the web-based manager through this interface. HTTP connections are not secure and can be intercepted by a third party.

SSH To allow SSH connections to the CLI through this interface.

SNMP To allow a remote SNMP manager to request SNMP information by connecting to this interface. See “Configuring SNMP” on page 147.

TELNET To allow Telnet connections to the CLI through this interface. Telnet connections are not secure and can be intercepted by a third party.

4 Select OK to save the changes.

Changing the MTU size to improve network performance

To improve network performance, you can change the maximum transmission unit (MTU) of the packets that the FortiWiFi unit transmits from any interface. Ideally, this MTU should be the same as the smallest MTU of all the networks between the FortiWiFi unit and the destination of the packets. If the packets that the FortiWiFi unit sends are larger, they are broken up or fragmented, which slows down transmission. Experiment by lowering the MTU to find an MTU size for best network performance.

To change the MTU size of the packets leaving an interface

1 Go to **System > Network > Interface**.

2 Choose an interface and select Modify.

3 Select Override default MTU value (1500).

4 Set the MTU size.

Set the maximum packet size. For manual and DHCP addressing mode the MTU size can be from 576 to 1500 bytes. For PPPoE addressing mode the MTU size can be from 576 to 1492 bytes.

Configuring traffic logging for connections to an interface

To configure traffic logging for connections to an interface

1 Go to **System > Network > Interface**.

2 Choose an interface and select Modify.

3 Select the Log check box to record log messages whenever a firewall policy accepts a connection to this interface.

4 Select OK to save the changes.

Configuring the management interface in Transparent mode

Configure the management interface in Transparent mode to set the management IP address of the FortiWiFi unit. Administrators connect to this IP address to administer the FortiWiFi unit. The FortiWiFi also uses this IP address to connect to the FDN for virus and attack updates (see “Updating antivirus and attack definitions” on page 93).

You can also configure the management interface to control how administrators connect to the FortiWiFi unit for administration and the FortiWiFi interfaces to which administrators can connect.

Controlling administrative access to a FortiWiFi interface connected to the Internet allows remote administration of the FortiWiFi unit from any location on the Internet. However, allowing remote administration from the Internet could compromise the security of the FortiWiFi unit. You should avoid allowing administrative access for an interface connected to the Internet unless this is required for your configuration. To improve the security of a FortiWiFi unit that allows remote administration from the Internet:

- Use secure administrative user passwords,
- Change these passwords regularly,
- Enable secure administrative access to this interface using only HTTPS or SSH,
- Do not change the system idle timeout from the default value of 5 minutes (see “To set the system idle timeout” on page 144).

To configure the management interface in Transparent mode

1. Go to **System > Network > Management**.
2. Change the Management IP and Netmask as required.

   This must be a valid IP address for the network that you want to manage the FortiWiFi unit from.
3. Add a default gateway IP address if the FortiWiFi unit must connect to a default gateway to reach the management computer.
4. Select the administrative access methods for each interface.

   HTTPS To allow secure HTTPS connections to the web-based manager through this interface.

   PING If you want this interface to respond to pings. Use this setting to verify your installation and for testing.

   HTTP To allow HTTP connections to the web-based manager through this interface. HTTP connections are not secure and can be intercepted by a third party.

   SSH To allow SSH connections to the CLI through this interface.

   SNMP To allow a remote SNMP manager to request SNMP information by connecting to this interface. See “Configuring SNMP” on page 147.

   TELNET To allow Telnet connections to the CLI through this interface. Telnet connections are not secure and can be intercepted by a third party.
5. Select Log for each interface that you want to record log messages whenever a firewall policy accepts a connection to this interface.
6. Select Apply to save the changes.

Wireless configuration

You can configure the FortiWiFi-60 WLAN interface so that users with wireless network cards can connect to this interface. From this wireless network users can connect through the FortiWiFi-60 to the Internet or to internal or DMZ networks.

The FortiWiFi-60 supports the following wireless network standards:

- IEEE 802.11b (2.4-GHz Band)
- IEEE 802.11g (2.4-GHz Band)
- Wired Equivalent Privacy (WEP)

To configure wireless settings

Configure wireless settings to select the country or region in which you are operating the FortiWiFi-60 and select the channel to use. You can also enable WEP, enter a WEP key, and change the SSID that the FortiWiFi-60 broadcasts.

1. Go to **System > Network > Interface**.
2. For the wlan interface, select Modify.
3. Set Geography to your country or region.
4. Select a channel number for your FortiWiFi-60 wireless network.

   Users who wish to use the FortiWiFi-60 wireless network should configure their computers to use this channel for wireless networking.
5. Set security to WEP and enter a WEP key.

   The key can be up to 26 hexidecimal digits (0-9 a-f).
6. Change the Service Set ID (SSID) as required.

   The SSID is the wireless network name that the FortiWiFi-60 broadcasts. Users who wish to use to the FortiWiFi-60 wireless network should configure their computers to connect to the network that broadcasts this network name.
7. Select OK.

Table 2: IEEE 802.11b (2.4-GHz Band) channel numbers

Channel number	Frequency (MHz)	Regulatory Areas			
		Americas	EMEA	Israel	Japan
1	2412	X	X	–	X
2	2417	X	X	–	X
3	2422	X	X	–	X
4	2427	X	X	–	X
5	2432	X	X	X	X
6	2437	X	X	X	X
7	2442	X	X	X	X
8	2447	X	X	X	X
9	2452	X	X	–	X
10	2457	X	X	–	X
11	2462	X	X	–	X
12	2467	–	X	–	X
13	2472	–	X	–	X
14	2484	–	–	–	X
Mexico is included in the Americas regulatory domain. Channels 1 through 8 are for indoor use only. Channels 9 through 11 can be used indoors and outdoors. You must make sure that the channel number complies with the regulatory standards of Mexico.					

Table 3: IEEE 802.11g (2.4-GHz Band) channel numbers

Channel number	Frequency (MHz)	Regulatory Areas							
		Americas		EMEA		Israel		Japan	
		CCK	ODFM	CCK	ODFM	CCK	ODFM	CCK	ODFM
1	2412	X	X	X	X	–	–	X	X
2	2417	X	X	X	X	–	–	X	X
3	2422	X	X	X	X	–	–	X	X
4	2427	X	X	X	X	–	–	X	X
5	2432	X	X	X	X	X	X	X	X
6	2437	X	X	X	X	X	X	X	X
7	2442	X	X	X	X	X	X	X	X
8	2447	X	X	X	X	X	X	X	X
9	2452	X	X	X	X	–	–	X	X
10	2457	X	X	X	X	–	–	X	X
11	2462	X	X	X	X	–	–	X	X
12	2467	–	–	X	X	–	–	X	X
13	2472	–	–	X	X	–	–	X	X
14	2484	–	–	–	–	–	–	X	–

Adding DNS server IP addresses

Several FortiWiFi functions, including sending email alerts and URL blocking, use DNS. Use the following procedure to add the IP addresses of the DNS servers that your FortiWiFi unit can connect to. DNS server IP addresses are usually supplied by your ISP.

To add DNS server IP addresses

1. Go to **System > Network > DNS**.
2. Change the primary and secondary DNS server IP addresses as required.
3. Select Apply to save the changes.

Configuring routing

This section describes how to configure FortiWiFi routing. You can configure routing to add static routes from the FortiWiFi unit to local routers. Using policy routing you can increase the flexibility of FortiWiFi routing to support more advanced routing functions.

You can also use routing to create a multiple Internet connection configuration that supports redundancy and load sharing between the two Internet connections.

This section describes:

- Adding a default route
- Adding destination-based routes to the routing table
- Adding routes in Transparent mode
- Configuring the routing table
- Policy routing

Adding a default route

You can add a default route for network traffic leaving the external interface.

To add a default route

1. Go to **System > Network > Routing Table**.
2. Select New to add a new route.
3. Set the Source IP and Netmask to 0.0.0.0.
4. Set the Destination IP and Netmask to 0.0.0.0.
5. Set Gateway 1 to the IP address of the routing gateway that routes traffic to the Internet.
6. Select OK to save the default route.

Note: Only one default route can be active at a time. If two default routes are added to the routing table, only the default route closest to the top of the routing table is active.

Adding destination-based routes to the routing table

You can add destination-based routes to the FortiWiFi routing table to control the destination of traffic exiting the FortiWiFi unit. You configure routes by adding destination IP addresses and netmasks and adding gateways for these destination addresses. The gateways are the next hop routers to which to route traffic that matches the destination addresses in the route.

You can add one or two gateways to a route. If you add one gateway, the FortiWiFi unit routes the traffic to that gateway. You can add a second gateway to route traffic to the second gateway if the first gateway fails.

To support routing failover, the IP address of each gateway must be added to the ping server of the interface connected to the same network as the gateway. For information about adding a ping server, see "Adding a ping server to an interface" on page 117.

To add destination-based routes to the routing table

1. Go to **System > Network > Routing Table**.
2. Select New to add a new route.
3. Type the Destination IP address and netmask for the route.
4. Add the IP address of Gateway #1.
   Gateway #1 is the IP address of the primary destination for the route.
   Gateway #1 must be on the same subnet as a FortiWiFi interface.
   If you are adding a static route from the FortiWiFi unit to a single destination router, you need to specify only one gateway.
5. Add the IP address of Gateway #2, if you want to route traffic to multiple gateways.
6. Set Device #1 to the FortiWiFi interface through which you want to route traffic to connect to Gateway #1.
   You can select the name of an interface or Auto (the default). If you select the name of an interface, the traffic is routed to that interface. If you select Auto the system selects the interface according to the following rules:
   - If the Gateway #1 IP address is on the same subnet as a FortiWiFi interface, the system sends the traffic to that interface.
   - If the Gateway #1 IP address is not on the same subnet as a FortiWiFi interface, the system routes the traffic to the WAN1 interface, using the default route.

   You can use Device #1 to send packets to an interface that is on a different subnet than the destination IP address of the packets without routing them using the default route.

7. Set Device #2 to the FortiWiFi interface through which to route traffic to connect to Gateway #2.

   You can select the name of an interface or Auto (the default). If you select the name of an interface, the traffic is routed to that interface. If you select Auto the system selects the interface according to the following rules:

   - If the Gateway #2 IP address is on the same subnet as a FortiWiFi interface, the system sends the traffic to that interface.
   - If the Gateway #2 IP address is not on the same subnet as a FortiWiFi interface, the system routes the traffic to the WAN1 interface, using the default route.

   You can use Device #2 to send packets to an interface that is on a different subnet than the destination IP address of the packets without routing them using the default route.

8. Select OK to save the route.

Note: Any two routes in the routing table must differ by something other than just the gateway to be simultaneously active. If two routes added to the routing table are identical except for their gateway IP addresses, only the route closer to the top of the routing table can be active.

Note: Arrange routes in the routing table from more specific to more general. For information about arranging routes in the routing table, see “Configuring the routing table”.

Adding routes in Transparent mode

Use the following procedure to add routes when operating the FortiWiFi unit in Transparent mode.

To add a route in Transparent mode

1. Go to **System > Network > Routing**.
2. Select New.
3. Enter the Destination IP address and Netmask for the route.
4. Enter the Gateway IP address for the route.
5. Select OK to save the new route.
6. Repeat steps 1 to 5 to add more routes as required.

Configuring the routing table

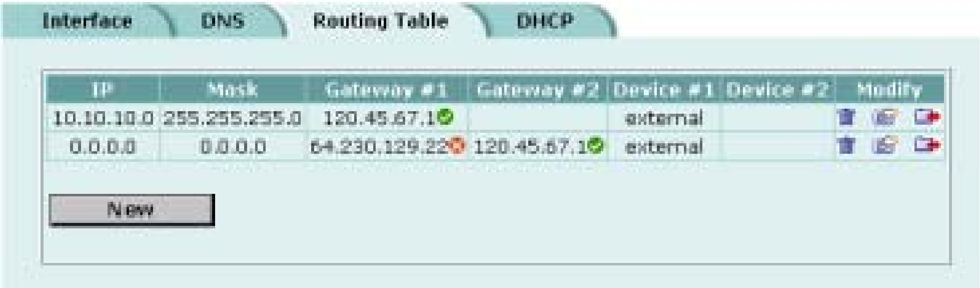
The routing table shows the destination IP address and mask of each route that you add, as well as the gateways and devices added to the route. The routing table also displays the gateway connection status. A green check mark indicates that the FortiWiFi unit has used the ping server and dead gateway detection to determine that it can connect to the gateway. A red X means that a connection cannot be established. A blue question mark means that the connection status is unknown. For more information, see “Adding a ping server to an interface” on page 117.

The FortiWiFi unit assigns routes using a best match algorithm based on the destination address of the packet and the destination address of the route. To select a route for a packet, the FortiWiFi unit searches the routing table for a route that best matches the destination address of the packet. If a match is not found, the FortiWiFi unit routes the packet using the default route.

To configure the routing table

1. Go to **System > Network > Routing Table**.
2. Choose the route that you want to move and select Move to ⇨ to change its order in the routing table.
3. Type a number in the Move to field to specify where in the routing table to move the route and select OK.
4. Select Delete 🗑 to delete a route from the routing table.

Figure 9: Routing table



IP	Mask	Gateway #1	Gateway #2	Device #1	Device #2	Modify
10.10.10.0	255.255.255.0	120.45.67.1 ✓		external		🗑 ✎ ⇨
0.0.0.0	0.0.0.0	64.230.129.22 ✗	120.45.67.1 ✓	external		🗑 ✎ ⇨

Policy routing

Policy routing extends the functions of destination routing. Using policy routing you can route traffic based on the following:

- Destination address
- Source address
- Protocol, service type, or port range
- Incoming or source interface

Using policy routing you can build a routing policy database (RPDB) that selects the appropriate route for traffic by applying a set of routing rules. To select a route for traffic, the FortiWiFi unit matches the traffic with the policy routes added to the RPDB starting at the top of the list. The first policy route that matches is used to set the route for the traffic. The route supplies the next hop gateway as well as the FortiWiFi interface to be used by the traffic.

Packets are matched with policy routes before they are matched with destination routes. If a packet does not match a policy route, it is routed using destination routes.

The gateway added to a policy route must also be added to a destination route. When the FortiWiFi unit matches packets with a route in the RPDB, the FortiWiFi unit looks in the destination routing table for the gateway that was added to the policy route. If a match is found, the FortiWiFi unit routes the packet using the matched destination route. If a match is not found, the FortiWiFi unit routes the packet using normal routing.

To find a route with a matching gateway, the FortiWiFi unit starts at the top of the destination routing table and searches until it finds the first matching destination route. This matched route is used to route the packet.

For policy routing examples, see “Policy routing examples” on page 56.

Policy routing command syntax

Configure policy routing using the following CLI command.

```
set system route policy <route_int> src <source_ip>
<source_mask> iifname <source-interface_name>
dst <destination_ip> <destination_mask>
oifname <destination-interface_name> protocol <protocol_int>
port <low-port_int> <high-port_int> gw <gateway_ip>
```

Complete policy routing command syntax is described in *Volume 6: FortiGate CLI Reference Guide*.

Configuring DHCP services

You can configure DHCP server or DHCP relay agent functionality on any FortiWiFi interface.

A FortiWiFi interface can act as either a DHCP server or as a DHCP relay agent. An interface cannot provide both functions.

Note: To configure DHCP server or DHCP relay functionality on an interface, the FortiWiFi unit must be in NAT/Route mode and the interface must have a static IP address.

This section describes the following:

- Configuring a DHCP relay agent
- Configuring a DHCP server

Configuring a DHCP relay agent

In a DHCP relay configuration, the FortiWiFi unit forwards DHCP requests from DHCP clients through the FortiWiFi unit to a DHCP server. The FortiWiFi unit also returns responses from the DHCP server to the DHCP clients. The DHCP server must have a route to the FortiWiFi unit that is configured as the DHCP relay so that the packets sent by the DHCP server to the DHCP client arrive at the FortiWiFi performing DHCP relay.

To configure an interface as a DHCP relay agent

1. Go to **System > Network > DHCP**.
2. Select Service.
3. Select the interface to be the DHCP relay agent.
4. Select DHCP Relay Agent.
5. Enter the DHCP Server IP address.
6. Select Apply.

Configuring a DHCP server

As a DHCP server, the FortiWiFi unit dynamically assigns IP addresses to hosts located on connected subnets. You can configure a DHCP server for any FortiWiFi interface. You can also configure a DHCP server for more than one FortiWiFi interface. For each DHCP server configuration you can add multiple scopes (also called address scopes) so that the DHCP server can assign IP addresses to computers on multiple subnets.

Use these procedures to configure an interface as a DHCP server:

- Adding a DHCP server to an interface
- Adding scopes to a DHCP server
- Adding a reserve IP to a DHCP server
- Viewing a DHCP server dynamic IP list

Adding a DHCP server to an interface

To add a DHCP server to an interface

1. Go to **System > Network > DHCP**.
2. Select Service.
3. Select an interface.
4. Select DHCP Server.
5. Select Apply.

Adding scopes to a DHCP server

If you have configured an interface as a DHCP server, the interface requires at least one scope (also called an address scope). The scope designates the starting IP and ending IP for the range of addresses that the FortiWiFi unit assigns to DHCP clients.

You can add multiple scopes to an interface so that the DHCP server added to that interface can supply IP addresses to computers on multiple subnets.

Add multiple scopes if the DHCP server receives DHCP requests from subnets that are not connected directly to the FortiWiFi unit. In this case, the DHCP requests are sent to the FortiWiFi unit through DHCP relay. DHCP relay packets contain DHCP relay IP, which is the IP address of the subnet from which the DHCP relay received the request.

If the DHCP request received by the DHCP server is not forwarded by a DHCP relay, the DHCP server decides which scope to use based on the IP address of the interface that received the DHCP request; usually the scope with the same subnet as the interface.

If the DHCP request received by the server is forwarded by a DHCP relay, the relay IP is used to select the scope.

To add a scope to a DHCP server

1. Go to **System > Network > DHCP**.
2. Select Address Scope.

3 Select an interface.

You must configure the interface as a DHCP server before it can be selected.

4 Select New to add an address scope.

5 Configure the address scope.

Scope Name	Enter the address scope name.
IP Pool	Enter the starting IP and ending IP for the range of IP addresses that this DHCP server assigns to DHCP clients.
Netmask	Enter the netmask that the DHCP server assigns to the DHCP clients.
Lease Duration	Enter the interval, in days, hours and minutes, after which a DHCP client must ask the DHCP server for a new address. If you select Unlimited, DHCP leases never expire.
Domain	Optionally enter in the domain that the DHCP server assigns to the DHCP clients.
Default Route	Enter the default route to be assigned to DHCP clients. The default route must be on the same subnet as the IP pool.

6 Select Advanced if you want to configure Advanced Options.

DNS IP	Enter the addresses of up to 3 DNS servers that the DHCP server assigns to the DHCP clients.
WINS Server IP	Add the IP addresses of one or two WINS servers to be assigned to DHCP clients.
Exclusion Range	Optionally enter up to 4 exclusion ranges of IP addresses within the IP pool that cannot be assigned to DHCP clients.

7 Select OK.

Adding a reserve IP to a DHCP server

If you have configured an interface as a DHCP server, you can reserve an IP address for a particular device on the network according to the MAC address of the device. When you add the MAC address of a device and an IP address to the reserve IP list, the DHCP server always assigns this IP address to the device.

To add a reserve IP you must first select the interface and scope to which you want to add the reserve IP.

To add a reserve IP to a DHCP server

1 Go to **System > Network > DHCP**.

2 Select Reserve IP.

3 Select an interface.

You must configure the interface as a DHCP server before you can select it.

4 Select a scope.

You must configure an address scope for the interface before you can select it.

5 Select New to add a reserved IP.

6 Configure the reserved IP.

IP	Enter an IP address. The IP address must be within the IP pool added to the selected scope.
MAC	Enter the MAC address of the device.
Name	Optionally, specify a name for the IP and MAC address pair.

Note: The reserved IP cannot be assigned to any other device. You can only add a given IP address or MAC address once.

7 Select OK.

Viewing a DHCP server dynamic IP list

You can view the list of IP addresses that the DHCP server has assigned, their corresponding MAC addresses, and the expiry time and date for these addresses.

To view a DHCP server dynamic IP list

1 Go to **System > Network > DHCP**.

2 Select Dynamic IP.

3 Select the interface for which you want to view the list.

Configuring the modem interface

You can connect a modem to the FortiWiFi unit and use it as either a backup interface or standalone interface.

- In backup mode, the modem interface automatically takes over from a selected ethernet interface when that ethernet interface is unavailable.
- In standalone mode, the modem interface is the connection from the FortiWiFi unit to the Internet.

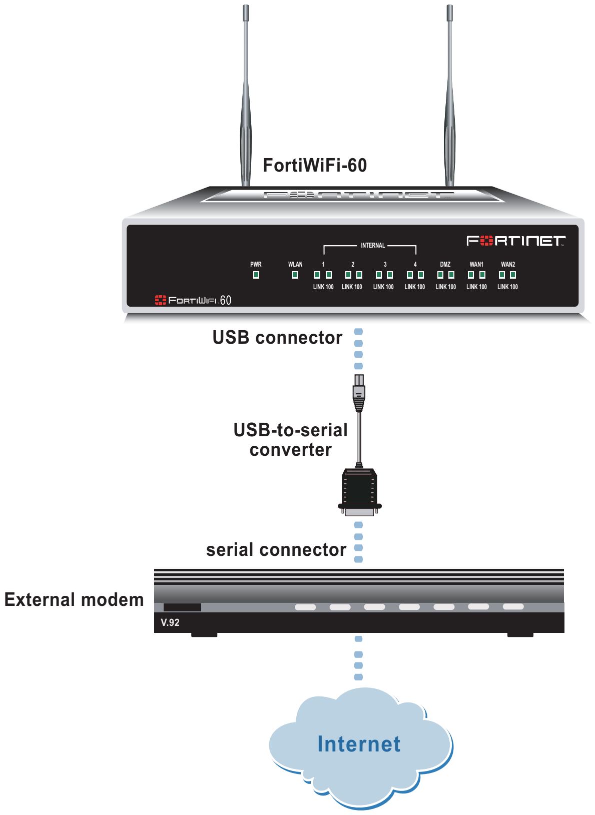
When connecting to the ISP, in either configuration, the FortiWiFi unit modem can automatically dial up to three dialup accounts until the modem connects to an ISP.

- Connecting a modem to the FortiWiFi unit
- Configuring modem settings
- Connecting to a dialup account
- Disconnecting the modem
- Viewing modem status
- Backup mode configuration
- Standalone mode configuration
- Adding firewall policies for modem connections

Connecting a modem to the FortiWiFi unit

The FortiWiFi unit can operate with most standard external serial interface modems that support standard Hayes AT commands. To connect, install a USB-to-serial converter between one of the two USB ports on the FortiWiFi unit and the serial port on the modem. The FortiWiFi unit does not support a direct USB connection between the two devices.

Figure 10: Example modem interface network connection



Configuring modem settings

Configure modem settings so that the FortiWiFi unit uses the modem to connect to your ISP dialup accounts. You can configure the modem to connect to up to three dialup accounts. You can also enable and disable FortiWiFi modem support, configure how the modem dials, and select the FortiWiFi interface that the modem is redundant for.

To configure modem settings

1. Go to **System > Network > Modem**.
2. Select Enable USB Modem.
3. Change any of the following dialup connection settings:

Redial Limit The maximum number of times (1-10) that the FortiWiFi unit dials the ISP to restore an active connection on the modem interface. The default redial limit is 1. Select None to allow the modem to never stop redialing.

Holddown Timer For backup configurations. The time (1-60 seconds) that the FortiWiFi unit waits before switching from the modem interface to the primary interface, after the primary interface has been restored. The default is 1 second. Configure a higher value if you find the FortiWiFi unit switching repeatedly between the primary interface and the modem interface.

Redundant for To associate the modem interface with the ethernet interface that you want to either back up (backup configuration) or replace (standalone configuration).

4 Enter the following Dialup Account 1 settings:

Phone Number The phone number required to connect to the dialup account. Do not add spaces to the phone number. Make sure to include standard special characters for pauses, country codes, and other functions as required by your modem to connect to your dialup account.

User Name The user name (maximum 63 characters) sent to the ISP.

Password The password sent to the ISP.

5 If you have multiple dialup accounts, enter Phone Number, User Name, and Password for Dialup Account 2 and Dialup Account 3.

6 Select Apply.

Connecting to a dialup account

Use the following procedure to connect the modem to a dialup account.

To connect to a dialup account

1 Go to **System > Network > Modem**.

2 Select Enable USB Modem.

3 Make sure there is correct information in one or more Dialup Accounts.

4 Select Apply if you make any configuration changes.

5 Select Dial Up.
The FortiWiFi unit initiates dialing into each dialup account in turn until the modem connects to an ISP.

Disconnecting the modem

Use the following procedure to disconnect the modem from a dialup account.

To disconnect the modem

1 Go to **System > Network > Modem**.

2 Select Hang Up if you want to disconnect from the dialup account.

Viewing modem status

To view the status of the modem connection go to **System > Network > Modem**.

Modem status is one of the following:

not active The modem interface is not connected to the ISP.

active The modem interface is attempting to connect to the ISP, or is connected to the ISP.

A green check mark indicates the active dialup account.

The IP address and netmask assigned to the modem interface appears on the System Network Interface page of the web-based manager.

Backup mode configuration

The modem interface in backup mode backs up a selected ethernet interface. If that ethernet interface disconnects from its network, the modem automatically dials the configured dialup accounts. When the modem connects to a dialup account, the FortiWiFi unit routes IP packets normally destined for the selected ethernet interface to the modem interface.

The FortiWiFi unit disconnects the modem interface and switches back to the ethernet interface when the ethernet interface can again connect to its network.

For the FortiWiFi unit to be able to switch from an ethernet interface to the modem you must select the name of the interface in the modem configuration and configure a ping server for that interface. You must also configure firewall policies for connections between the modem interface and other FortiWiFi interfaces.

Note: Do not add policies for connections between the modem interface and the interface that the modem is backing up.

To configure backup mode

1. Go to **System > Network > Modem**.
2. From the Redundant for list, select the ethernet interface that you want the modem to back up.
3. Configure other modem settings as required.
   See "Configuring modem settings" on page 130.
4. Configure a ping server for the ethernet interface selected in step 2.
   See "Adding a ping server to an interface" on page 117.
5. Configure firewall policies for connections to the modem interface.
   See "Adding firewall policies for modem connections" on page 133.

Standalone mode configuration

In standalone mode, you manually connect the modem to a dialup account. The modem interface operates as the primary connection to the Internet. The FortiWiFi unit routes traffic through the modem interface, which remains permanently connected to the dialup account.

If the connection to the dialup account fails, the FortiWiFi unit redials the modem. The modem redials the number of times specified by the redial limit, or until it connects to a dialup account.

In standalone mode the modem interface replaces the WAN1 or WAN2 ethernet interface. When configuring the modem, you must set Redundant for to the name of the ethernet interface that the modem interface replaces. You must also configure firewall policies for connections between the modem interface and other FortiWiFi interfaces.

Note: Do not add a default route to the ethernet interface that the modem interface replaces.

Note: Do not add firewall policies for connections between the ethernet interface that the modem replaces and other interfaces.

To operate in standalone mode

1. Go to **System > Network > Modem**.
2. From the Redundant for list, select the ethernet interface that the modem is replacing.
3. Configure other modem settings as required.
   See “Configuring modem settings” on page 130.
   Make sure there is correct information in one or more Dialup Accounts.
4. Select Dial Up.
   The FortiWiFi unit initiates dialing into each dialup account in turn until the modem connects to an ISP.
5. Configure firewall policies for connections to the modem interface.
   See “Adding firewall policies for modem connections” on page 133.

Adding firewall policies for modem connections

The modem interface requires firewall addresses and policies. You can add one or more addresses to the modem interface. For information about adding addresses, see “Adding addresses” on page 169. When you add addresses, the modem interface appears on the policy grid.

You can configure firewall policies to control the flow of packets between the modem interface and the other interfaces on the FortiWiFi unit. For information about adding firewall policies, see “Adding firewall policies” on page 162.

RIP configuration

The FortiWiFi implementation of the Routing Information Protocol (RIP) supports both RIP version 1 as defined by RFC 1058, and RIP version 2 as defined by RFC 2453. RIP version 2 enables RIP messages to carry more information, and to support simple authentication and subnet masks.

RIP is a distance-vector routing protocol intended for small, relatively homogeneous, networks. RIP uses hop count as its routing metric. Each network is usually counted as one hop. The network diameter is limited to 15 hops.

This chapter describes how to configure FortiWiFi RIP:

- RIP settings
- Configuring RIP for FortiWiFi interfaces
- Adding RIP filters

RIP settings

To configure RIP on the FortiWiFi unit

1 Go to **System > RIP > Settings**.

2 Select Enable RIP.

When you enable RIP, the FortiWiFi unit starts the RIP process. The FortiWiFi unit does not send or receive RIP packets until you enable RIP on at least one interface. For information about configuring RIP, see “Configuring RIP for FortiWiFi interfaces” on page 137.

3 Select Enable Advertise Default if you want RIP to always send the default route to neighbors whether or not the default route is in the static routing table.

If you disable Advertise Default, RIP never sends the default route.

4 Change the following RIP default settings, as required.

RIP defaults are effective in most configurations. You should only have to change these settings to troubleshoot problems with the RIP configuration.

Default Metric RIP uses the default metric to advertise routes learned from other routing protocols. Set Default Metric to a positive integer lower than 16 to advertise that metric for all routes learned from other routing protocols. The default setting for the Default Metric is 2.

Input Queue Change the depth of the RIP input queue. The higher the number, the deeper the input queue. Change the input queue depth to prevent loss of information from the routing table when you have a FortiWiFi unit sending at high speed to a router that cannot receive at high speed. The range is 0 to 1024. The default input queue depth is 50. A queue size of 0 means there is no input queue.

Output Delay Add a delay in milliseconds between packets in a multiple-packet RIP update. Add an output delay if you are configuring RIP on a FortiWiFi unit that could be sending packets to a router that cannot receive the packets at the rate the FortiWiFi unit is sending them. Output Delay can be from 8 to 50 milliseconds. The default output delay is 0 milliseconds.

5 Change the following RIP timer settings, as required.

RIP timer defaults are effective in most configurations. You should only have to change these timers to troubleshoot network routing problems. All routers and access servers in the network should have the same RIP timer settings.

Update The time interval in seconds between RIP updates. The default is 30 seconds.

Invalid The time interval in seconds after which a route is declared invalid. Invalid should be at least three times the value of Update.

During the invalid interval, after the first update is missed and before the invalid timer expires, the route is marked inaccessible and advertised as unreachable; however, the route is still used for forwarding packets. The invalid interval allows for the loss of one or more update packets before RIP considers the route unusable. If RIP receives an update for a route, before the invalid timer expires, it resets the invalid timer to 0. The default for Invalid is 180 seconds.

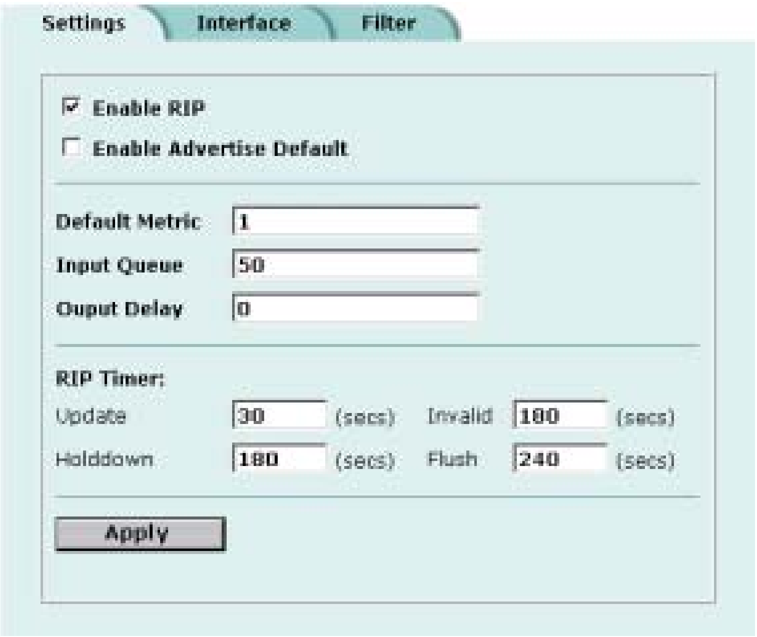
Holddown The time interval in seconds during which RIP ignores routing information for a route. Holddown should be at least three times the value Update.

A route enters the holddown state when RIP receives an update packet indicating that a route is unreachable or when the invalid timer for the route expires. The holddown interval allows time for bad routing information to clear the network during network convergence. The route is marked inaccessible and advertised as unreachable and is no longer used for forwarding packets. The default for Holddown is 180 seconds.

Flush The time in seconds that must elapse after the last update for a route before RIP removes the route from the routing table. Flush should be greater than the value of Invalid to allow the route to go into the holddown state. The default for Flush is 240 seconds.

6 Select Apply to save the changes.

Figure 1: Configuring RIP settings



☑ Enable RIP

□ Enable Advertise Default

Default Metric 1

Input Queue 50

Ouput Delay 0

RIP Timer:

Update 30 (secs) Invalid 180 (secs)

Holddown 180 (secs) Flush 240 (secs)

Configuring RIP for FortiWiFi interfaces

You can customize a RIP configuration for each FortiWiFi interface. This allows you to customize RIP for the network to which each interface is connected.

To configure RIP for FortiWiFi interfaces

1 Go to **System > RIP > Interface**.
On this page you can view a summary of the RIP settings for each FortiWiFi interface.

2 Select Modify for the interface for which to configure RIP settings.

3 Configure any of the following RIP settings:

RIP1 Send Enables sending RIP version 1 broadcasts from this interface to the network it is connected to. The routing broadcasts are UDP packets with a destination port of 520.

RIP1 Receive Enables listening on port 520 of an interface for RIP version 1 broadcasts.

RIP2 Send Enables sending RIP version 2 broadcasts from this interface to the network it is connected to. The routing broadcasts are UDP packets with a destination port of 520.

RIP2 Receive Enables listening on port 520 of an interface for RIP version 2 broadcasts.

Split-Horizon Prevents RIP from sending updates for a route back out the interface from which it received those routes. Split horizon is enabled by default. You should only disable split horizon if there is no possibility of creating a counting to infinity loop when network topology changes.

Authentication Enables authentication for RIP version 2 packets sent and received by an interface. Because the original RIP standard does not support authentication, authentication is only available for RIP version 2.

Password Enter the password to be used for RIP version 2 authentication. The password can be up to 16 characters long.

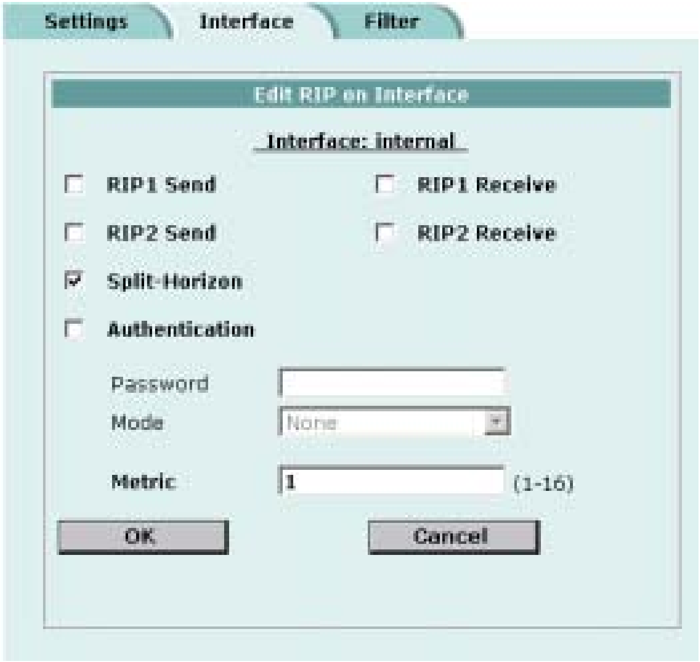
Mode Defines the authentication used for RIP version 2 packets sent and received by this interface. If you select Clear, the password is sent as plain text. If you select MD5, the password is used to generate an MD5 hash.

MD5 only guarantees the authenticity of the update packet, not the confidentiality of the routing information in the packet.

Metric Changes the metric for routes sent by this interface. All routes sent from this interface have this metric added to their current metric value. You can change the interface metric to give a higher priority to an interface. For example, if you have two interfaces that can be used to route packets to the same destination, and you set the metric of one interface higher than the other, the routes to the interface with the lower metric will seem to have a lower cost. More traffic will use routes to the interface with the lower metric. Metric can be from 1 to 16 with 16 equalling unreachable.

4 Select OK to save the RIP configuration for the selected interface.

Figure 2: Example RIP configuration for an internal interface



Edit RIP on Interface

Interface: internal

☐ RIP1 Send ☐ RIP1 Receive

☐ RIP2 Send ☐ RIP2 Receive

☑ Split-Horizon

☐ Authentication

Password

Mode None

Metric 1 (1-16)

Adding RIP filters

Use the Filter page to create RIP filter lists and assign RIP filter lists to the neighbors filter, incoming route filter, or outgoing route filter. The neighbors filter allows or denies updates from other routers. The incoming filter accepts or rejects routes in an incoming RIP update packet. The outgoing filter allows or denies adding routes to outgoing RIP update packets.

Each entry in a RIP filter list consists of a prefix (IP address and netmask), the action RIP should take for this prefix (allow or deny), and the interface to which to apply this RIP filter list entry. When RIP applies a filter while processing an update packet, it starts at the top of the filter list and works down through the list looking for a matching prefix. If RIP finds a matching prefix, it then checks that the interface in the filter list entry matches the interface that the packet is received or sent on. If both prefix and interface match, RIP takes the action specified. If no match is found, the default action is allow.

- For the neighbors filter, RIP attempts to match prefixes in the filter list against the source address in the update packet.
- For the incoming filter, RIP attempts to match prefixes in the filter list against prefixes in the routing table entries in the update packet.
- For the outgoing filter, RIP attempts to match prefixes in the filter list against prefixes in the RIP routing table.

You can add up to four RIP filter lists to the FortiWiFi RIP configuration. You can then select one RIP filter list for each RIP filter type: neighbors, incoming routes, outgoing routes. If you do not select a RIP filter list for any of the RIP filter types, no filtering is applied.

Note: To block all updates not specifically allowed in a filter list, create an entry at the bottom of the filter list with a prefix with 0.0.0.0 for the IP address, 0.0.0.0 for the netmask, and action set to deny. Because RIP uses the first match it finds in a top down search of the filter list, all the allowed entries are matched first, and all other entries for the specified interface are matched by the last entry and denied. Create a separate entry at the bottom of the filter list for each interface for which you want to deny all updates not specifically allowed.

This section describes:

- Adding a RIP filter list
- Assigning a RIP filter list to the neighbors filter
- Assigning a RIP filter list to the incoming filter
- Assigning a RIP filter list to the outgoing filter

Adding a RIP filter list

Each entry in a RIP filter list consists of a prefix (IP address and netmask), the action RIP should take for this prefix (allow or deny), and the interface to which to apply this RIP filter list entry.

To add a RIP filter list

1. Go to **System > RIP > Filter**.
2. Select New to add a RIP filter.

3. For Filter Name, type a name for the RIP filter list.

   The name can be 15 characters long and can contain upper and lower case letters, numbers, and special characters. The name cannot contain spaces.

4. Select the Blank Filter check box to create a RIP filter list with no entries, or enter the information for the first entry on the RIP filter list.
5. Enter the IP address and Mask to create the prefix.
6. For Action, select allow or deny.
7. For Interface, enter the name of the interface to which to apply the entry.
8. Select OK to save the RIP filter list.

To add an entry to a RIP filter list

1. Go to **System > RIP > Filter**.
2. For the RIP filter list name, select ⊞ Add Prefix to add an entry to the filter list.
3. Enter the IP address and Mask to create the prefix.
4. For Action, select allow or deny.
5. For Interface, enter the name of the interface to which to apply the entry.
6. Select OK to add the entry to the RIP filter list.
7. Repeat steps 2 to 6 to add entries to the RIP filter list.

Assigning a RIP filter list to the neighbors filter

The neighbors filter allows or denies updates from other routers. You can assign a single RIP filter list to the neighbors filter.

To assign a RIP filter list to the neighbors filter

1. Go to **System > RIP > Filter**.
2. Add RIP filter lists as required.
3. For Neighbors Filter, select the name of the RIP filter list to assign to the neighbors filter.
4. Select Apply.

Assigning a RIP filter list to the incoming filter

The incoming filter accepts or rejects routes in an incoming RIP update packet. You can assign a single RIP filter list to the incoming filter.

To assign a RIP filter list to the incoming filter

1. Go to **System > RIP > Filter**.
2. Add RIP filter lists as required.
3. For Incoming Routes Filter, select the name of the RIP filter list to assign to the incoming filter.
4. Select Apply.