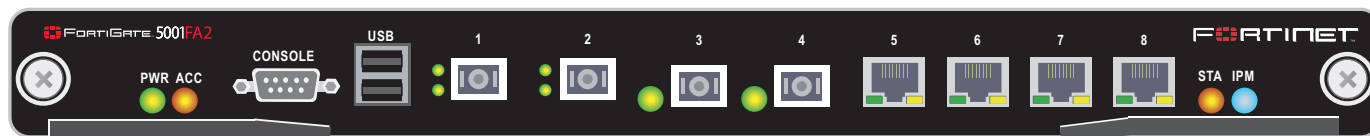


Security System Guide

FortiGate-5001FA2



A detailed guide to the FortiGate-5001FA2 Security System. This *FortiGate-5001FA2 Security System Guide* describes FortiGate-5001FA2 hardware features, how to install the FortiGate-5001FA2 board in a FortiGate-5000 series chassis, how to configure the FortiGate-5001FA2 security system for your network, and contains troubleshooting information to help you diagnose and fix problems.

The most recent versions of this and all FortiGate-5000 series documents are available from the [FortiGate-5000](http://docs.forticare.com) page of the [Fortinet Technical Documentation](http://docs.forticare.com) web site (<http://docs.forticare.com>).

Visit <http://support.fortinet.com> to register your FortiGate-5001FA2 system. By registering you can receive product updates, technical support, and FortiGuard services.

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Warnings and cautions

Only trained and qualified personnel should be allowed to install or maintain FortiGate-5000 series equipment. Read and comply with all warnings, cautions and notices in this document.



CAUTION: Risk of Explosion if Battery is replaced by an Incorrect Type. Dispose of Used Batteries According to the Instructions.



Caution: You should be aware of the following cautions and warnings before installing FortiGate-5000 series hardware

- Turning off all power switches may not turn off all power to the FortiGate-5000 series equipment. Except where noted, disconnect the FortiGate-5000 series equipment from all power sources, telecommunications links and networks before installing, or removing FortiGate-5000 series components, or performing other maintenance tasks. Failure to do this can result in personal injury or equipment damage. Some circuitry in the FortiGate-5000 series equipment may continue to operate even though all power switches are off.
- An easily accessible disconnect device, such as a circuit breaker, should be incorporated into the data center wiring that connects power to the FortiGate-5000 series equipment.
- Install FortiGate-5000 series chassis at the lower positions of a rack to avoid making the rack top-heavy and unstable.
- Do not insert metal objects or tools into open chassis slots.
- Electrostatic discharge (ESD) can damage FortiGate-5000 series equipment. Only perform the procedures described in this document from an ESD workstation. If no such station is available, you can provide some ESD protection by wearing an anti-static wrist strap and attaching it to an ESD connector or to a metal part of a FortiGate chassis.
- Some FortiGate-5000 series components may overload your supply circuit and impact your overcurrent protection and supply wiring. Refer to nameplate ratings to address this concern.
- Make sure all FortiGate-5000 series components have reliable grounding. Fortinet recommends direct connections to the branch circuit.
- If you install a FortiGate-5000 series component in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Make sure the operating ambient temperature does not exceed the manufacturer's maximum rated ambient temperature.
- Installing FortiGate-5000 series equipment in a rack should be such that the amount of airflow required for safe operation of the equipment is not compromised. Refer to the ATCA specification for more information about cooling and airflow requirements.
- This equipment is for installation only in a Restricted Access Location (dedicated equipment room, service closet or the like), in accordance with the National Electrical Code.
- Per the National Electrical Code, sizing of a Listed circuit breaker or branch circuit fuse and the supply conductors to the equipment is based on the marked input current rating. A product with a marked input current rating of 25 A is required to be placed on a 40 A branch circuit. The supply conductors will also be sized according to the input current rating and also derated for the maximum rated operating ambient temperature, T_{ma}, of the equipment.
- FortiGate-5000 series equipment shall be installed and connected to an electrical supply source in accordance with the applicable codes and regulations for the location in which it is installed. Particular attention shall be paid to use of correct wire type and size to comply with the applicable codes and regulations for the installation / location. Connection of the supply wiring to the terminal block on the equipment may be accomplished using Listed wire compression lugs, for example, Pressure Terminal Connector made by Ideal Industries Inc. or equivalent which is suitable for AWG 10. Particular attention shall be given to use of the appropriate compression tool specified by the compression lug manufacturer, if one is specified.

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FortiGate-5001FA2 security system

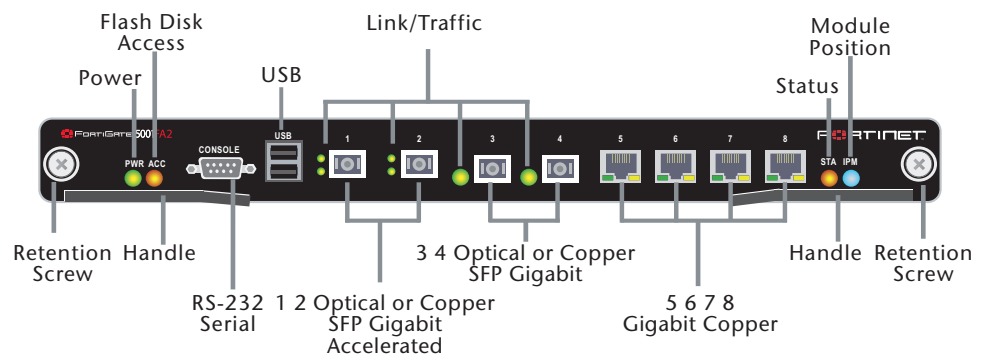
The FortiGate-5001FA2 security system is a high-performance FortiGate security system with a total of 8 front panel gigabit ethernet interfaces and two base backplane interfaces. Use the front panel interfaces for connections to your networks and the backplane interfaces for communication between FortiGate-5000 series boards over the FortiGate-5000 chassis backplane.

You can also configure two or more FortiGate-5001FA2 boards to create a high availability (HA) cluster using the base backplane interfaces for HA heartbeat communication through chassis backplane, leaving all eight front panel gigabit interfaces available for network connections.

FortiGate-5001FA2 front panel interfaces 1 and 2 also include accelerated packet forwarding and policy enforcement for faster small packet performance.

The FortiGate-5001FA2 board also supports high-end FortiGate features including 802.1Q VLANs, multiple virtual domains, 802.3ad aggregate interfaces, and FortiGate-5000 chassis monitoring.

Figure 1: FortiGate-5001FA2 front panel



The FortiGate-5001FA2 board includes the following features:

- A total of eight front panel gigabit interfaces
 - Two accelerated packet forwarding and policy enforcement gigabit interfaces that can accept optical Small Formfactor Pluggable (SFP) or copper SFP gigabit transceivers (interfaces 1 and 2)
 - Two gigabit interfaces that can accept optical or copper SFP gigabit transceivers (interfaces 3 and 4)
 - Four 10/100/1000Base-T gigabit copper network interfaces (interfaces 5, 6, 7, 8)
- Two base backplane gigabit interfaces (port9 and port10) for HA heartbeat and data communications across the FortiGate-5000 chassis backplane.
- DB-9 RS-232 serial console connection
- One USB connector
- Mounting hardware
- LED status indicators

The FortiGate-5001FA2 board comes supplied with four optical or four copper SFP transceivers. Before you can connect FortiGate-5001FA2 interfaces 1 to 4, you must insert the SFP transceivers into the FortiGate-5001FA2 front panel cage slots numbered 1 to 4.

The FortiGate-5001FA2 board ships with two RAM DIMMs installed on the FortiGate-5001FA2 circuit board. You should confirm that the RAM DIMMs are installed correctly before inserting the FortiGate-5001FA2 board into a chassis.

Front panel LEDs and connectors

From the FortiGate-5001FA2 front panel you can view the status of the front panel LEDs to verify that the board is functioning normally. You also connect the FortiGate-5001FA2 board to your network through the front panel ethernet connectors. The front panel also includes the RS-232 console port for connecting to the FortiOS CLI and a USB port. The USB port can be used with a Fortinet USB key. For information about using the FortiUSB key, see the [FortiGate-5000 Series Firmware and FortiUSB Guide](#).

LEDs

[Table 1](#) lists and describes the FortiGate-5001FA2 board LEDs.

Table 1: FortiGate-5001FA2 board LEDs

LED	State	Description
PWR	Green	The FortiGate-5001FA2 board is powered on.
ACC	Off or Flashing red	The ACC LED flashes red when the FortiGate-5001FA2 board accesses the FortiOS flash disk. The FortiOS flash disk stores the current FortiOS firmware build and configuration files. The system accesses the flash disk when starting up, during a firmware upgrade, or when an administrator is using the CLI or GUI to change the FortiOS configuration. Under normal operating conditions this LED flashes occasionally, but is mostly off.
STA	Green	Normal operation.
	Red	The FortiGate-5001FA2 is booting or a fault condition exists.
IPM	Blue	The FortiGate-5001FA2 is ready to be hot-swapped (removed from the chassis). If the IPM light is blue and no other LEDs are lit the FortiGate-5001FA2 board has lost power, possibly because of a loose or incorrectly aligned left handle. See "Inserting a FortiGate-5001FA2 board into a chassis" on page 13 for more information.
	Flashing Blue	The FortiGate-5001FA2 is changing from hot swap to running mode or from running mode to hot swap.
	Off	Normal operation. The FortiGate-5001FA2 board is in contact with the chassis backplane.
1, 2, 3, 4	Green	The correct cable is connected to the gigabit SFP interface.
	Flashing	Network activity at the gigabit SFP interface.

Table 1: FortiGate-5001FA2 board LEDs (Continued)

LED		State	Description
5, 6, 7, 8	Link LED	Green	The correct cable is inserted into this interface and the connected equipment has power.
		Flashing	Network activity at this interface.
	Speed LED	Green	The interface is connected at 1000 Mbps.
		Amber	The interface is connected at 100 Mbps.
		Unlit	The interface is connected at 10 Mbps.

Connectors

[Table 2](#) lists and describes the FortiGate-5001FA2 connectors.

Table 2: FortiGate-5001FA2 connectors

Connector	Type	Speed	Protocol	Description
1 and 2	LC SFP	1000Base-SX	Ethernet	Two accelerated gigabit SFP interfaces that can accept optical or copper gigabit transceivers. These interfaces only operate at 1000Mbps. The accelerated interface connectors are inverted compared to connectors 3 and 4. See “Installing SFP transceivers” on page 10 for more information.
3 and 4	LC SFP	1000Base-SX	Ethernet	Two gigabit SFP interfaces that can accept optical or copper gigabit transceivers. These interfaces only operate at 1000Mbps. See “Installing SFP transceivers” on page 10 for more information.
5, 6, 7, 8	RJ-45	10/100/1000 Base-T	Ethernet	Copper gigabit connection to 10/100/1000Base-T copper networks.
CONSOLE	DB-9	9600 bps	RS-232 serial	Serial connection to the command line interface.
USB	USB			FortiUSB key firmware updates and configuration backup.

Accelerated packet forwarding and policy enforcement

FortiGate-5001FA2 Accelerated packet forwarding and policy enforcement results in accelerated small packet performance required for voice, video, and other multimedia streaming applications. The following traffic scenarios are recommended for the accelerated interfaces:

- Small packet applications, such as voice over IP (VoIP).
The FortiGate-5001FA2 accelerated interfaces provide wire speed performance for small packet applications.
- Latency sensitive applications, such as multimedia.
The FortiGate-5001FA2 accelerated interfaces add much less latency than normal (non-accelerated) interfaces.

- Session Oriented Traffic with long session lifetime, such as FTP sessions.
Packet size does not affect performance for traffic with long session lifetime. For long sessions, processing that would otherwise be handled by the FortiGate-5001FA2 CPUs is off-loaded to the acceleration module.
- Firewall and intrusion protection (IPS), when there is a reasonable percentage of P2P packets.
- Firewall, intrusion protection (IPS), and antivirus, when there is a reasonable percentage of P2P packets.
- Firewall and IPSec VPN applications.

The following traffic scenarios should be handled by the normal (or non-accelerated) FortiGate-5001FA2 interfaces:

- Session oriented traffic when the session lifetime is very short.
- Firewall and antivirus only applications.

Traffic will not be off-loaded to the FortiGate-5001FA2 accelerator module. The result will be high CPU usage because of the high CPU requirement for antivirus scanning.

FA2 interfaces and active-active HA performance

FortiOS v3.0 MR4 firmware can also use FA2 acceleration to improve active-active HA load balancing performance. See the [FortiGate HA Overview](#) or the [FortiGate HA Guide](#) for more information.

Base backplane gigabit communication

The FortiGate-5001FA2 port9 and port10 base backplane gigabit interfaces can be used for HA heartbeat communication between FortiGate-5001FA2 boards installed in the same or in different FortiGate-5000 chassis. You can also configure FortiGate-5001FA2 boards to use the base backplane interfaces for data communication between FortiGate boards. To support base backplane communications your FortiGate-5140 or 5050 chassis must include one or more FortiSwitch-5003 boards. FortiSwitch-5003 boards are installed in chassis slots 1 and 2. The FortiGate-5020 chassis supports base backplane communication with no additions or changes to the chassis.

For information about base backplane communication in FortiGate-5140 and FortiGate-5050 chassis, see the [FortiGate-5000 Base Backplane Communication Guide](#). For information about the FortiSwitch-5003 board, see the [FortiSwitch-5003 Guide](#).

Hardware installation

Before use, the FortiGate-5001FA2 board must be correctly inserted into an Advanced Telecommunications Computing Architecture (ACTA) chassis such as the FortiGate-5140, FortiGate-5050, or FortiGate-5020 chassis.

Before inserting the board into a chassis you should make sure RAM DIMMs are installed and FortiGate-5001FA2 jumpers are set. SFP transceivers must also be installed for interfaces 1 to 4 before these interfaces can be connected to network devices.

This section describes:

- [RAM DIMMs](#)
- [Installing SFP transceivers](#)
- [Changing FortiGate-5001FA2 jumper settings](#)
- [Inserting a FortiGate-5001FA2 board into a chassis](#)
- [Removing a FortiGate-5001FA2 board from a chassis](#)
- [Troubleshooting](#)

RAM DIMMs

The FortiGate-5001FA2 board ships with two RAM DIMMs installed on the FortiGate-5001FA2 circuit board. You should confirm that the RAM DIMMs are installed correctly before inserting the FortiGate-5001FA2 board into a chassis.

To install FortiGate-5001FA2 RAM DIMMs

To complete this procedure, you need:

- A FortiGate-5001FA2 board
- Two RAM DIMMs to be installed into the FortiGate-5001FA2 board RAM DIMM slots
- An electrostatic discharge (ESD) preventive wrist strap with connection cord



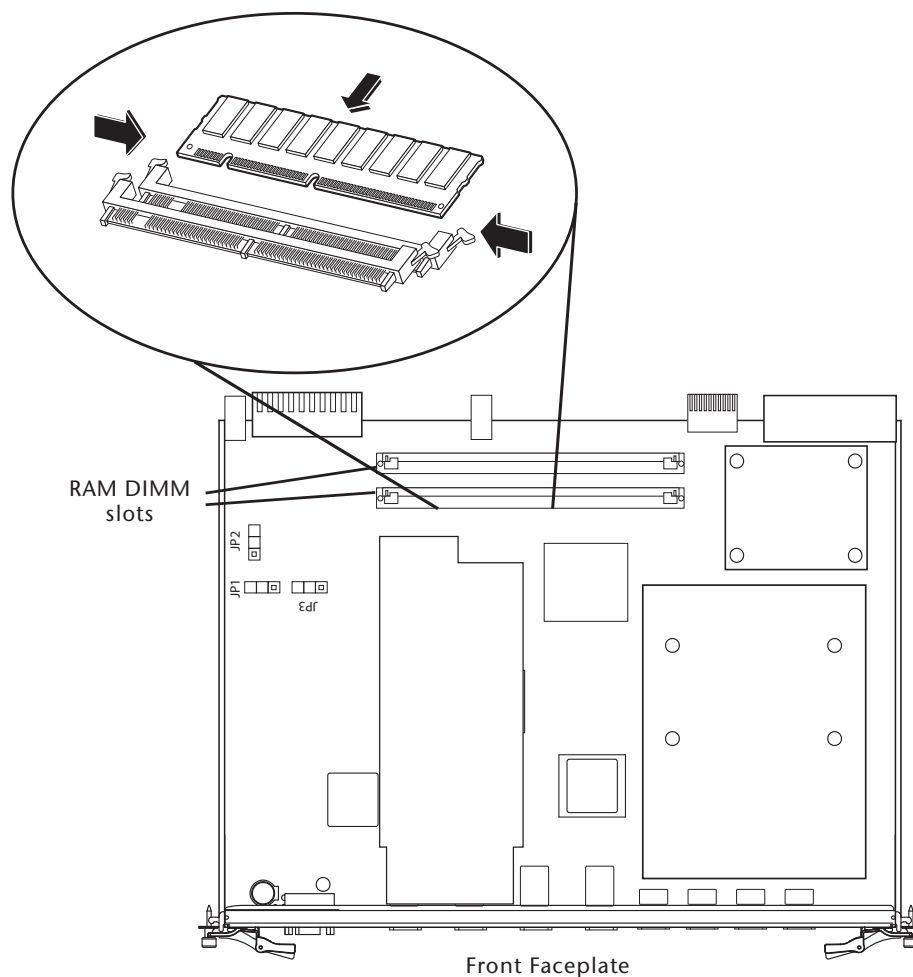
Caution: FortiGate-5001FA2 boards must be protected from static discharge and physical shock. Only handle or work with FortiGate-5001FA2 boards at a static-free workstation. Always wear a grounded electrostatic discharge (ESD) preventive wrist strap when handling FortiGate-5001FA2 boards.

- 1 Attach the ESD wrist strap to your wrist and to an ESD socket or to a bare metal surface on a chassis or frame.



Caution: Handle DIMMs by the edges only. DIMMs are ESD-sensitive components that can be damaged by mishandling.

- 2 Remove RAM DIMMs from their antistatic packaging.

Figure 2: Location of FortiGate-5001FA2 RAM DIMM slots

- 3 Insert each RAM DIMM perpendicular to the RAM DIMM slots. Push the DIMM firmly into place using the minimum amount of force required. When the DIMM is properly seated, the socket guide posts click into place.

Do not use excessive force when installing a DIMM.

The RAM slots allow only one alignment of each RAM DIM. If you cannot lock the locking levers the DIM is not aligned correctly or is in upside-down.

Installing SFP transceivers

The FortiGate-5001FA2 board ships with four SFP transceivers that you must install for normal operation of the FortiGate-5001FA2 board. The SFP transceivers are inserted into cage sockets numbered 1 to 4 on the FortiGate-5001FA2 front panel. You can install the SFP transceivers before or after inserting the FortiGate-5001FA2 board into a FortiGate chassis.



Note: Cage slots 1 and 2 are rotated 180 degrees. Install the transceivers in slots 1 and 2 inverted compared to the orientation of the transceivers in slots 3 and 4.

You can install the following types of SFP transceivers for connectors 1, 2, 3, and 4:

- optical SFP transceivers
 - SFP 1000Base-LX, SM module
 - SFP 1000Base-SX, MM module (multimode)
- copper SFP transceivers
 - SFP 1000Base-T, SERDES version only (SGMII version not supported)

To install SFP transceivers

To complete this procedure, you need:

- A FortiGate-5001FA2 board
- Four SFP transceivers
- An electrostatic discharge (ESD) preventive wrist strap with connection cord



Caution: FortiGate-5001FA2 boards must be protected from static discharge and physical shock. Only handle or work with FortiGate-5001FA2 boards at a static-free workstation. Always wear a grounded electrostatic discharge (ESD) preventive wrist strap when handling FortiGate-5001FA2 boards.

- 1 Attach the ESD wrist strap to your wrist and to an ESD socket or to a bare metal surface on the chassis or frame.
- 2 Remove the caps from SFP cage sockets on the FortiGate-5001FA2 front panel.



Caution: Handling the SFP transceivers by holding the release Latch can damage the connector. Do not force the SFP transceivers into the cage slots. If the transceiver does not easily slide in and click into place, it may not be aligned correctly. If this happens, remove the SFP transceiver, realign it and slide it in again.

- 3 For cage slots 1 and 2, hold the sides of the SFP transceiver and slide SFP transceiver into the cage socket until it clicks into place.
- 4 For cage slots 3 to 8, turn each SFP transceiver over before sliding it into the cage slot until it locks into place.

Changing FortiGate-5001FA2 jumper settings

The JP3 jumper on the FortiGate-5001FA2 board is factory set by Fortinet into one of two positions (see [Figure 3 on page 12](#)):

- For a FortiGate-5140 or FortiGate-5050 chassis, the jumper connects pins 2 and 3
- For a FortiGate-5020 chassis, the jumper connects pins 1 and 2

The jumper must connect pins 2 and 3 if the chassis contains a shelf manager. Both the FortiGate-5140 and the FortiGate-5050 contain shelf managers, and the FortiGate-5020 does not.

If the JP3 jumper settings are incorrect, when you insert the FortiGate-5001FA2 board into a chassis the board may not start up or may not be able to communicate with the chassis shelf manager.

Normally, because the jumpers are factory set, you do not have to change them. However, if you are moving a FortiGate-5001FA2 from a FortiGate-5140 or FortiGate-5050 to a FortiGate-5020 or the reverse, you need to move the JP3 jumper.

Also, if a new FortiGate-5001FA2 board does not function properly, you should check the JP3 jumper settings.

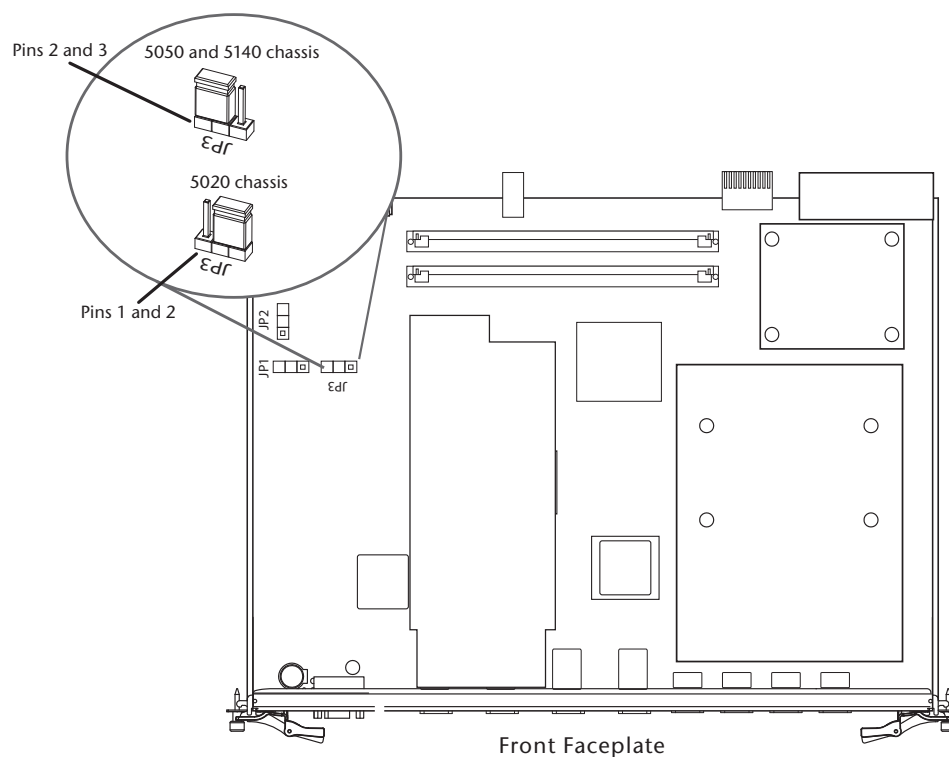
Table 3: FortiGate-5001FA2 JP3 jumper settings for each chassis

Chassis	Correct JP3 Jumper Setting	Result of wrong jumper setting
FortiGate-5140	pins 2 and 3	Shelf manager cannot find FortiGate-5001FA2 board. No chassis information available.
FortiGate-5050	pins 2 and 3	Shelf manager cannot find FortiGate-5001FA2 board. No chassis information available.
FortiGate-5020	pins 1 and 2	FortiGate-5001FA2 board will not start up.



Note: If the shelf manager in a FortiGate-5140 or FortiGate-5050 chassis is missing or not functioning, FortiGate-5001FA2 boards with JP3 jumper connecting pins 2 and 3 will not start up. To operate FortiGate-5001FA2 boards in a FortiGate-5140 or FortiGate-5050 chassis without a shelf manager, set the JP3 jumper to connect pins 1 and 2.

Figure 3: FortiGate-5001FA2 jumper settings



To change or verify the JP3 jumper setting

To complete this procedure, you need:

- A FortiGate-5001FA2 board
- A tool for moving jumpers (optional)
- An electrostatic discharge (ESD) preventive wrist strap with connection cord



Caution: FortiGate-5001FA2 boards must be protected from static discharge and physical shock. Only handle or work with FortiGate-5001FA2 boards at a static-free workstation. Always wear a grounded electrostatic discharge (ESD) preventive wrist strap when handling FortiGate-5001FA2 boards.

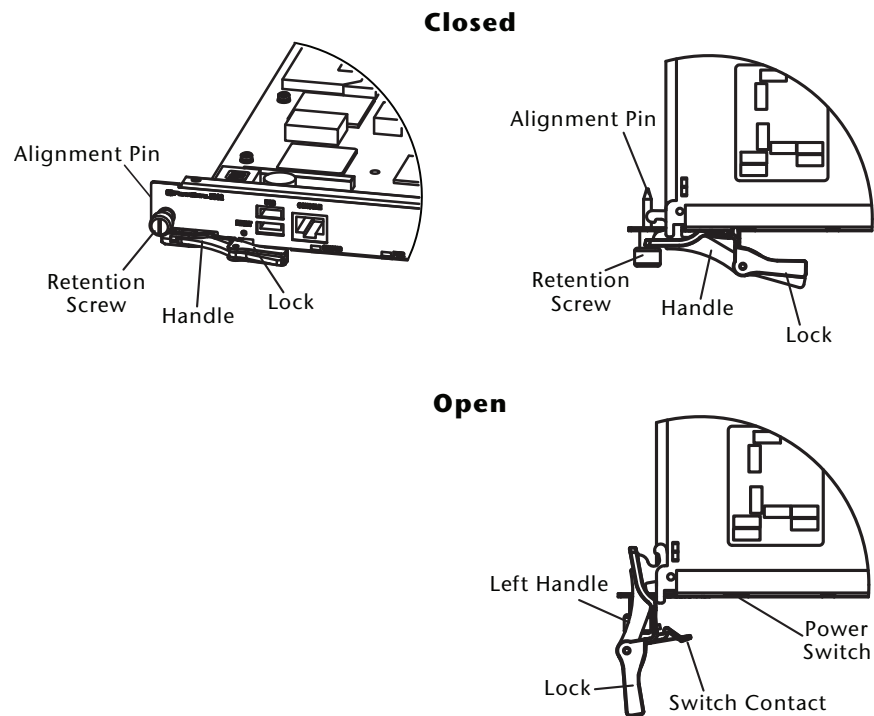
- 1 Attach the ESD wrist strap to your wrist and to an ESD socket or to a bare metal surface on a chassis or frame.
- 2 If you have installed the FortiGate-5001FA2 board in a chassis, remove it.
For removal instructions, see [“Removing a FortiGate-5001FA2 board from a chassis” on page 17](#).
- 3 Use [Figure 3](#) to locate the jumper settings on the circuit board.
- 4 If required, carefully move the jumper to the correct setting.
- 5 You can now insert the board into a chassis and verify that it is operating correctly.
For inserting instructions, see [“Inserting a FortiGate-5001FA2 board into a chassis” on page 13](#).

Inserting a FortiGate-5001FA2 board into a chassis

The following procedure describes how to correctly use the FortiGate-5001FA2 mounting components shown in [Figure 4](#) to insert a FortiGate-5001FA2 board into a FortiGate-5000 series chassis slot.

The FortiGate-5001FA2 board left handle contacts to a hidden power switch. The board must be fully installed in a chassis slot and this handle must be closed and locked for the FortiGate-5001FA2 board to receive power and operate normally. If the FortiGate-5001FA2 board is not receiving power, the IPM LED glows blue and all other LEDs remain off.

It is important to carefully seat the FortiGate-5001FA2 board all the way into the chassis, to not use too much force on the handles, and to make sure that the handles are properly locked and engaged with the hidden power switch. Only then will the FortiGate-5001FA2 board power-on and start up correctly.

Figure 4: FortiGate-5001FA2 mounting components

Before inserting the FortiGate-5001FA2 board in a chassis

Before installing the FortiGate-5001FA2 board in a chassis you should verify that the RAM DIMMs are installed and the JP3 jumper is set correctly. You can also install the SFP transceivers before inserting the board.

- [“RAM DIMMs” on page 9](#)
- [“Installing SFP transceivers” on page 10](#)
- [“Changing FortiGate-5001FA2 jumper settings” on page 11](#)

Insertion procedure

FortiGate-5001FA2 boards are hot swappable. The procedure for inserting the FortiGate-5001FA2 board into a FortiGate-5000 series chassis slot is the same whether or not the FortiGate-5000 series chassis is powered on.

To insert a FortiGate-5001FA2 board into a FortiGate-5000 series chassis



Caution: Do not carry the FortiGate-5001FA2 board by holding the handles. When inserting or removing the FortiGate-5001FA2 board from a chassis slot, handle the board by the front panel. The handles are designed for positioning and locking the FortiGate-5001FA2 board into a slot in a chassis only and should not be used for handling the board. If the handles become bent or damaged the FortiGate-5001FA2 board may not align correctly in the chassis slot and the handles may not activate the power switch.

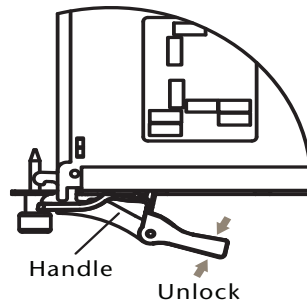
To complete this procedure, you need:

- A FortiGate-5001FA2 board
- A FortiGate-5000 series chassis with an empty slot
- An electrostatic discharge (ESD) preventive wrist strap with connection cord

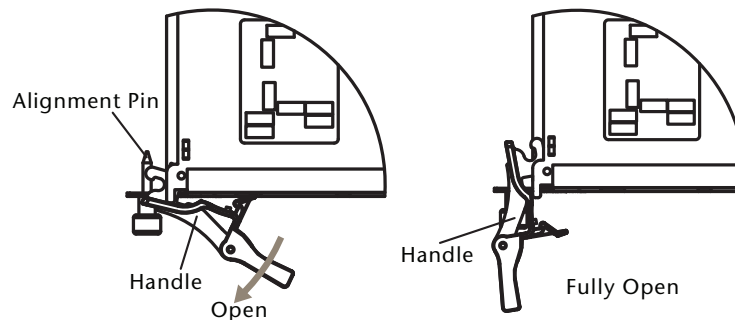


Caution: FortiGate-5001FA2 boards must be protected from static discharge and physical shock. Only handle or work with FortiGate-5001FA2 boards at a static-free workstation. Always wear a grounded electrostatic discharge (ESD) preventive wrist strap when handling FortiGate-5001FA2 boards.

- 1 Attach the ESD wrist strap to your wrist and to an ESD socket or to a bare metal surface on the chassis or frame.
- 2 Unlock the left and right handles by squeezing the handle locks.



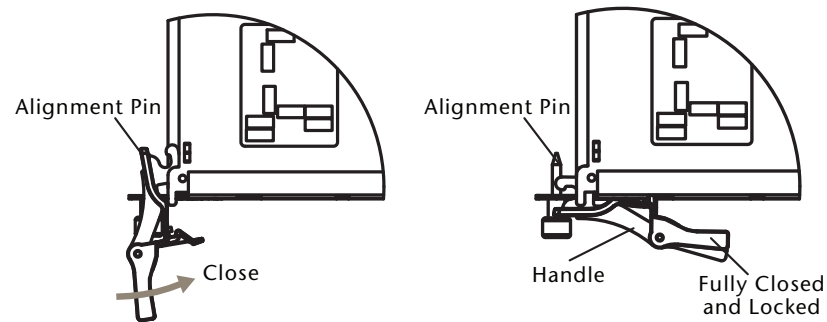
- 3 Open the left and right handles to their fully open positions.



- 4 Insert the FortiGate-5001FA2 board into the empty slot in the chassis.
- 5 Carefully guide the board into the chassis using the rails in the slot.
Insert the board by applying moderate force to the front faceplate (not the handles) to slide the board into the slot. The board should glide smoothly into the chassis. If you encounter any resistance while sliding the board in, the board could be aligned incorrectly. Pull the board back out and try inserting it again.
- 6 Slide the board in until the alignment pins are inserted half way into their sockets in the chassis.
If the chassis is powered on the IPM LED lights up and turns blue.

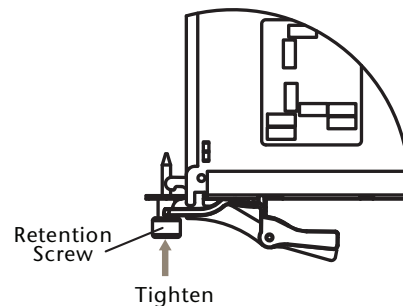
7 Turn both handles to their fully-closed positions.

The handles should hook into the sides of the chassis slot. Closing the handles draws the FortiGate-5001FA2 board into place in the chassis slot and into contact with the chassis backplane. The FortiGate-5001FA2 front panel should be in contact with the chassis front panel. When the handles are fully-closed they lock into place.



If the chassis is powered on, as the board slides into place the IPM LED starts flashing blue.

8 Fully tighten the left and right retention screws to lock the FortiGate-5001FA2 board into position in the chassis slot.



If the chassis is powered on the PWR LED turns green and the STA LED turns red. The ACC LED also starts flashing red. After a few minutes, if the board is operating correctly the front panel LEDs are lit as described in [Table 4](#).

Table 4: FortiGate-5001FA2 normal operating LEDs

LED	State
PWR	Green
ACC	Off (Or flashing red when the system accesses the flash disk.)
STA	Green
IPM	Off

Removing a FortiGate-5001FA2 board from a chassis

The following procedure describes how to correctly use the FortiGate-5001FA2 mounting components shown in [Figure 4](#) to remove a FortiGate-5001FA2 board from a FortiGate-5000 series chassis slot.

To remove a FortiGate-5001FA2 board from a FortiGate-5000 series chassis

FortiGate-5001FA2 boards are hot swappable. The procedure for removing the FortiGate-5001FA2 board from a FortiGate-5000 series chassis slot is the same whether or not the FortiGate-5000 series chassis is powered on.



Caution: Do not carry the FortiGate-5001FA2 board by holding the handles. When inserting or removing the FortiGate-5001FA2 board from a chassis slot, handle the board by the front panel. The handles are designed for positioning and locking the FortiGate-5001FA2 board into a slot in a chassis only and should not be used for handling the board. If the handles become bent or damaged the FortiGate-5001FA2 board may not align correctly in the chassis slot and the left handle may not activate the power switch.

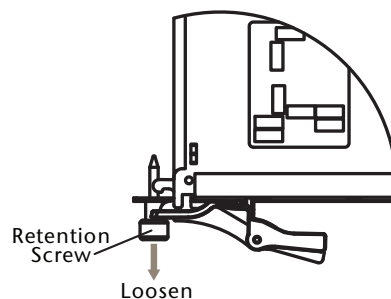
To complete this procedure, you need:

- A FortiGate-5000 series chassis with a FortiGate-5001FA2 board installed
- An electrostatic discharge (ESD) preventive wrist strap with connection cord



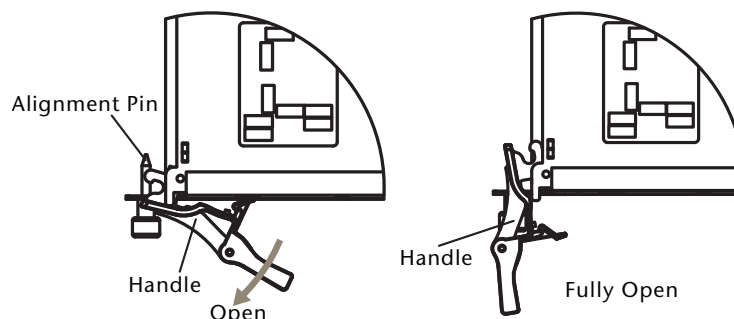
Caution: FortiGate-5001FA2 boards must be protected from static discharge and physical shock. Only handle or work with FortiGate-5001FA2 boards at a static-free workstation. Always wear a grounded electrostatic discharge (ESD) preventive wrist strap when handling FortiGate-5000 series or FortiSwitch-5000 series boards.

- 1 Attach the ESD wrist strap to your wrist and to an ESD socket or to a bare metal surface on the chassis or frame.
- 2 Disconnect all cables from the FortiGate-5001FA2 board, including all network cables, the console cable, and any USB cables or keys.
- 3 Fully loosen the retention screws on the left and right sides of the FortiGate-5001FA2 front panel.

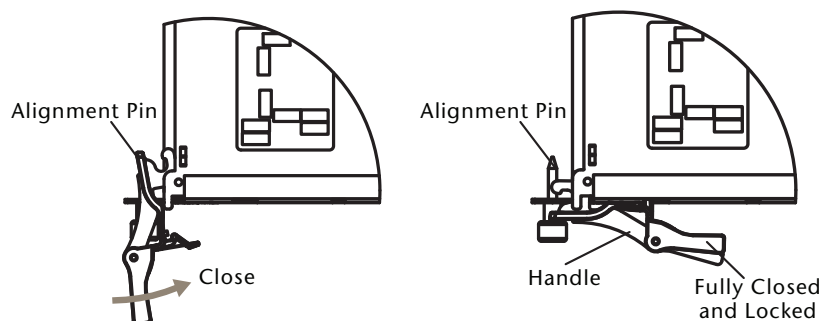


- 4 Unlock the left and right handles by squeezing the handle locks.

- 5 Open the left and right handles to their fully open positions.
Opening the handles slides the board a short distance out of the slot, disconnecting the board from the chassis backplane.
The IPM LED turns blue. All other LEDs turn off.



- 6 Pull the board about half way out.
All LEDs turn off.
- 7 Turn both handles to their fully-closed positions.
When the handles are fully-closed they lock into place.



- 8 Carefully slide the board completely out of the slot.

Troubleshooting

This section describes the following troubleshooting topics:

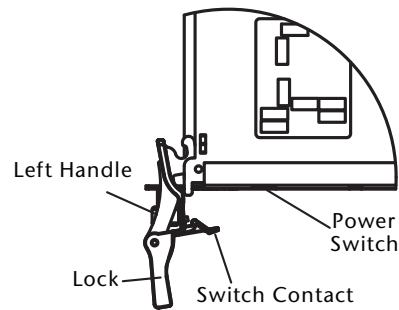
- [FortiGate-5001FA2 does not startup](#)
- [FortiGate-5001FA2 cannot display chassis information](#)

FortiGate-5001FA2 does not startup

Positioning of FortiGate-5001FA2 handles, the presence or absence of a functioning shelf manager, incorrect jumper settings and firmware problems may all prevent a FortiGate-5001FA2 board for starting up correctly. This section describes how to find and fix each of these problems.

All chassis: left handle not contacting power switch

The left handle activates the FortiGate-5001FA2 board power switch.

Figure 5: Location of FortiGate-5001FA2 power switch

If the left handle is damaged or positioned incorrectly the FortiGate-5001FA2 board does not receive power and will not start up. Make sure the left handle is correctly aligned, fully inserted and locked. Sometimes you may have to make small adjustments to the handle to achieve contact with the switch.

FortiGate-5020 chassis: incorrect FortiGate-5001FA2 jumper settings

If the JP3 jumper on the FortiGate-5001FA2 circuit board is set to detect a shelf manager, the FortiGate-5001FA2 board will not start up when inserted into a FortiGate-5020 chassis. This occurs because the FortiGate-5020 chassis does not have a shelf manager.

To fix the problem, remove the FortiGate-5001FA2 board and check the position of the JP3 jumper (see [Figure 3 on page 12](#)). Make sure the jumper connects pins 1 and 2 (to the right when seen from the front of the board).

FortiGate-5140 or 5050 chassis: shelf manager not installed or not functioning

If you are operating a FortiGate-5001FA2 in a FortiGate-5140 or 5050 chassis, the FortiGate-5001FA2 board will not start up if the JP3 jumper connects pins 2 and 3 (see [Figure 3 on page 12](#)) and a shelf manager is not installed or is not operating correctly.

If the shelf manager is not installed or not operating correctly, when you insert a FortiGate-5001FA2 board, the board attempts to communicate with the shelf manager. If the FortiGate-5001FA2 board cannot communicate with the shelf manager, the board will not startup.

If a shelf manager is installed, make sure it is functioning normally (the Status LED is green and all other LEDs are off). If the shelf manager is not functioning normally, you can try removing it from the chassis and reinstalling it. If this does not solve the problem, contact Fortinet Technical Support.

If the shelf manager has been removed from the chassis, you should re-install it. If you are planning on operating the chassis without a shelf manager, you can move the FortiGate-5001FA2 JP3 jumper between pins 1 and 2. The FortiGate-5001FA2 should now start up.

All chassis: Firmware problem

If the FortiGate-5001FA2 board power switch is connected and the JP3 jumper and shelf manager are set as required, and the FortiGate-5001FA2 still does not start up, the problem could be with FortiOS. Connect to the FortiGate-5001FA2 console and try cycling the power to the board. If the BIOS starts up, interrupt the BIOS startup and install a new firmware image. For details about installing a new firmware image in this way, see the [FortiGate-5000 Series Firmware and FortiUSB Guide](#).

If this does not solve the problem, contact Fortinet Technical Support.

FortiGate-5001FA2 cannot display chassis information

If the FortiGate-5001FA2 board is installed in a FortiGate-5140 or 5050 chassis, if a shelf manager is operating in the chassis, and if the JP3 jumper is set between pins 2 and 3, the FortiGate-5001FA2 board should be able to communicate with the chassis shelf manager.

If the FortiGate-5001FA2 board can communicate with the shelf manager, the FortiGate-5001FA2 web-based manager **System > Chassis** pages should display information about the boards installed in the chassis. If any one of the conditions listed above are not met, the FortiGate-5001FA2 web-based manager system chassis pages will not display chassis information.

If all of the above conditions are met, the FortiGate-5001FA2 **System > Chassis > Blades** list displays a list of all of the boards installed in the chassis. If any of the other FortiGate-5001FA2 boards in the chassis have the JP3 jumper between pins 1 and 2, these slots will appear empty. [Figure 6](#) shows the blades list for a FortiGate-5001FA2 board installed in slot 3 of a FortiGate-5050 chassis. The FortiGate-5001FA2 boards in slots 3 and 4 are called node cards. The FortiGate-5003 board in slot 2 is called a switch card.

Figure 6: Example System > Chassis > Blades web-based manager page

Refresh Interval 20 seconds Refresh			
Slot #	Blade Type	Temperature	Voltage
5	Empty		
4	Node Card	Good	Good
3	Node Card	Good	Good
2	Switch Card	Good	Good
1	Empty		

Quick Configuration Guide

This section is a quick start guide to connecting and configuring a FortiGate-5001FA2 security system for your network.

Before using this chapter, your FortiGate-5000 series or compatible ATCA chassis should be mounted and connected to your power system. In addition, your FortiGate-5001FA2 boards should be inserted into the chassis and additional hardware components (such as AMC cards and SFP transceivers) should be installed. The FortiGate-5001FA2 boards should also be powered up and the front panel LEDs should indicate that the boards are functioning normally.

This chapter includes the following topics:

- [Registering your Fortinet product](#)
- [Planning the configuration](#)
- [Choosing the configuration tool](#)
- [Factory default settings](#)
- [Configuring NAT/Route mode](#)
- [Configuring Transparent mode](#)
- [Upgrading FortiGate-5001FA2 firmware](#)
- [FortiGate-5001FA2 base backplane data communication](#)
- [Powering off the FortiGate-5001FA2 board](#)

Registering your Fortinet product

Register your Fortinet product to receive Fortinet customer services such as product updates and technical support. You must also register your product for FortiGuard services such as FortiGuard Antivirus and Intrusion Prevention updates and for FortiGuard Web Filtering and AntiSpam.

Register your product by visiting <http://support.fortinet.com> and selecting Product Registration.

To register, enter your contact information and the serial numbers of the Fortinet products that you or your organization have purchased. You can register multiple Fortinet products in a single session without re-entering your contact information.

Planning the configuration

Before beginning to configure your FortiGate-5001FA2 security system, you need to plan how to integrate the system into your network. Your configuration plan depends on the operating mode that you select: NAT/Route mode (the default) or Transparent mode.

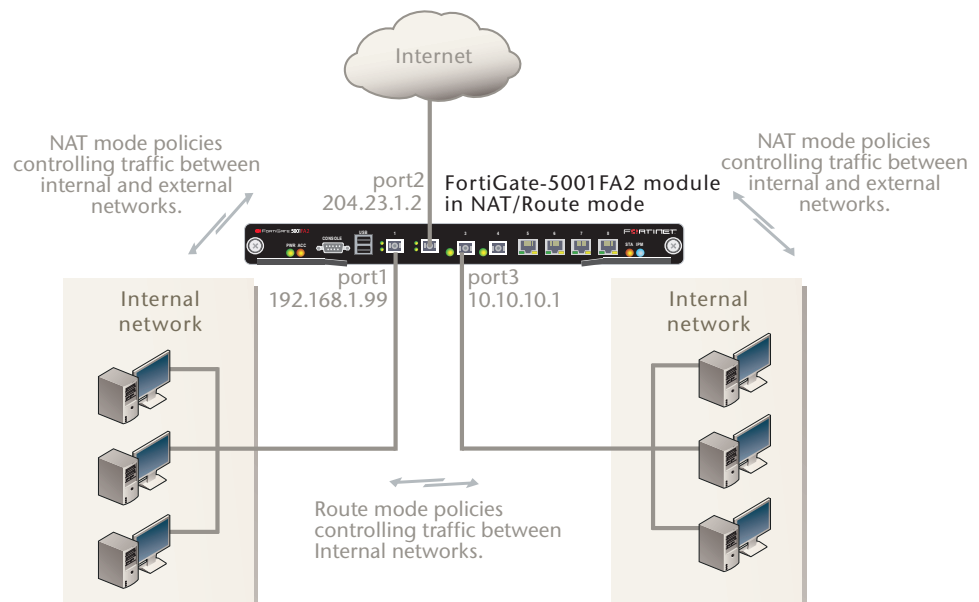
NAT/Route mode

In NAT/Route mode, the FortiGate-5001FA2 security system is visible to the networks that it is connected to. Each interface connected to a network must be configured with an IP address that is valid for that network. In many configurations, in NAT/Route mode all of the FortiGate interfaces are on different networks, and each network is on a separate subnet.

You would typically use NAT/Route mode when the FortiGate-5001FA2 security system is deployed as a gateway between private and public networks. In the default NAT/Route mode configuration, the FortiGate-5001FA2 security system functions as a firewall. Firewall policies control communications through the FortiGate-5001FA2 security system. No traffic can pass through the FortiGate-5001FA2 security system until you add firewall policies.

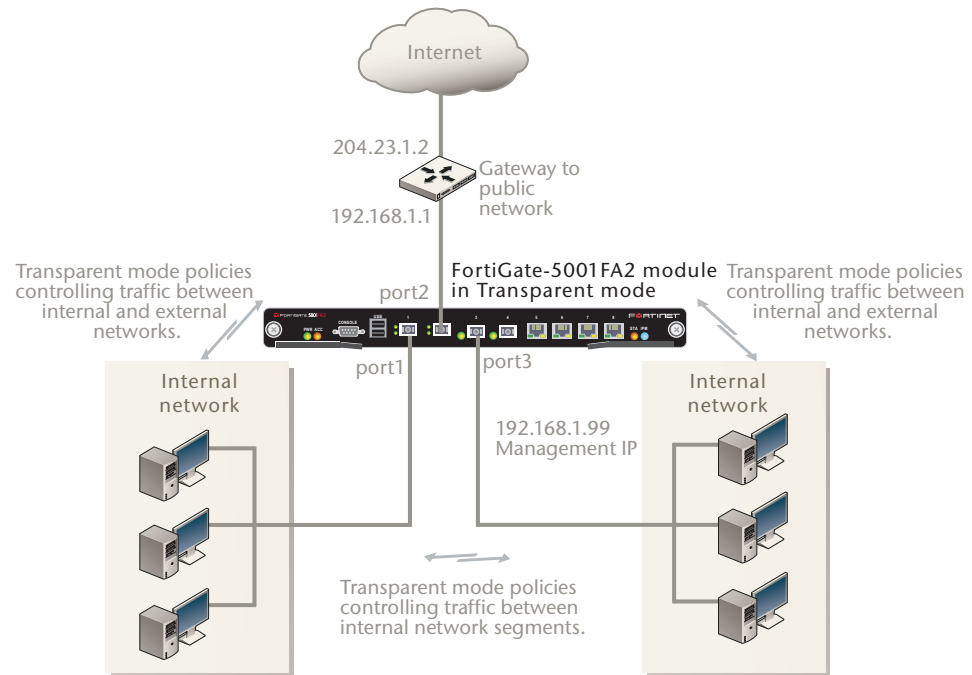
In NAT/Route mode, firewall policies can operate in NAT mode or in Route mode. In NAT mode, the FortiGate firewall performs network address translation before IP packets are sent to the destination network. In Route mode, no translation takes place.

Figure 7: Example FortiGate-5001FA2 board operating in NAT/Route mode



Transparent mode

In Transparent mode, the FortiGate-5001FA2 security system is invisible to the network. All of the FortiGate-5001FA2 interfaces are connected to different segments of the same network. In Transparent mode you only have to configure a management IP address so that you can connect to the FortiGate-5001FA2 security system to make configuration changes and so the FortiGate-5001FA2 security system can connect to external services such as the FortiGuard Distribution Network (FDN).

Figure 8: Example FortiGate-5001FA2 board operating in Transparent mode

You would typically deploy a FortiGate-5001FA2 security system in Transparent mode on a private network behind an existing firewall or behind a router. In the default Transparent mode configuration, the FortiGate-5001FA2 security system functions as a firewall. No traffic can pass through the FortiGate-5001FA2 security system until you add firewall policies.

Choosing the configuration tool

You can use either the web-based manager or the Command Line Interface (CLI) to configure the FortiGate board.

Web-based manager

The FortiGate-5001FA2 web-based manager is an easy to use management tool. Use the web-based manager to configure the FortiGate-5001FA2 administrator password, the interface addresses, the default gateway, and the DNS server addresses.

Requirements:

- An Ethernet connection between the FortiGate-5001FA2 board and management computer.
- Internet Explorer 6.0 or higher on the management computer.

Command Line Interface (CLI)

The CLI is a full-featured management tool. Use it to configure the administrator password, the interface addresses, the default gateway, and the DNS server addresses.

Requirements:

- The serial connector that came packaged with your FortiGate-5001FA2 board.
- Terminal emulation application (for example, HyperTerminal for Windows) on the management computer.

Factory default settings

The FortiGate-5001FA2 unit ships with a factory default configuration. The default configuration allows you to connect to and use the FortiGate-5001FA2 web-based manager to configure the FortiGate-5001FA2 board onto the network. To configure the FortiGate-5001FA2 board onto the network you add an administrator password, change the network interface IP addresses, add DNS server IP addresses, and, if required, configure basic routing.

Table 5: FortiGate-5001FA2 factory default settings

Operation Mode	NAT/Route
Administrator Account	User Name: admin Password: (none)
port1 IP/Netmask	192.168.1.99/24
port2 IP/Netmask	192.168.100.99/24
Default route	Gateway: 192.168.100.1 Device: port2
Primary DNS Server:	65.39.139.53
Secondary DNS Server:	65.39.139.53



Note: At any time during the configuration process, if you run into problems, you can reset the FortiGate-5001FA2 board to the factory defaults and start over. From the web-based manager go to **System > Status** find System Operation at the bottom of the page and select Reset to Factory Default. From the CLI enter `execute factory reset`.

Configuring NAT/Route mode

Use [Table 6](#) to gather the information you need to customize NAT/Route mode settings for the FortiGate-5001FA2 security system. You can use one table for each board to configure.

Table 6: FortiGate-5001FA2 board NAT/Route mode settings

Admin Administrator Password:		
port1	IP:	____.____.____.____
	Netmask:	____.____.____.____
port2	IP:	____.____.____.____
	Netmask:	____.____.____.____
Default Route	Device (Name of the Interface connected to the external network):	
	Default Gateway IP address:	____.____.____.____
	The default route consists of the name of the interface connected to an external network (usually the Internet) and the default gateway IP address. The default route directs all non-local traffic to this interface and to the external network.	
DNS Servers	Primary DNS Server:	____.____.____.____
	Secondary DNS Server:	____.____.____.____

Using the web-based manager to configure NAT/Route mode

- 1 Connect port1 of the FortiGate-5001FA2 board to the same hub or switch as the computer you will use to configure the FortiGate board.



Note: If you cannot connect to port1, see [“Using the CLI to configure NAT/Route mode” on page 26](#).

- 2 Configure the management computer to be on the same subnet as the port1 interface of the FortiGate-5001FA2 board. To do this, change the IP address of the management computer to 192.168.1.2 and the netmask to 255.255.255.0.
- 3 To access the FortiGate web-based manager, start Internet Explorer and browse to <https://192.168.1.99> (remember to include the “s” in https://).
- 4 Type admin in the Name field and select Login.

To change the admin administrator password

- 1 Go to **System > Admin > Administrators**.
- 2 Select Change Password for the admin administrator and enter a new password.

To configure interfaces

- 1 Go to **System > Network > Interface**.
- 2 Select the edit icon for each interface to configure.
- 3 Set the addressing mode for the interface. (See the online help for information.)
 - For manual addressing, enter the IP address and netmask for the interface that you added to [Table 6 on page 24](#).
 - For DHCP addressing, select DHCP and any required settings.
 - For PPPoE addressing, select PPPoE and enter the username and password and any other required settings.

To configure the Primary and Secondary DNS server IP addresses

- 1 Go to **System > Network > Options**.
- 2 Enter the Primary and Secondary DNS IP addresses that you added to [Table 6 on page 24](#) as required and select Apply.

To configure the Default Gateway

- 1 Go to **Router > Static** and select Edit icon for the static route.
- 2 Select the Device that you recorded above.
- 3 Set Gateway to the Default Gateway IP address that you added to [Table 6 on page 24](#).
- 4 Select OK.

Using the CLI to configure NAT/Route mode

- 1 Use the serial cable supplied with your FortiGate-5001FA2 board to connect the FortiGate Console port to the management computer serial port.
- 2 Start a terminal emulation program (HyperTerminal) on the management computer. Use these settings:
Baud Rate (bps) 9600, Data bits 8, Parity None, Stop bits 1, and Flow Control None.
- 3 At the Login: prompt, type admin and press Enter twice (no password required).
- 4 Change the administrator password.

```
config system admin
edit admin
set password <password>
end
```
- 5 Configure the port1 internal interface to the setting that you added to [Table 6 on page 24](#).

```
config system interface
edit port1
set ip <intf_ip>/<netmask_ip>
end
```
- 6 Repeat to configure each interface as required, for example, to configure the port2 interface to the setting that you added to [Table 6 on page 24](#).

```
config system interface
edit port2
...
```
- 7 Configure the primary and secondary DNS server IP addresses to the settings that you added to [Table 6 on page 24](#).

```
config system dns
set primary <dns-server_ip>
set secondary <dns-server_ip>
end
```
- 8 Configure the default gateway to the setting that you added to [Table 6 on page 24](#).

```
config router static
edit 1
set device <interface_name>
set gateway <gateway_ip>
end
```

Configuring Transparent mode

Use [Table 7](#) to gather the information you need to customize Transparent mode settings.

Table 7: Transparent mode settings

Admin Administrator Password:		
Management IP	IP:	____.____.____.____
	Netmask:	____.____.____.____
	The management IP address and netmask must be valid for the network where you will manage the FortiGate-5001FA2 unit.	
Default Route	Default Gateway IP address:	____.____.____.____
	In Transparent mode the default route requires the default gateway IP address. The default route directs all non-local traffic to the external network.	
DNS Servers	Primary DNS Server:	____.____.____.____
	Secondary DNS Server:	____.____.____.____

Using the web-based manager to configure Transparent mode

- 1 Connect port1 of the FortiGate-5001FA2 board to the same hub or switch as the computer you will use to configure the FortiGate board.



Note: If you cannot connect to port1, see [“Using the CLI to configure Transparent mode” on page 28](#).

- 2 Configure the management computer to be on the same subnet as the port1 interface of the FortiGate-5001FA2 board. To do this, change the IP address of the management computer to 192.168.1.2 and the netmask to 255.255.255.0.
- 3 To access the FortiGate web-based manager, start Internet Explorer and browse to https://192.168.1.99 (remember to include the “s” in https://).
- 4 Type admin in the Name field and select Login.

To switch from NAT/Route mode to transparent mode

- 1 Go to **System > Status** and select the Change link beside Operation Mode: NAT.
- 2 Set Operation Mode to Transparent.
- 3 Set the Management IP/Netmask to the settings that you added to [Table 7 on page 27](#).
- 4 Set the default Gateway to the setting that you added to [Table 7 on page 27](#).

To change the admin administrator password

- 1 Go to **System > Admin > Administrators**.
- 2 Select Change Password for the admin administrator and enter the password that you added to [Table 7 on page 27](#).

To change the management interface

- 1 Go to **System > Config > Operation**.
- 2 Enter the Management IP address and netmask that you added to [Table 7 on page 27](#) and select Apply.

To configure the Primary and Secondary DNS server IP addresses

- 1 Go to **System > Network > Options**.
- 2 Enter the Primary and Secondary DNS IP addresses that you added to [Table 7 on page 27](#) as required and select Apply.

Using the CLI to configure Transparent mode

- 1 Use the serial cable supplied with your FortiGate-5001FA2 board to connect the FortiGate Console port to the management computer serial port.
- 2 Start a terminal emulation program (HyperTerminal) on the management computer. Use these settings:
Baud Rate (bps) 9600, Data bits 8, Parity None, Stop bits 1, and Flow Control None.
- 3 At the Login: prompt, type admin and press Enter twice (no password required).
- 4 Change from NAT/Route mode to Transparent mode. Configure the Management IP address and default gateway to the settings that you added to [Table 7 on page 27](#).

```
config system settings
  set opmode transparent
  set manageip <mng_ip>/<netmask>
  set gateway <gateway_ip>
end
```

- 5 Configure the primary and secondary DNS server IP addresses to the settings that you added to [Table 7 on page 27](#).

```
config system dns
  set primary <dns-server_ip>
  set secondary <dns-server_ip>
end
```

Upgrading FortiGate-5001FA2 firmware

Fortinet periodically updates the FortiGate-5001FA2 FortiOS firmware to include enhancements and address issues. After you have registered your FortiGate-5001FA2 security system (see [“Registering your Fortinet product” on page 21](#)) you can download FortiGate-5001FA2 firmware from the support web site <http://support.fortinet.com>.

Only FortiGate-5001FA2 administrators (whose access profiles contain system read and write privileges) and the FortiGate-5001FA2 admin user can change the FortiGate-5001FA2 firmware.

For complete details about upgrading and downgrading FortiGate-5001FA2 firmware using the web-based manager or CLI; and using a USB key, see the [FortiGate-5000 Series Firmware and FortiUSB Guide](#).

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 administrator.
- 3 Go to **System > Status**.

- 4 Under **System Information > Firmware Version**, select Update.
- 5 Type the path and filename of the firmware image file, or select Browse and locate the file.
- 6 Select OK.
The FortiGate-5001FA2 board uploads the firmware image file, upgrades to the new firmware version, restarts, and displays the FortiGate 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 the firmware upgrade is successfully installed.
- 9 Update the FortiGate-5001FA2 antivirus and attack definitions. See the FortiGate-5001FA2 online help for details.

To upgrade the firmware using the CLI

To use the following procedure, you must have a TFTP server the FortiGate-5001FA2 board can connect to.

- 1 Make sure 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.
- 4 Make sure the FortiGate board 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 FortiGate-5001FA2 board:

```
execute restore image <name_str> <tftp_ipv4>
```

Where <name_str> is the name of the firmware image file and <tftp_ipv4> is the IP address of the TFTP server. For example, if the firmware image file name is `image.out` and the IP address of the TFTP server is 192.168.1.168, enter:

```
execute restore image image.out 192.168.1.168
```

The FortiGate-5001FA2 board responds with the message:

```
This operation will replace the current firmware version!  
Do you want to continue? (y/n)
```

- 6 Type `y`.
The FortiGate-5001FA2 board uploads the firmware image file, upgrades to the new firmware version, and restarts. This process takes a few minutes.
- 7 Reconnect to the CLI.
- 8 To confirm the firmware image is successfully installed, enter:

```
get system status
```
- 9 Update antivirus and attack definitions. You can use the command

```
execute update-now
```


FortiGate-5001FA2 base backplane data communication

You can configure the FortiGate-5001FA2 boards for data communications using the two FortiGate-5140, FortiGate-5050, or FortiGate-5020 chassis base backplane interfaces.



Note: Different FortiGate-5000 series boards may use different names for the base backplane interfaces. For example, on the FortiGate-5001SX and FortiGate-5001FA2 boards the base backplane interfaces are called port9 and port10. On the FortiGate-5005FA2 and FortiGate-5001A boards the base backplane interfaces are called base1 and base2.

By default the base backplane interfaces are used for HA heartbeat communication. However, using the information in this section, you can configure the FortiGate-5001FA2 to also use the base backplane interfaces for data communication. Once the base backplane interfaces are configured for data communication you can operate and configure them in the same way as any FortiGate-5001FA2 interface.



Note: VLAN communication over the backplane is only available for FortiGate-5005FA2 boards installed in a FortiGate-5020 chassis. The FortiSwitch-5003 does not support VLAN-tagged packets so VLAN communication is not available over the FortiGate-5050 and FortiGate-5140 chassis backplanes.

Although not recommended, you can use base backplane interfaces for data communication and HA heartbeat communication at the same time.

In a FortiGate-5140 or FortiGate-5050 chassis, FortiGate-5001FA2 base backplane communication requires one or two FortiSwitch-5003 boards. A FortiSwitch-5003 board installed in chassis slot 1 provides communication on the port9 interface. A FortiSwitch-5003 board installed in chassis slot 2 provides communication on the port10 interface. The FortiGate-5020 chassis supports base backplane data communication for both interfaces with no additions or changes to the chassis.

For details and configuration examples of FortiGate-5001FA2 base backplane communication using the FortiSwitch-5003 board, see the [FortiGate-5000 Base Backplane Communication Guide](#).

To enable base backplane data communication from the FortiGate-5001FA2 web-based manager

From the FortiGate-5001FA2 web-based manager use the following steps to enable base backplane data communication.

- 1 Go to **System > Network > Interface**.
- 2 Select Show backplane interfaces.

The port9 and port10 backplane interfaces now appear in the Interface list.

Figure 9: FortiGate-5001FA2 interface list with backplane interfaces enabled

Create New			<input checked="" type="checkbox"/> Show backplane interfaces	
Name	IP / Netmask	Access	Status	
base1	/		Bring Down	
base2	/		Bring Down	
fabric1	/		Bring Down	
fabric2	/		Bring Down	
port1	172.20.120.152 / 255.255.255.0	HTTPS,PING,SSH	Bring Down	
port2	192.168.100.99 / 255.255.255.0	PING	Bring Down	
port3	/	HTTPS,PING	Bring Down	
port4	/	PING	Bring Down	
port5	/	PING	Bring Down	
port6	/	PING	Bring Down	
port7	/	PING	Bring Down	
port8	/	PING	Bring Down	

To enable base backplane data communication from the FortiGate-5001FA2 CLI

From the FortiGate-5001FA2 board CLI you can use the following steps to enable base backplane data communication.

- 1 Enter the following command to show the backplane interfaces:

```
config system global
  set show-backplane-intf enable
end
```

The port9 and port10 backplane interfaces now appear in all Interface lists.

Powering off the FortiGate-5001FA2 board

To avoid potential hardware problems, always shut down the FortiGate-5001FA2 operating system properly before removing the FortiGate-5001FA2 board from a chassis slot or before powering down the chassis.

To power off a FortiGate-5001FA2 board

- 1 Shut down the FortiGate-5001FA2 operating system:
 - From the web-based manager, go to **System > Status** and from the **Unit Operation** widget, select Shutdown and then select OK.
 - From the CLI enter `execute shutdown`
- 2 Remove the FortiGate-5001FA2 board from the chassis slot.



Note: Once a shutdown operation is completed, the only way to restart the FortiGate-5001FA2 board is to remove and reinsert it.

For more information

Support for your Fortinet product is available as online help from within the web-based manager, from the Tools and Documentation CD included with the product, on the Fortinet Technical Documentation web site, from the Fortinet Knowledge Center web site, as well as from Fortinet Technical Support.

Fortinet documentation

The most up-to-date publications and previous releases of Fortinet product documentation are available from the Fortinet Technical Documentation web site at <http://docs.forticare.com>. FortiGate-5000 series documentation is located in its own section of the site at <http://docs.forticare.com/fgt5k.html>.

Fortinet Tools and Documentation CD

All Fortinet documentation is available from the Fortinet Tools and Documentation CD shipped with your Fortinet product. The documents on this CD are current for your product at shipping time. For the latest versions of all Fortinet documentation see the Fortinet Technical Documentation web site at <http://docs.forticare.com>.

Fortinet Knowledge Center

Additional Fortinet technical documentation is available from the Fortinet Knowledge Center. The knowledge center contains troubleshooting and how-to articles, FAQs, technical notes, and more. Visit the Fortinet Knowledge Center at <http://kc.forticare.com>.

Comments on Fortinet technical documentation

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

Customer service and technical support

Fortinet Technical Support provides services designed to make sure that your Fortinet systems install quickly, configure easily, and operate reliably in your network.

Please visit the Fortinet Technical Support web site at <http://support.fortinet.com> to learn about the technical support services that Fortinet provides.

Register your Fortinet product

Register your Fortinet product to receive Fortinet customer services such as product updates and technical support. You must also register your product for FortiGuard services such as FortiGuard Antivirus and Intrusion Prevention updates and for FortiGuard Web Filtering and AntiSpam.

Register your product by visiting <http://support.fortinet.com> and selecting Product Registration.

To register, enter your contact information and the serial numbers of the Fortinet products that you or your organization have purchased. You can register multiple Fortinet products in a single session without re-entering your contact information.

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