

# GB-Ware

## SOFTWARE Firewall

*powered by*

**GNAT Box**  
System Software

### Product Guide

GBWA200501-01



**Global  
Technology  
Associates, Inc.**

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GTA includes 30 days "up and running" installation support from the date of purchase. See GTA's web site for more information. GTA's direct customers in the USA should call or email GTA using the telephone and email address below. International customers should contact a local GTA authorized channel partner.

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# 1 Introduction

## About GTA Firewalls

Global Technology Associates, Inc. (GTA) has been designing and building Internet firewalls since 1994. In 1996, GTA developed the first truly affordable commercial-grade firewall, the GNAT Box®. Since then, ICASA-certified GNAT Box System Software has become the engine that drives all GTA hardware appliance and software firewall systems.

## About GB-Ware

GB-Ware is a complete software firewall system that runs from a Compact Flash module or hard drive installed on x86 (PC) hardware. After software installation, GB-Ware must be configured for local network requirements using either the setup wizard (video console) or manually (serial console, GBAdmin or browser).

## Features

- 10/100/1000 Mbps Ethernet WAN/LAN speed support
- ICASA-certified GNAT Box System Software (version 3.5 and higher)
- Stateful packet inspection
- User authentication (GTA, LDAP & RADIUS)
- SSL encrypted management
- DES, 3DES, AES, and Blowfish VPN encryption
- IPSec VPN with 1 mobile user license
- PPP, PPPoE and PPTP support
- SMTP email proxy
- Transparent NAT (network address translation)
- Async Modem and ISDN TA support
- RIP (Routing Information Protocol)
- Remote logging using WELF
- Gateway routing failover
- DMZ (PSN, Private Service Network; optional on 10 user version)

- Dynamic DNS
- DNS proxy
- Transparent and traditional web proxy with script blocking
- DNS server (optional on 10 user version)
- DHCP server
- Web and GBAAdmin user interfaces for remote management
- SNMP (read-only)
- Traffic shaping (bandwidth limiting)
- NTP (network time protocol) server

### **Additional Software Products**

- GTA Reporting Suite™ (firewall log reporting)
- GB-Commander™ (firewall management)

### **Optional Features**

- VPN hardware acceleration
- Additional mobile VPN clients
- Surf Sentinel® content filtering
- Mail Sentinel™ Anti-Spam email filtering
- Mail Sentinel™ Anti-Virus email filtering
- GTA-certified 512 MB Compact Flash disk
- Multi-Interface option (up to 20 network interfaces)
- Support contracts

### **Additional Options for 10-User Version**

- 25, 50 or unlimited user license upgrades
- GB-Ware Plus Package (DNS Server and DMZ (PSN))

## Software Specifications

<i>Specification</i>	<b>GB-Ware 10 users</b>	<b>GB-Ware unrestricted users</b>
<i>Concurrent connections (standard)</i>	1,000	128,000
<i>Concurrent outbound users (standard)</i>	10	Unrestricted
<i>Network interfaces (standard)</i>	2	3
<i>User authentication</i>	50	750
<i>Address objects</i>	50	600
<i>Aliases</i>	5	300
<i>Pass-through hosts</i>	10	300
<i>Filters, outbound &amp; remote access objects</i>	75	400
<i>Traffic shaping objects</i>	5	50
<i>Static outbound maps</i>	25	300
<i>Static routes</i>	10	300
<i>Time groups</i>	75	100
<i>Tunnels</i>	25	300
<i>Protocols</i>	255	255
<i>URL access lists</i>	10	300
<i>Local content lists</i>	25	250
<i>DNS domains</i>	Optional	20
<i>DNS hosts</i>	Optional	500
<i>DNS networks</i>	Optional	80
<i>VPN objects</i>	5	100
<i>VPN security associations</i>	20	600
<i>Concurrent Mobile VPN (max)</i>	10	300

## Hardware Specifications

The GB-Ware firewall is designed to operate efficiently on a broad spectrum of hardware, but the hardware you select will impact GB-Ware's performance. This is especially true when GB-Ware is used in an intranet

configuration with full network speeds on all interfaces. The best possible performance can be obtained by using a Pentium class or higher CPU with PCI network cards.

Network performance bottlenecks usually occur at the connection to the Internet when using DSL or T1 class connectivity. GB-Ware with 10 Mbps Ethernet cards easily provides enough throughput for network connectivity of up to T1 speeds (1.5 Mbps). However, when the WAN connectivity is a T3 or faster, GTA recommends that 100 Mbps network cards be used.

If you encounter problems, check your motherboard and IRQ assignments. Make sure any unused devices, such as IDE and SCSI controllers, sound cards and serial ports are disabled. Scan the hardware configuration report for error messages—often the cause of a problem is indicated in this report.

### **Note**

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Check [gta.com](http://gta.com) for an up-to-date list of compatible network interface cards and drivers.

### **System Requirements**

- x86 architecture processor (Intel 486, Pentium, or Xeon; compatible AMD or Cyrix CPUs); Pentium-class or faster CPU recommended
- 64 MB RAM (128 MB if using Mail Sentinel Anti-Virus and/or Mail Sentinel Anti-Spam options)
- 512 MB ATA (IDE) compliant hard disk drive or 512 MB GTA-certified Compact Flash card with Compact Flash IDE adapter
- 2 compatible network cards (NICs)
- 1 Serial (RS-232/COM) port
- 1 USB port or parallel (printer) port on the motherboard (for hardware key block installation)

### **Note**

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PCI cards with USB or parallel ports will not function correctly. The USB or parallel ports must be located directly "on-board" (as an integrated part of the motherboard).

- 1 ATAPI (IDE) CD-ROM (installation and recovery only)
- 1 Video card, 1 monitor and 1 keyboard (for video console use only; keyboard may not be required for operation if the motherboard's BIOS supports booting without a keyboard)
- Ethernet cables: crossover cables for connections to routers or computers; straight-through cables for connections to hubs or switches

For installation requirements, see page 10.

## Optional Components

- 1-18 additional network cards (if using the Multi-Interface Option)
- Async modem (PPP connections or pager only)
- ISDN TA with RS-232 interface (PPP connections only)
- Cable modem
- Serial ports for COM 1-4 (1645x/1655x UARTs only)

### **Note**

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GTA recommends installing only the GB-Ware required or GB-Ware optional components in the system. Devices such as SCSI controllers and sound cards remain unused and may decrease performance.

## Memory Recommendations

Adding RAM is an easy way to boost system performance. Using 64 MB RAM, the physically possible maximum number of concurrent sessions is 32,765; using 128 MB RAM, the physically possible maximum is 128,000 connections. Generally, the more features that are being utilized (e.g. DNS server or Mail Sentinel email proxy), the more RAM is recommended for optimum performance.

### **Note**

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Some GB-Ware options may require additional RAM.

## PPP Hardware

GNAT Box System Software supports the use of a PPP network connection in place of a network interface card for the external network interface. The PPP interface supports only a dial-up connection and a single remote system configuration. Once of the following should be used:

- An external asynchronous modem. COM ports 1-4 are supported; only COM ports based on the 1645x/1655x UARTs are supported.
- An internal asynchronous modem. Only modems that use 1645x/1655x compliant UARTs are supported.
- An ISDN external modem/terminal adapter. COM ports 1-4 are supported; only COM ports based on the 1645x/1655x compliant UARTs are supported.
- Network interface card (NIC) for use with PPPoE (ADSL) or PPTP.

## Serial Port Hardware

Most serial ports will easily support any asynchronous modem or a single BRI 64Kbps ISDN connection. If both channels of a BRI line are used to achieve 128Kbps, throughput may be limited to 115Kbps due to serial port limitations.

### **Modem/ISDN TA Hardware**

GTA recommends configuring the modem or ISDN TA on another system before installing it on GB-Ware. Most modems allow the storage of a user configuration and the recall of this configuration using a specific command (e.g. ATZ). It is usually easiest to configure the modem before installation, and then to recall that configuration and set the modem with a few commands.

#### **Note**

The default configuration for most modems will generally work with GB-Ware.

You should configure the modem to use a fixed DTE speed (the speed at which the computer talks to the modem). If the modem supports DTE speeds of 38,400 or 57,600 baud, use whichever of these values will ensure the highest throughput. Configure your serial port to the highest possible speed when using an ISDN TA. Unless you wish to connect at a specific speed, set DCE (the speed at which the modem talks to a remote modem) to auto-negotiate.

### **Cable Modems and xDSL Hardware**

Cable modems and DSL (ADSL etc.) configurations utilize a passive inter-connection device (cable modem, xDSL box) that is typically connected to an Ethernet network interface card via a special network patch cable (crossover cable).

## **Support**

Installation ("up and running") support is available to registered users. If you have registered your product and need installation assistance during the first 30 days, contact the GTA Support team by email to [support@gta.com](mailto:support@gta.com). Include your product name, serial number, activation code, feature activation code numbers for your optional/subscription features, and a Configuration Report (available in **Reports** under **Configuration** in the web user interface), if possible.

Installation support only covers installation and default configuration of the firewall. For further assistance, contact an authorized GTA Channel Partner or GTA Sales staff for information about support offerings.

### **Support Options**

If you need support after installation and default configuration, a variety of support contracts are available. Contact an authorized GTA Channel Partner or GTA Sales staff for more information. Support ranges from support per incident to annual contract coverage.

Other avenues for assistance are available through authorized GTA Channel Partners, the GNAT Box Mailing List, or the GTA web site ([www.gta.com](http://www.gta.com)).

## Upgrades

Once registered, you can view available upgrades in the GTA online support center section of the GTA web site ([www.gta.com/support/center/login/](http://www.gta.com/support/center/login/)). Click on the serial number of your registered product to see if an upgrade is available for that specific unit.

Click on the **DOWNLOADS** link to view all available software versions.

### **Caution**

Back up your configuration before upgrading!

## About This Guide

This Product Guide describes how to set up and install GB-Ware and change the factory settings to your network's configuration scheme. The *GNAT Box System Software User's Guide* includes configuration functions, descriptions of GBAdmin and the web interface, administrative tools and GNAT Box-specific terms.

User's guides, product guides and feature guides are available for GTA products. These manuals and other documentation for registered products can be found at [www.gta.com](http://www.gta.com) and on installation CDs.

Look in your firewall's product guide or the *GNAT Box System Software User's Guide* for instructions on installation, registration and setup from default configuration. Look in feature guides for instructions on using optional firewall features.

## Documentation Conventions

A few conventions are used in this guide to help you recognize specific elements of the text.

<b><i>Bold Italics</i></b>	emphasis
<i>Italics</i>	publications
SMALL CAPS	field names
Monospace Font	screen text
<b>Condensed Bold</b>	menus, menu items
<b>BOLD SMALL CAPS</b>	buttons, links

## Additional Documentation

For additional instructions on installation, registration and setup of a GTA product, see applicable Quick Guides, FAQs or technical papers. For optional features, see the appropriate feature guide. Documentation is included on installation CDs, and is available for download from the GTA web site.

### Note

Check the GTA web site for the latest PDFs and other documentation.

These manuals and other documentation can also be found on the GTA web site ([www.gta.com](http://www.gta.com)). Documents on the web site are either in plain text (\*.txt) or portable document format (\*.pdf) which requires Adobe Acrobat Reader version 5.0, Apple Preview or ghostview. A free copy of Adobe Acrobat Reader can be obtained from [www.adobe.com](http://www.adobe.com).

<i>Document</i>	<i>Topics</i>
<i>GNAT Box System Software User's Guide</i>	GNAT Box system software features; web user interface, GBAdmin
<i>Console Interface User's Guide</i>	console interface
<i>GB-Commander Product Guide</i>	GB-Commander for GTA firewalls
<i>GTA Reporting Suite Product Guide</i>	stand-alone reporting software
<i>Mail Sentinel Feature Guide</i>	email anti-spam and anti-virus filtering optional feature
<i>Surf Sentinel Content Filtering Feature Guide</i>	content filtering optional feature
<i>H<sub>2</sub>A High Availability Feature Guide</i>	high availability optional feature
<i>GNAT Box VPN Feature Guide</i>	VPN (virtual private networks) optional feature
FAQs on <a href="http://www.gta.com">www.gta.com</a>	frequently asked questions (FAQs)
<a href="http://www.gta.com">www.gta.com</a>	hardware specifications, current documentation, examples

### Mailing List

To learn more about GNAT Box System Software, join the GTA staff-monitored GNAT Box email mailing list at [gb-users-subscribe@gta.com](mailto:gb-users-subscribe@gta.com) .

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## 2 Installation

### Registration

To get technical support and software updates, you must register your GTA firewall.

- 1) To register, go to [www.gta.com](http://www.gta.com). Click on **SUPPORT** and then the **SUPPORT CENTER** link to visit <https://gta.com/support/center/login/>.
- 2) If you do not have an online support account, click on the **CREATE AN ACCOUNT NOW** link and enter your information. Once you have completed the form, click the **SUBMIT** button to save the profile.
- 3) Enter your user ID and password on the login page. Click on the **REGISTER A PRODUCT** link. Enter your serial number and installation code, then click the **SUBMIT** button. Write down the activation code and store it with your serial number and installation code records. To view your registered products, click the **VIEW YOUR REGISTERED PRODUCTS** link.

In addition to qualifying you for installation support, your product registration will allow GTA to inform you about software updates and special offers.

#### **Note**

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If you cannot retrieve your activation code, or a code does not appear under **VIEW YOUR REGISTERED PRODUCTS**, please email support with a brief description of your problem in the body of the email. Include the product serial number and your online support account's user ID in the message subject.

### Getting Your Activation Code

All commercial GTA firewalls use an activation code to protect system software. Optional features require separate feature activation codes. Serial numbers and installation codes are included with the packaging and are also available under **VIEW REGISTERED PRODUCTS** on the GTA Support site, <http://www.gta.com/support/center/login/>; GB-Ware serial numbers and installation codes are required to retrieve GB-Ware activation codes.

#### **Note**

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GNAT Box System Software may be copied for backup purposes.

## Installing GB-Ware on PC Hardware

GB-Ware software must be installed on x86 (Intel-compatible) computer hardware before you can use your firewall. The GB-Ware installation CD will install the firewall software onto your computer hardware.

### Requirements

GB-Ware can be installed either on a bootable Compact Flash disk or hard drive on the intended firewall, or installed onto a Compact Flash disk using a USB reader/writer on a proxy computer, and then later inserted into the intended firewall.

See the Appendix for instructions on installing a Compact Flash card and Compact Flash adapter.

To install GB-Ware directly onto the Compact Flash card or hard drive of the intended firewall, you will need the following components:

- x86 (Intel-compatible) computer with 64 MB RAM
- USB or parallel port (on the motherboard only)
- ATAPI (IDE) CD-ROM drive
- video card, monitor and keyboard (video console only)
- ATA (IDE) compliant hard disk drive or a GTA-certified 512 MB Compact Flash disk and Compact Flash IDE adapter
- GB-Ware software and hardware key block with activation code

To copy GB-Ware onto a Compact Flash disk using a computer other than the intended firewall (for later installation in the intended firewall), you will need these components:

- x86 (Intel-compatible) computer with a USB port and ATAPI (IDE) CD-ROM drive
- GTA-certified 512 MB Compact Flash card
- USB Compact Flash card reader/writer, such as SanDisk® ImageMate™
- GB-Ware software and hardware key block with activation code

### **Note**

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GTA recommends installing only hardware required by GB-Ware- or GB-Ware options. Superfluous devices such as SCSI controllers and sound cards remain unused and may in some cases decrease firewall performance.

## Setup for GB-Ware Installation

The computer (either the intended firewall or an installation proxy computer) must be modified to boot using a CD-ROM drive. This enables the GNAT Box System Software installation CD to activate and install the GB-Ware firewall software when powering on the PC.

### **Caution**

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If installing GB-Ware using a proxy computer, temporarily disconnect other (non-GB-Ware) writable drives to prevent accidental erasure during firewall installation. GB-Ware will irrevocably erase the installation's target disk, and cannot be installed alongside any other disk contents.

### **Setting the Boot Sequence**

Using the appropriate process for your computer system, change the sequence so that the system boots from an IDE CD-ROM drive.

1. Power on the computer and enter the CMOS (BIOS). Do this before any installed operating system (like Windows) boots.
2. Change the boot sequence so that a CD-ROM drive attempts to boot first, before other CD-ROM or hard drives in the IDE controller.  
This will enable the GNAT Box System installation CD to boot upon powering up the computer.
3. Save the settings and exit the BIOS. Power off the computer.

### **Note**

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Setting the boot sequence varies by the computer. Please consult your computer's hardware guide to set the boot sequence on your computer.

### **Installing the Compact Flash Card Reader or IDE Adapter**

1. Attach the USB Compact Flash card reader or Compact Flash IDE adapter and insert the Compact Flash card. Alternately, attach a hard drive. See the Appendix for detailed instructions. (Skip this step if installing on an existing hard drive.)

### **Warning**

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Only install the Compact Flash IDE adapter when your computer is powered off and unplugged. Failure to unplug the computer could result in destruction of equipment, or serious harm or death due to electrical current. Never install internal computer hardware while it is plugged in or powered on!

## Caution

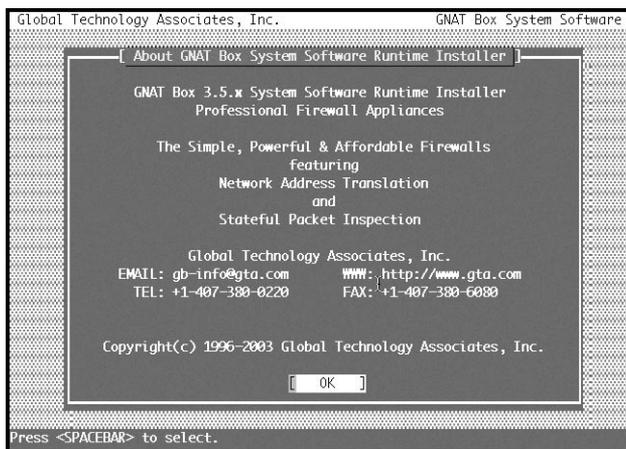
Installing GB-Ware on a hard drive will erase its contents and replace them with GB-Ware. If you wish to keep the data on a hard drive, do not install GB-Ware on it; instead, install GB-Ware on a different hard drive. You may also wish to temporarily disconnect other (non-GB-Ware) hard drives to prevent accidental erasure during firewall installation.

2. Power on the computer. Insert the GNAT Box System installation CD into the system's CD-ROM drive.
3. Restart the computer using a cold reboot. (In a cold reboot, shut down, turn off, and then turn your computer back on.)

If the boot sequence is correctly set to boot from CD-ROM, the system will boot from the GNAT Box System installation CD.

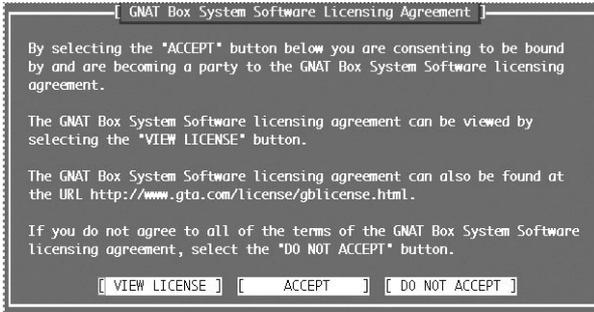
## Using GB-Ware's GNAT Box Installer

After setting the BIOS, inserting the installation CD and restarting the computer, you will see the **About GNAT Box System Software Runtime Installer** screen for the installation CD. Press the **SPACE BAR** or **ENTER** key to continue and install GB-Ware.



*About the GNAT Box System Software Runtime Installer*

The GNAT Box System Software Licensing Agreement will appear. Use the **TAB** or arrow key to move to the selection. Press the **SPACE BAR** or **ENTER** to select your answer. Select **VIEW LICENSE** to read the terms of the software and hardware license. If you agree with the terms, select **ACCEPT** to continue the installation. The **DO NOT ACCEPT** selection cancels installation and closes the program.



### *GNAT Box System Software Licensing Agreement*

## Selecting a GB-Ware Runtime

The GNAT Box System Software Runtime Installer screen will appear. If you are upgrading, verify that your configuration has been backed up to another location. Any information currently on the disk will be over-written during the installation.

Select the desired GB-Ware runtime (executable) version from the list of products in step 2. Use the **SPACE BAR** to cycle through available options, or use the **F2** key to display a list of runtimes and the arrow keys to move through the list. Once you have selected the desired option, use the **TAB** key to move to the **OK** selection and press the **SPACE BAR** to begin the installation.

The default selection is the GB-Ware SIO runtime (the “serial interface only” console version). Your selections will also include the GB-Ware video console runtime, the BootManager SIO (which allows the user to change console output from video to serial during boot), and BootManager video, which allows the user to change console output from serial to video during boot.

### **Note**

If you want to manage the firewall remotely using either GBAdmin or the web user interface instead of a console, don't worry. Both runtimes will provide this functionality, so you may choose either the serial or video runtime. Because some advanced firewall functionality is not configurable in the serial and video console interfaces, it's best to use them as a failsafe when network connectivity is down, or for initial network interface configuration.

### **Note**

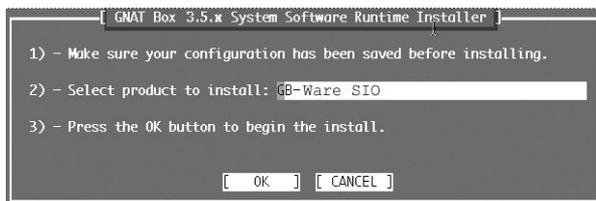
The video version of the GB-Ware runtime does not have factory default network settings, and hence does not initially allow any network or serial connections. If you chose to install the video version of the GB-Ware runtime, you will need to run the Setup Wizard to enter basic network information before you can use your firewall.

The serial version of the GB-Ware runtime installs factory default settings; a serial or temporary peer Ethernet connection can be used to change these settings. If you prefer to perform initial firewall configuration over the web or with GBAdmin, choose this option.

The selection list also includes the Erase Disk function. This allows the user to clear all the disk data from the selected disk.

### Caution

Using the **ERASE DISK** choice will erase a drive's contents. Only use it if you are sure you want to destroy all data on the destination disk.



*GNAT Box Runtime System Software Runtime Installer*

### Selecting an Installation Disk

The software will ask you to select a drive that should receive the GB-Ware installation. From the list of available devices, select the Compact Flash card or hard drive device where you wish to install GB-Ware.

### Note

The Compact Flash card, once mounted using an adapter or USB card reader, is considered a disk drive by the system.

Press the **SPACE BAR** to cycle through available options, or use the **F2** key to display a list of devices and the **ARROW** keys to move through the list.

**The prefix *da* indicates a direct access USB device.** A USB Compact Flash card reader/writer containing a Compact Flash card might be designated `da0`. Any additional USB devices recognized by the installation will be designated as `da1`, `da2`, etc.

**The prefix *ad* identifies an IDE device.** Any recognized IDE device installed on the primary IDE controller master will be designated `ad0`, whether it's a hard drive or a Compact Flash card mounted in a Compact Flash IDE adapter. Any additional recognized IDE device will be designated by the IDE controller slot it occupies; if you have not disconnected your firewall's hard drive, and you put a Compact Flash card and IDE adapter on the primary IDE controller slave port, the hard drive will be recognized as `ad0`, while the Compact Flash card will be designated `ad1`.

## Note

USB pen drives may appear, but should not be selected for installation as they are not IDE-bootable devices. CD-ROM or DVD-ROM drives will not be displayed by the GB-Ware system installation process, as they are not writable discs. Other drives will not display.

## Device Designations

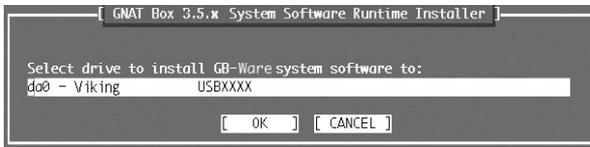
<i>Designation</i>	<i>Description</i>	<i>Device Geometry*</i>
da0	USB storage device (Generic storage device)	[978/4/32]
ad0	IDE storage device (with device manufacturer identification)	[978/4/32]

\*If there is an indication of the device size in the description, this can be used to help identify the correct drive. Device Geometry format is in cylinders/heads/sectors.

Once you have selected the desired device, press tab to **OK**, then press the **SPACE BAR** or **ENTER** to continue.

## Caution

Carefully select the correct storage device, especially when using a USB Compact Flash reader/writer to install GB-Ware on a separate system. Installing GB-Ware on the wrong device will overwrite the disk (e.g. selecting the system hard drive will overwrite your operating system or other data, destroying it). You may wish to disconnect non-GB-Ware hard drives before installing to prevent accidental erasure.

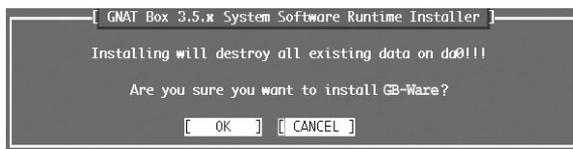


*Installation Device Selection*

## Installing the Runtime

The next dialog will display the warning: ***Installing will destroy any existing data on <device number>!!! Are you sure you want to install GB-Ware?*** where “device number” is the Compact Flash card or hard drive you will be writing to, and “runtime version” is the GNAT Box runtime version you have selected.

Tab to **OK**, then press **SPACE BAR** or **ENTER** when you are sure you have selected the correct drive and are ready to install the runtime.



### *Disk Re-formatting Warning*

It may take several minutes for the runtime to install. A pipe indicator (|) will be animated while the system installs. A message similar to the following will display when the system installation is complete:

```
Loading runtime image for <runtime number> - succeeded
Initializing disklabel for da0 - succeeded
Initializing runtime slice 2 - succeeded
Initializing runtime slice 1 - succeeded
```

## Completing Installation

Your Compact Flash disk or hard disk should now have GB-Ware firewall software installed. Remove the GNAT Box System installation CD and press **ENTER** to reboot. Power off the computer.

If you have installed GB-Ware using a proxy computer, remove the GB-Ware disk from the computer and install it as the boot disk on the intended firewall.

### **Note**

See the Appendix for instructions on installing a Compact Flash card and Compact Flash IDE adapter on your intended firewall.

If you installed GB-Ware using a proxy computer, restore the BIOS boot settings to the computer and re-connect any drives you may have disconnected during GB-Ware installation.

### **Attaching the Hardware Key Block**

After installing the GB-Ware Compact Flash card or hard drive, but before initial configuration, plug the hardware key block (USB or parallel) into your GB-Ware firewall.

### **Note**

Without the key block, the software will operate in an unregistered mode during which the system is operational for only 60 minutes.

GTA's hardware key block is different from other key blocks because it is attached only to the GB-Ware firewall and not to client computers. The key block also provides freedom to upgrade or change system hardware: simply

attach the hardware key block to a prospective GB-Ware firewall and boot the GB-Ware disk.



## 3 Configuration

The following sections describe how to change GB-Ware from the default configuration, in which all internal users are allowed outbound connections, but no unsolicited inbound connections are allowed.

Use either the web user interface, GBAdmin, the video console, or the serial console to configure the GB-Ware firewall.

### Setting the Boot Sequence

After installing GB-Ware and attaching the hardware key block, power up the GB-Ware firewall.

1. Boot into the firewall's CMOS (BIOS).
2. Set the boot sequence so that the GB-Ware drive is first, before any other drives in the IDE controller slots. This will enable GB-Ware to boot upon powering up.
3. Save your settings and exit the BIOS.
4. Restart the computer using a cold reboot. (In a cold reboot, shut down, power off, and then power your computer back on.)

#### **Note**

GTA recommends disconnecting or disabling any unnecessary hardware in the GB-Ware firewall system. This prevents accidental access of other drives and simplifies hardware configuration.

If the boot sequence is correctly set, the firewall will boot from the GB-Ware drive.

### Loading the Correct Memory Slice (Partition)

Both memory slice and 1 and slice 2 of the disk image have already been written during installation and are, at this point, identical. The first time the GNAT Box System is loaded, slice 1 will boot up by default.

### Selecting a User Interface

Your GB-Ware firewall can be accessed in many ways. Choose one which best suits your available hardware, network situation, GB-Ware runtime version and preferences.

During installation, you chose the video or the serial console version of the GNAT Box runtime. These methods can be used during setup, or when you have direct physical access to the firewall, or as a failsafe if the network is down and you can no longer administer your firewall remotely. Additionally, you may choose to set up your firewall over a peer Ethernet connection using GBAAdmin or a web user interface.

### Note

You do not have to install separate GNAT Box runtimes to activate the GBAAdmin or web user interfaces; they are included with the installation of a video or serial console runtime version. However, if you installed GB-Ware's video runtime version, you will have to use the video console's Setup Wizard before your firewall will allow you to connect any other way.

### Note

If you installed the serial console version of the GB-Ware runtime, the video console connection mode may not be available. Conversely, if you installed the video console version of GB-Ware, the serial console version may not be available to you.

<i>User Interface Name</i>	<i>Style</i>
web	browser-contained HTML GUI application over Ethernet connection to a computer
GBAdmin	Windows-only GUI application over Ethernet connection to a computer
serial console	DOS-like text menus with keyboard commands over DB-9 serial connection to a computer
video console	DOS-like text menus with keyboard commands only using a monitor and keyboard connected directly to your firewall

Each style of user interface has unique requirements for physical setup before they can be used for firewall configuration.

## Physically Connecting Your GB-Ware Firewall

Depending upon which user interface (UI) you choose to use for initial firewall configuration, you may need to attach different hardware to your GB-Ware firewall.

## Requirements

If using the web user interface, you will need:

- 1 crossover Ethernet cable to connect with the computer directly, or 1 straight-through Ethernet cable to connect with the computer through a hub or switch
- 2 straight-through Ethernet cables, one for each required network connection
- 1 computer with a SSL-compatible and frames-enabled browser

If using GBAAdmin, you will need:

- 1 crossover Ethernet cable to connect with the computer directly, or 1 straight-through Ethernet cable to connect with the computer through a hub or switch
- 2 straight-through Ethernet cables, one for each required network connection
- 1 Windows computer

If using the video console, you will need:

- 1 keyboard
- 1 monitor

If using the serial console, you will need:

- 1 null-modem serial cable
- 1 computer with a serial port

## Making a Temporary Peer Network Connection

If you want to initially configure your firewall using GBAAdmin or a browser, you will need to construct a temporary peer Ethernet network.

### **Note**

The video console version of the GB-Ware runtime does not have factory default network settings, and hence does not initially allow any network or serial connections; you will need to run the video Setup Wizard before you can use your firewall. This will perform initial network setup on your firewall so that you can then connect remotely with either GBAAdmin or the web UI.

GBAdmin and the web user interface for the GB-Ware firewall occur over an Ethernet network connection. Because the factory network information settings on the serial version of the GB-Ware firewall are unlikely to match your existing network, your firewall will not automatically join your network.

You will need to temporarily join a computer to the firewall's default network. This allows you to configure the firewall's network settings to

match the network address scheme. Then you may add the firewall to your network and connect remotely (by web or GBAdmin) through your normal network.

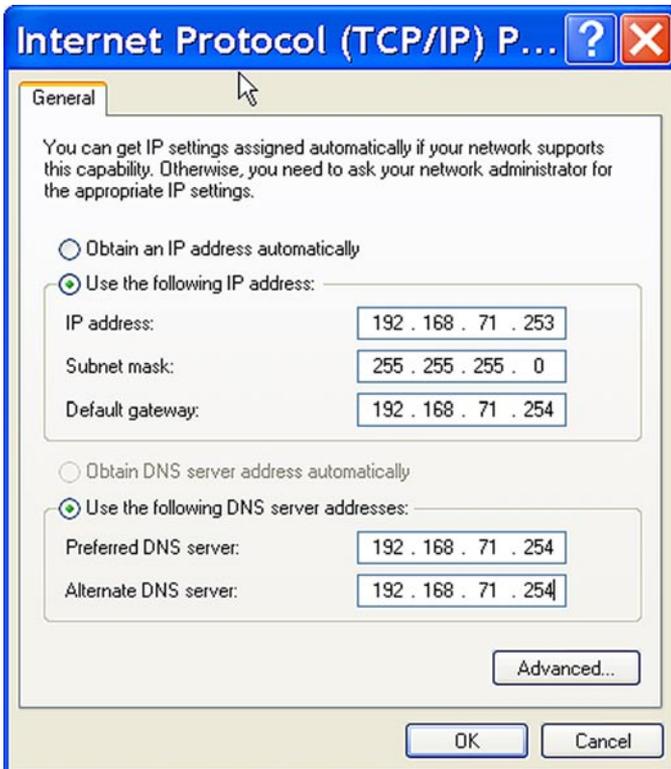
- 1) Use a crossover Ethernet cable to connect a computer to the firewall's first network interface card. Alternately, use straight-through cables to connect your computer and the firewall's first network interface to a hub or switch.
- 2) Note or back-up your computer's network configurations. Temporarily change your computer's network configuration to join the firewall's default network:

IP ADDRESS: 192.168.71.253 (or any address on the default network)

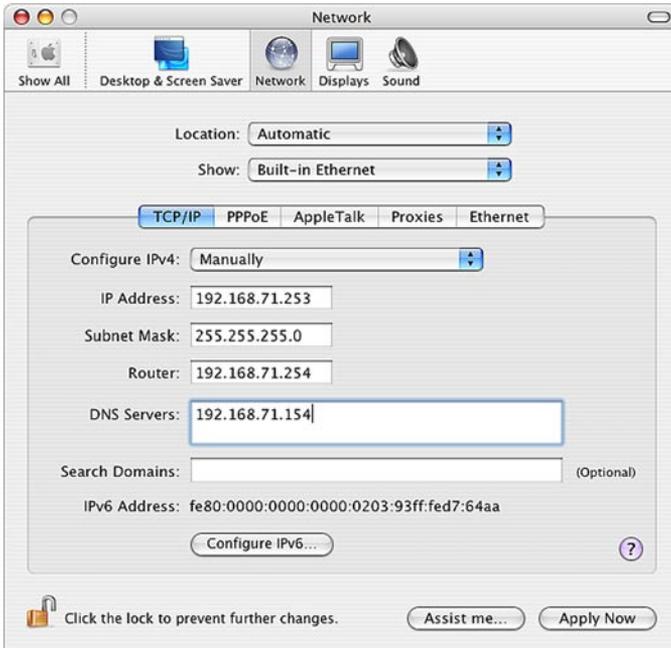
GATEWAY: 192.168.71.254

NET MASK: 255.255.255.0

DNS: none



*Temporary Network Configuration for Connection  
with Firewall Defaults - Windows*



*Temporary Network Configuration for Connection  
with Firewall Defaults - Mac OS X*

- 3) Reboot your computer if necessary to put your new network configuration into effect.

### **Note**

Please refer to the *GNAT Box System Software User's Guide* for specific information about editing network information.

## **Making a Serial Connection**

If you want to initially configure your firewall using the serial console, use a null-modem serial cable to connect a computer's COM port to the COM port of your firewall. Wiring diagrams and further information are available in the *Console Guide*.

The computer will use terminal software over the serial cable to emulate attaching a keyboard and monitor directly to the firewall.

## **Making a Video Connection**

If you want to initially configure your firewall using the video console, attach a monitor and a keyboard directly to your firewall. A mouse will not be used.

## Configuring Your Firewall

You will need to configure your firewall to match your network scheme before installing it.

### Requirements

If using a web browser, you will need:

- an SSL-compatible, frames-enabled web browser
- a temporary peer network connection between the firewall and a computer (first configuration only; otherwise, connect over the network normally)

If using GBAdmin, you will need:

- GBAdmin software, pre-installed on a Windows PC
- a temporary peer network connection between the firewall and a Windows computer (first configuration only; otherwise, connect over the network normally)

If using the serial console, you will need:

- terminal emulation software such as TeraTerm or Microsoft HyperTerminal
- a serial connection between the firewall and a computer

If using the video console, you will need:

- a monitor and keyboard directly attached to your firewall

Additionally, you will need:

- the GB-Ware firewall you installed
- an understanding of TCP/IP networking
- network IP addresses for all network interfaces used
- net masks for each attached network
- default route to the external network
- a list of services/ports to allow inbound (if any)
- a list of services/ports to restrict outbound (if any)

### Browser Compatibility

GTA recommends using Apple Safari ([www.apple.com](http://www.apple.com)), Microsoft Internet Explorer for Windows (<http://www.microsoft.com/windows/ie/>), Mozilla ([www.mozilla.org](http://www.mozilla.org)), Netscape Navigator ([www.netscape.com](http://www.netscape.com)), Opera ([www.opera.com](http://www.opera.com)), or another SSL-compatible and frame-enabled browser to administer your firewall.

On Macintosh computers, GTA does not recommend using Microsoft Internet Explorer for Macintosh (Mac IE 5). OpenSSL encryption, used by the firewall, is known to be incompatible with Mac IE 5, and your browser will not allow you to continue past the security alert screen. If you must use Mac IE 5, install the firewall using a compatible browser, GBAdmin or the console and disable SSL before using Mac IE 5. Mac IE 5 can only be used with SSL encryption disabled.

### **Caution**

Administration of the firewall without SSL is insecure and may send sensitive information such as passwords in clear text, and is not recommended if you have a hub or other network device between your computer and the firewall appliance.

## **Configuration Using a Web Browser**

- 1) Start a web browser on your computer and enter the firewall's URL into the browser's location/address field: `https://192.168.71.254`.
- 2) If your network and cables are set up correctly, you will be prompted with a security alert dialog indicating that the certificate authority is not one you have chosen to trust; that the security certificate date is valid; and that the name on the security certificate does not match the name of the site.



### *Accepting the Firewall's SSL Certificate*

Select **YES**, or if your alert differs, choose the selection that allows you to proceed. (You may establish your firewall SSL certificate once you have logged on to the firewall.)

- 3) Next, in the login screen, enter the default user ID, "**gnatbox**" (all lower case). Then enter the default password, also "**gnatbox**" (all lower case). Select **OK** or press the **RETURN** key when finished.



*Entering the Default User ID and Password*

### **Caution**

GTA recommends changing the default user ID and password to prevent unauthorized access.

### **Entering Your Network Information**

GB-Ware requires entry of the serial number and activation code. Click on **Basic Configuration** and expand the menu, then select **Features**. Enter the serial number and activation code, then click the **SAVE** button then the **OK** button.

The firewall has default settings which need to be changed to match your network settings. Click on **Basic Configuration** and expand the menu, then select **Network Information**.

Only one external and one protected network interface is required to initially configure and test the firewall. The other interface can be defined as any of the three network types: protected, external or PSN (Private Service Network, GTA's enhanced DMZ).

1) On the **Network Information** section:

- Enter IP addresses and net masks (in either dotted decimal or CIDR notation) for your external and protected networks on each network interface.
- Disable the DHCP option on the external network interface if necessary.
- Enter the default route to your Internet router's IP address.
- Enter the firewall's domain name according to your DNS server. This will automatically generate a new SSL certificate for the firewall using its domain name.

## Caution

Closing the browser without clicking **SAVE** will cause the entered data to be lost, and your firewall will remain in default configuration. You will need to re-connect to the firewall and re-enter the network information.

- Once you have completed the network configuration, apply the changes by clicking **SAVE**. The firewall will then join the assigned network. Close your browser.

## Caution

Failure to close the browser may allow unauthorized access to the firewall. To prevent this, always log out and close your browser after a firewall administration session.

## Note

If you changed the IP of NIC 0's protected network, the firewall will now be on a different logical network than your computer, and you will not be able to access the firewall from your computer. You must restore your computer's original network settings to access the firewall again.

**GNAT Box Network Information**

Logical Interfaces						
Logical Name	Type	IP Address	NIC	DHCP	Gateway	
EXTERNAL	External	199.120.225.254/24	fxp1	<input type="checkbox"/>	<input type="checkbox"/>	
PROTECTED	Protected	192.168.71.254/24	fxp0	<input type="checkbox"/>	<input type="checkbox"/>	
	External		fxp1	<input type="checkbox"/>	<input type="checkbox"/>	
	External		fxp2	<input type="checkbox"/>	<input type="checkbox"/>	
	External		fxp3	<input type="checkbox"/>	<input type="checkbox"/>	
	External		PPP1	<input type="checkbox"/>	<input type="checkbox"/>	

Host name:

Default gateway:

Bridged Interfaces			
Logical Name	Type	Interface	NIC
	External	???	???
	External	???	???

Network Interface Cards				
NIC	MAC Address	Connection	Option	MTU
fxp0	00:D0:68:00:47:D1	AUTO	default	1500
fxp1	00:D0:68:00:47:D2	AUTO	default	1500
fxp2	00:D0:68:00:47:D3	AUTO	default	1500
fxp3	00:D0:68:00:47:D4	AUTO	default	1500
PPP0		PPTP	PROTECTED	1500
PPP1		serial	COM2	1500

*Entering a Network Configuration Using a Browser*

**Using CIDR-based or Slash (/) Notation**

CIDR (Classless Inter-Domain Routing) aggregates routes so that one IP address represents thousands served by a backbone provider. GNAT Box System Software uses CIDR-based notation as the default for subnet masks, instead of dotted decimal (e.g. 255.255.255.0) notation.

Instead of the fixed 8, 16 and 24 bits used in dotted decimal Class A, B, or C net masks, CIDR-based notation can further divide the network into subnets by using bit masking of any number from 1 to 32 to determine network class (/32 representing one IP address). For example, the CIDR address 204.12.01.42/24 indicates that the first 24 bits are used for the network class ID. The /24 mask includes 254 hosts on the network, and is equivalent to 255.255.255.0 in dotted-decimal notation.

Calculate a CIDR-based notation net mask by converting the dotted decimal net mask to binary and count the ones. For a Class C network, the dotted decimal net mask is 255.255.255.0. The binary notation of that net mask is 11111111.11111111.11111111.00000000. There are 24 ones, so the CIDR notation would be /24. Using a 255.255.255.240 net mask, the binary representation would be: 11111111.11111111.11111111.11110000. The notation would be /28.

You may also enter a host address that is defined by not including a bit mask (e.g. 192.168.123.1). This is equivalent to a /32 bit mask. To enter a range of addresses, use a hyphen (-) between the two extremes of the range (e.g. 192.168.123.0-192.168.123.255).

Dotted decimal may still be used by entering the dotted decimal net mask after the forward slash.

**Re-configuring Your Computer**

If you temporarily changed your computer's network configuration to connect to the firewall, restore the original configuration now. If you formed a temporary peer network during network configuration, disassemble it now; reconnect your computer and the firewall to your network. Now your computer and firewall should both be members of your network. Reboot your computer if necessary to affect the network configuration change.

**Accessing the Firewall**

Access the firewall using the IP address you assigned to the protected network.

The firewall should now be active and functioning in default security mode (all internal users are allowed outbound and no unsolicited inbound connections are allowed). You can now perform any additional configuration tasks, including changing the administrative password.

## Caution

Failure to change the default password is a serious security weakness. GTA recommends changing the default user ID and password to prevent unauthorized access.

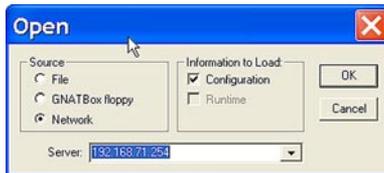
## Configuration Using GBAAdmin

If your computer's operating system is Microsoft Windows, you can choose to configure your firewall by using the GBAAdmin software you installed earlier instead of using the web interface.

## Note

GBAdmin can only be installed on a local computer that uses Windows 98, NT 4.0, XP, Me, 2000 or 2003.

- 1) Select **GBAdmin** from the Windows **Start** menu to start GBAAdmin.
- 2) Select **File** from the tool bar, then select **Open**. In the dialog box's SOURCE area, select **NETWORK**. In the SERVER field, enter the default IP address for the firewall (192.168.71.254). Make sure that there is a check in the box next to CONFIGURATION in the INFORMATION TO LOAD section. Once this is complete, press the **RETURN** key or click **OK**.



*Opening a GBAAdmin Firewall Connection*

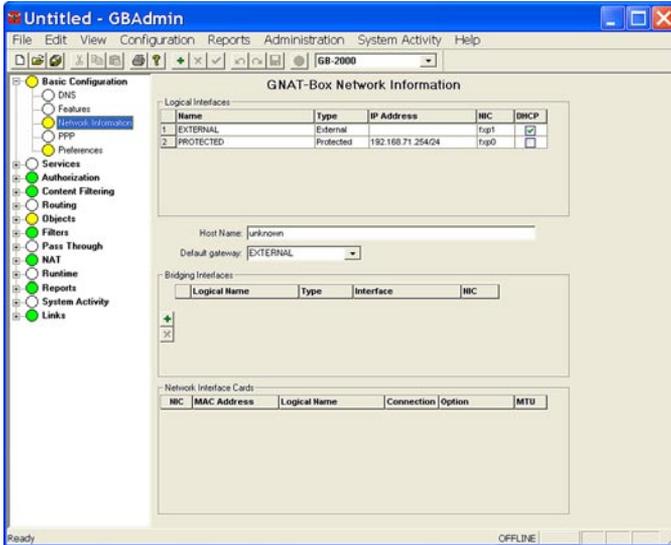
- 3) GBAAdmin will prompt you for a user ID and password to the firewall. Enter the default USER ID, which is "**gnatbox**" (all lower case) and enter the default PASSWORD, which is also "**gnatbox**" (all lower case), then press the **RETURN** key or select **OK** when finished.



*Entering the Default User ID and Password*

## Caution

GTA recommends changing the default user ID and password to prevent unauthorized access.



*GBAdmin Network Information Window*

## Entering Your Network Information

GB-Ware requires entry of the serial number and activation code. Click on **Basic Configuration** and expand the menu, then select **Features**. Enter the serial number and activation code, then click the **SAVE** button then the **OK** button.

The firewall has default settings which need to be changed to match your network settings. Click on **Basic Configuration** and expand the menu to select **Network Information**.

Only one external and one protected network are required to initially configure and test the firewall. The other interface can be defined as any of the three network types: protected, external or PSN (Private Service Network, GTA's DMZ).

### 1) On the **Network Information** section:

- Enter IP addresses and net masks (in either dotted decimal or CIDR notation, as described in the web setup method) for your external and protected networks on each port.
- Disable the DHCP option on the external network if necessary.
- Enter the default route to your Internet router's IP address.
- Enter the firewall's domain name according to your DNS server. This will automatically generate a new SSL certificate for the firewall using its domain name.

## **Caution**

Closing GBAdmin without clicking **SAVE** will cause the entered data to be lost, and your firewall will remain in default configuration. You will need to re-connect to the firewall and re-enter the network information.

- 2) Once you have completed the **Network Information** form, apply the changes by clicking **SAVE**. The firewall will then join the assigned network. Close GBAdmin.

## **Note**

If you changed the IP of network interface 0's protected network, the firewall will now be on a different logical network than your computer, and you will not be able to access the firewall from your computer. You must restore your computer's original network settings to access the firewall again.

## **Re-configuring Your Computer**

If you temporarily changed your computer's network configuration to connect to the firewall, restore the original configuration now. If you formed a temporary peer network during network configuration, disassemble it now; reconnect your computer and the firewall to your network. Now your computer and firewall should both be members of your network. Reboot your computer if necessary to affect the network configuration change.

## **Accessing the Firewall**

Access the firewall using the IP address you assigned to the protected network interface.

The firewall should now be active and functioning in default security mode (all internal users are allowed outbound and no unsolicited inbound connections are allowed). You can now perform any additional configuration tasks.

## **Configuration Using the Serial Console**

Use this user interface only if you have installed the serial version of the GB-Ware runtime.

Because the factory network information settings on the GB-Ware firewall are unlikely to match your existing network, your firewall will not automatically join your network. You will need to temporarily join a computer to the firewall using a null-modem serial cable. This allows you to configure the firewall's network settings to match the local area network (LAN) address scheme. Then you may add the firewall to your network and connect remotely (by web or GBAdmin).

## **Note**

The serial console user interface is suitable for initial firewall network interface configuration. It cannot, however, perform some of the more advanced firewall configuration tasks.

- 1) On your computer, open terminal emulator software such as Tera Term or Microsoft HyperTerminal and enter the following settings for a new connection:

EMULATION	VT-100
PORT	Computer serial (COM) port connected to the firewall via a DB-9 cable
BAUD RATE	38400
DATA / BIT RATE	8
PARITY	None
STOP	1
FLOW CONTROL	Hardware*

\* Set flow control to "None" as an alternative to hardware flow control.

- 2) Enter registration (preferences) information and basic configuration for network information. Set a new user ID and password.

### **Note**

See *Console Guide* for more information on key commands and features, including entry of routing information and firewall rules.

- 3) Basic configuration is complete. If you add the firewall to your network, you should now be able to remotely administer it using GBAdmin or a web browser.

## **Configuration Using the Video Console**

Use this user interface only if you have installed the video version of the GB-Ware runtime.

### **Note**

The video version of the GB-Ware runtime does not have factory default network settings, and hence does not initially allow any network or serial connections. If you chose to install the video version of the GB-Ware runtime, you will need to run the Setup Wizard to enter basic network information before you can use your firewall.

- 1) The firewall will probe for hardware. To verify that the system has detected and recognized your network cards, press **ALT+F1** to see the log messages. To scroll through the messages, engage the **SCROLL LOCK** key, and use either the **PAGE UP** and **PAGE DOWN** keys, or the **UP/DOWN** arrow keys. You can also view this information using the **Configuration Verification** item on the console interface or **View Log Messages** under the **System Activity** menu using GBAdmin or the web user interface.

- 2) If you specified the video console version during installation and your hardware was configured correctly, and the system did not encounter any problems, the Setup Wizard should now appear.

### Video Console Navigation

There are three modes on the video console: log messages, the main interface and statistics. View log messages by pressing **ALT+F1**. Press **ALT+F2** to switch to the main interface. These keys are always active. After initial setup, see firewall statistics by pressing **ALT+F3**.

#### Note

See *Console Guide* for more information on key commands and features, including entry of routing information and firewall rules.

### Video Console Keystroke Guide

<i>Function</i>	<i>Keystroke</i>
Exit/Abort	<b>ESC</b>
Clear field	<b>F6</b>
Previous field	<b>F7</b>
Next field	<b>F8</b> or <b>TAB</b>
Delete/Backspace	<b>DEL</b> or <b>BACKSPACE</b>
Toggle choice list	<b>SPACE BAR</b>
Display choice list	<b>F2</b>
Toggle color	<b>F12</b>
Save	<b>F10</b>
Insert	<b>INSERT</b>
Select a button	<b>SPACE BAR</b>

### Using the Setup Wizard

Complete the Setup Wizard to perform initial configuration of your firewall's network interfaces.

- GNAT Box Licensing Agreement
 

Move the cursor to **VIEW LICENSE**. If you agree to the terms, press **ESC** to return to the previous dialog box, then select **ACCEPT**; if you don't agree to the terms, select **DO NOT ACCEPT** to terminate the software installation.
- GNAT Box Wizard
 

Select **OK** to use the GNAT Box Wizard. If you choose not to use the Wizard, select **CANCEL**.

## Note

If you cancel the Setup Wizard, go to **Basic Configuration** then **Features** to enter your serial number and activation code. Next, enter your initial configuration information in **Basic Configuration** then **Network Information**. Your firewall will not be functional until these steps are performed, either by hand or Setup Wizard.



*Setup Wizard*

### 3. Host Name

Enter the host name of the firewall. The host name should be a fully-qualified domain name registered with your domain name server. Select **NEXT**.

### 4. Contact Information

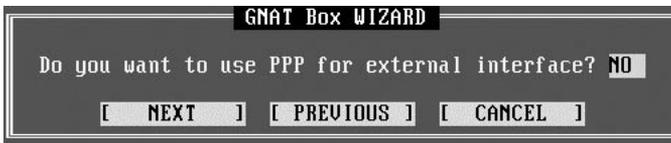
Fill in the contact information for your firewall. Select **NEXT**.

### 5. Serial Number and Activation

Enter your firewall's serial number and activation code, which are retrievable from the GTA Support web site (<https://gta.com/support/center/login/>) under **VIEW PRODUCTS** after registering your product. Select **NEXT**.

### 6a. PPP/PPPoE/PPTP

Select **NO** if you will not be using PPP on the external network interface, and go to step 6b. To use PPP/PPPoE/PPTP, toggle the field value to **YES** and click **NEXT**, then go to PPP Configuration.



*Use PPP?*

### 6b. DHCP

If your system will not utilize DHCP on the external network interface, select **NO**, and go to step 6c. If your system will use DHCP on the external network interface, select **YES**, and skip to step 7. (Typically, cable modem and xDSL sites use DHCP.)



*Run DHCP?*

#### 6c. IP Address

You will reach this option if you rejected use of dynamic IP address services. Enter the static IP address and subnet mask of the external network interface.

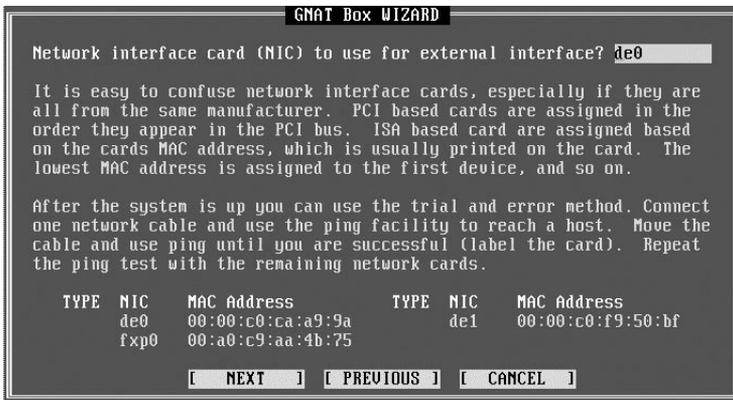
The IP address for the external network interface should be a valid ISP-registered IP address if you will be connecting your firewall to the Internet.

#### 7. Network Interface Card for the External, Protected Network or PSN

Select an available NIC to assign to the external interface. Use **F2** or the **SPACE BAR** to select from the device list. Each NIC detected on your system is listed at the bottom of the screen with its MAC address.

#### Note

All networks or sub-networks attached to a firewall interface should be on logically different networks from one another.



*Selecting a Network Interface Card*

#### 8. Protected Network Interface

Use steps 6b, 6c, and 7 to select DHCP and NIC or assign a static IP address, subnet and NIC for the protected interface. (The protected interface is required: it defines hosts protected by the firewall.)

If you are setting up a new network, GTA recommends choosing network addresses described in RFC 1918. The Internet Assign-

ment Numbers Authority (IANA) has specified network addresses in RFC 1918 that are designated exclusively for internal networks.

#### IANA Private Network IP Address Rules

Quantity of Addresses Available	Network Class	IP Address Range
1	A	10.0.0.0 - 10.255.255.255
16	B	172.16.0.0 - 172.31.255.255
256	C	192.168.0.0 - 192.168.255.255

#### Note

Because GTA firewalls perform NAT, the IP address and any network addresses behind the firewall (i.e., attached to, or on the protected network or PSN) can be unregistered. IANA compliance is largely a matter of convenience in NATted networks.

#### 9. Gateway/Default Route on External Interface (No DHCP or PPP/PPPoE/PPTP)

If your external network interface is not using DHCP (which automatically fetches gateway information), enter a default route for outbound traffic. Once the IP address, net mask, and device assignment have been made, the wizard will prompt for the default route. The wizard attempts to determine the network segment of the IP address automatically.

#### 10. Password

Assign a password to your firewall (required). Initially, the user ID and password is set to "**gnatbox**." The user ID can be changed later in **Authorization** then **Admin Accounts**.

#### Caution

GTA recommends changing the default user ID and password to prevent unauthorized access. See the *GNAT Box System Software User's Guide* for instructions.

#### 10. Saving Your Settings

The summary screen displays all your configuration settings. If you need to make changes, use the **PREVIOUS** button to move back to the desired dialog and make corrections. Once you are satisfied with your settings, select **SAVE** and allow the firewall to boot up. Initial configuration is now complete.

### **Accessing Your GTA Firewall**

After completing the initial configuration in the setup wizard, your GTA firewall should be active and functioning in default security mode (all internal users are allowed outgoing connections, and no unsolicited connections are allowed in).

After testing connectivity, you can now perform any additional configuration tasks using GBAAdmin or the web interface. See the *GNAT Box System Software User's Guide* for more information.



# 4 Troubleshooting

## Troubleshooting Basics

GTA Support recommends the following guidelines as a starting point when troubleshooting network problems:

- Start with the simplest case of locally attached hosts.
- Use IP addresses, not names. Your problem could be DNS.
- Work with one network segment at a time.
- Verify your firewall system configuration by using **Verify Configuration**. The verification check is the best method of ensuring that your system is configured correctly. Correct all errors and warnings listed.
- Your first tests should be connectivity tests. Ping and traceroute are very useful tools for testing connectivity.
- Make sure the network cabling is connected to the correct network interface. Some useful guidelines are:
  - Verify the network interface numbers, MAC addresses and logical names listed on the **Network Information** screen and in the Configuration Report.
  - Use the logical elimination method. Connect a network cable to the first network interface and use the ping facility to test for connectivity with a host on the desired network. If unsuccessful, move the cable to the next network interface and perform the test again. Repeat until successful, or all network interfaces have been tested.
  - Generate a Configuration Report. Check the report to ensure all your network devices have been recognized by the system at boot time.

## Frequently Asked Questions (FAQ)

### 1. Why can't *all* hosts (computers and devices) behind the firewall reach the Internet?

This is usually a routing problem. The traceroute facility can be very useful in debugging routing problems. Check for these problems:

- Are the hosts that can't reach the Internet on a different network subnet from the firewall?

- Have you added a static route on the firewall to tell it which router is used to reach the Internet? Have you set the router's default route to be the firewall? Have you set the default route for hosts on the problem network to be the router or firewall?
- Is the wrong IP address assigned to the hosts or firewall? All network interfaces on the firewall must be on different logical networks.
- Is the default route assigned incorrectly? The default route should always be on the same subnet as the network interface of the host (this is true for all hosts, not just the firewall). For a firewall, the default route must be an IP address on the network which is attached to the network interface.

### **Note**

When using PPP, PPTP or PPPoE, the default route is not necessarily on the same subnet. The route is assigned by your PPP provider.

### **2. Why can't one host (computers and devices) behind the firewall reach the Internet?**

This may indicate that the default route is assigned incorrectly (or not at all) to hosts on the protected or Private Service networks. All hosts protected by the firewall must use the IP address of the firewall's network interface for the respective network. Hosts that reside behind routers or other gateways on these networks generally use the IP address of the gateway or router instead.

### **3. Why can't I access the web user interface from the protected network?**

The default remote access filter set is generated from the configuration parameters entered in the Network Information screen. It is possible that the firewall's protected network interface is on a different subnet from your host. Check the remote access filter for the web interface; it may need to be adjusted.

### **4. Why do I get errors when starting GBAdmin? Why is online help not displayed?**

GBAdmin requires Microsoft Windows and Microsoft Internet Explorer 5.x or later. Components from Internet Explorer are used to display the online help information. Errors will occur if Internet Explorer for Windows is not correctly installed.

### **5. Why can't I "see" or ping the protected network interface?**

First check for proper network configuration settings. If the network configuration is correct for the network interface, you may have the wrong cable for your connection.

- For a direct connection (firewall to host or router), you need a crossover cable.
- For a connection through a hub or switch, you need a straight-through cable.

## Note

Distinguish between crossover cables and straight-through cables by comparing the connection ends. On a straight-through cable, the wire order matches; on a crossover cable, the first three of the four wires are in reverse order.

### 6a. How do I install the parallel port hardware key block?

The parallel port hardware key block must be installed in the parallel (printer) port. The side to be attached to the port is labeled COMPUTER, with arrows pointing in the direction of the computer. Screws are provided to connect the key block securely to the port. If the computer is close to a wall or other obstacle, you can attach an extension cable to the port, then attach the hardware key block to the cable. Use a straight-through, 25-pin, male-to-female cable.

If the hardware key block is not recognized once you have booted the system, and the serial number and activation code are both entered correctly, make sure that your system's parallel port is set to the values below.

Hardware Key Block	Settings
Mode:	EPP, SPP or Both
Address (Hex Value)	IRQ
0x378	7
0x278	5

### 6b. How do I install the USB hardware key block?



*USB Key Block*

In order to use GB-Ware, you must first install the hardware key block. ***Do this after you install GB-Ware, but before configuration.***

1. Register your GB-Ware firewall and retrieve your activation code. (For more information, see the registration section.)
2. Plug the USB key block in to your GB-Ware firewall.



*Installation of the USB Key Block*

3. Enter the GB-Ware serial number and activation code in the **Basic Configuration** then **Features** section of the GB-Ware web interface or wizard.

### **Note**

If the hardware key block is not recognized once you have booted the system, and the serial number and activation code are both entered correctly, make sure that your firewall's USB port is active and functional according to your hardware's BIOS. These settings may be checked during the boot process before operating system software is loaded.

Refer to your system's hardware guide for specific instructions.

### **7. Why is my system booting up in unregistered mode instead of going to the Setup Wizard?**

Check your serial number and activation code. If both of these numbers are correct, it may mean that the hardware key block is not being recognized by your system. See #6, above, for more information.

### **8. I selected the video console, but now I would like to use the serial interface.**

Always back up your configuration before uploading a new runtime or re-installing the operating system.

To switch from the video console interface to the serial console interface, access the system on the Web interface and use the **Upload Runtime** feature to install the SIO ("serial interface only") version from the installation CD.

Optionally, re-install the operating system using the steps outlined in the manual for selecting the SIO version. After loading the SIO runtime, upload the backup configuration to the firewall.

### **9. My computer is not booting from the installation CD.**

Make sure you are using the GB-Ware installation CD, that the boot sequence is set properly, and that you are using an IDE CD-ROM.

### **10. My system does not see the USB Compact Flash card.**

Make sure you are using a GTA-certified Compact Flash card and that the USB Compact Flash card reader is properly connected to your PC.

**11. The warning message “Initializing runtime slice 2 failed; No space left on device” is displayed.**

1. The Compact Flash card is too small; GTA only supports GTA-certified Compact Flash cards.
2. The Compact Flash card no longer functions correctly; contact GTA or a GTA Channel Partner for hardware warranty.

**12. I lost my user name and/or password. How can I log on to my firewall ?**

If login information has been irretrievably lost, a firewall can be reset to factory defaults, erasing all current configuration data and resetting both the case-sensitive user name and password to “**gnatbox**”.

**Caution**

Resetting the firewall will cause it to lose current configuration data. The configuration data can only be restored by loading a saved configuration with a known user name and password, or by manually entering the information.

To reset your firewall to factory defaults, attach either a terminal (using a serial console cable), or a computer with terminal emulation software (using a DB-9 null-modem cable). Enter these settings for the console connection:

EMULATION	VT-100
PORT	Computer serial (COM) port connected to the firewall via a DB-9 cable
BAUD RATE	38400
DATA / BIT RATE	8
PARITY	None
STOP	1
FLOW CONTROL	Hardware*

\* Set flow control to “None” as an alternative to hardware flow control.

Power on the firewall. The following words will display:

```
GNAT Box System Software x.x.x
loading ...
```

When the word “loading” appears, immediately press **CONTROL-R**. The system will begin to load, and configuration and hardware data will appear on screen. Finally, a confirmation question displays:

```
Are you sure you want to reset your firewall configuration?:
("yes" or "no")
```

To reset to factory defaults, type the word “yes” in **lower case** letters. Typing any other key will reboot the system without resetting to defaults. There is no time out; the reset confirmation question will remain until a key is pressed.

**13. How do I revert to my previous configuration after a version upgrade?**

The firewall's Compact Flash or hard drive memory is in two sections ("slices"); one contains the current software version plus any saved configuration, the other contains the previous software version and configuration. A new firewall's two memory slices are identical.

When the firewall is upgraded to a new runtime, the upgrade process automatically overwrites the memory slice not in use with the new software version and the existing configuration, leaving the production firewall version and configuration intact. When the firewall is rebooted, the updated memory slice will load by default.

To select a memory slice other than the default, set up the console interface as described in Troubleshooting question #7.

When the system boots up, the memory slice information will load. When the word "Default" appears, immediately type the number of the slice you wish to load.

```
1  GNAT Box slice 1
2  GNAT Box slice 2
Default: 1
```

**14. How do I use the memory section feature for live configuration testing?**

The memory section ("slice") feature can be used to test a new firewall configuration in production while preserving the current configuration in the other memory slice. In the following example, memory slice 1 contains the current configuration, and memory slice 2 is used for testing a configuration.

1. Save a copy of the test configuration.
2. Reboot the firewall using the console interface.
3. Select and boot memory slice 2.

**Caution**

---

The test configuration will now be your active firewall.

4. Upload the configuration saved in step #1.
5. Switch to the web interface or GBAAdmin to make advanced configuration changes; the currently selected slice will load by default until another is selected.
6. To revert to the last configuration, reboot the firewall using the console interface and select memory slice 1.

**Note**

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For more Troubleshooting suggestions, see the *GNAT Box System Software User's Guide* and GTA's web site at [www.gta.com](http://www.gta.com).

**16. When I try to boot from the GB-Ware installation CD to install the system, I get the error message, "Mounting CD – failed: Input/output error." What steps can I take to locate the problem?**

Use these troubleshooting steps:

1. If you have more than one CD-ROM drive installed, either disconnect the additional CD-ROM drives and retry, or verify that the installation CD-ROM drive is detected first in the boot sequence, before other CD-ROM drives in the IDE controller ports.
2. Connect a different CD-ROM drive and retry.
3. Try installing GB-Ware into a different hardware system.

**16. My system did not auto-detect the Compact Flash.**

Use these troubleshooting steps:

1. If the Compact Flash module was not auto-detected, make sure that the card is fully seated in the adapter board.
2. Enter the system BIOS of the target system for GB-Ware. Once in the BIOS, load the setup defaults and/or the BIOS defaults. Locate and run IDE auto-detection. The Compact Flash module should be auto-detected on the primary IDE controller port. Select **SAVE**.
4. If you have an older system (e.g. Compaq Pentium II 450 686T3 and Desk Pro EN), try setting the PIO mode to 0, then retry auto-detect.

**17. When I boot GB-Ware, GB-Ware hangs after the memory slice default number displays. (You may also hear a beeping sound coming from the firewall or serial console computer.)**

Enter the firewall's BIOS. Load the setup defaults and/or the BIOS defaults. Disable logical block access (LBA) in the BIOS, if the option is available. LBA may also be referred to as "logical" or "logical block," or it may be indicated with an option to change to CHS (cylinders/heads/sectors).

**Note**

---

For more troubleshooting suggestions, see the *GNAT Box System Software User's Guide*.

**18. When I boot GB-Ware, I receive the error message "r10: Couldn't map ports/memory".**

Enter the firewall's BIOS. Disable plug-and-play. Reboot. If the error message still appears, enter the BIOS again and load the setup defaults and/or the BIOS defaults.



# Appendix

## Installing the Compact Flash Card

If you are installing your GB-Ware firewall on a Compact Flash card, use these instructions to install the Compact Flash card for your firewall. The instructions assume that the Compact Flash IDE adapter is being installed in the intended firewall; modification is necessary to install the GB-Ware firewall Compact Flash IDE adapter on an installation proxy computer.

### Requirements

Required components include (clockwise from the left of the illustration):

- mounting posts
- Compact Flash IDE adapter board
- IDE cable
- 512 MB GTA-certified Compact Flash card

This component kit is available for purchase from GTA; GB-Ware may also be installed to a hard drive instead of using a Compact Flash card kit.



*Compact Flash IDE Adapter Components*

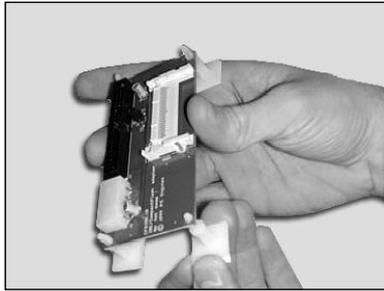
Before beginning, do not plug in any part of the system; make sure that you are properly grounded to prevent static electricity discharge before opening the case.

## **Warning**

Improper grounding can damage your system or Compact Flash card, and may cause physical injury or death. Never service your GB-Ware system while it is plugged in or powered on!

## **Assembling the Compact Flash IDE Adapter**

- 1) Insert the four white nylon mounting posts into the mounting holes in the adapter board. (You can also mount the adapter board in a hard disk drive bay using 3.5" hard disk drive mounting hardware.)



*Inserting the Mounting Posts into the IDE Adapter Board*

- 2) Holding the Compact Flash card with the label up, slide the card into the slot on the adapter board, pinholes in, until firmly and evenly seated.



*Inserting the Compact Flash Card into the IDE Adapter Board*

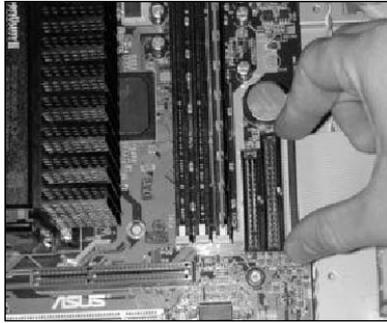
## **Installing the Compact Flash IDE Adapter**

Open the case of your intended firewall. (Please contact the case manufacturer if you have questions on how to complete this step.)

### **Locating IDE Controller Ports**

Locate the IDE controller ports on the motherboard, and remove anything that is plugged into them. The Compact Flash module may not function properly with other components plugged into the IDE controller ports.

(Refer to the motherboard's user guide if you cannot locate the IDE controller ports.)



*Locating the Primary IDE Controller Port*

### **Mounting the Compact Flash Card**

Mount the adapter board securely inside the firewall's case; find a place where the components fit easily and securely, and where the IDE cable can easily reach from the adapter board to the primary IDE controller port. **DO NOT** mount the adapter board onto or near other electronic components inside the case.

#### ***Warning***

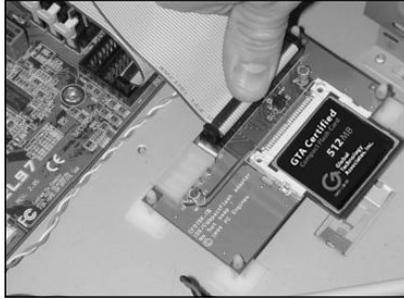
The Compact Flash card is NOT hot-swappable. Never insert or remove the Compact Flash card while the power is on. Doing so can damage the Compact Flash card, and electrical discharge could cause injury. Never open your GB-Ware firewall's chassis while it is plugged in or powered on!



*Mounting the Compact Flash IDE Adapter Inside the Intended Firewall*

### Connecting the IDE Cable

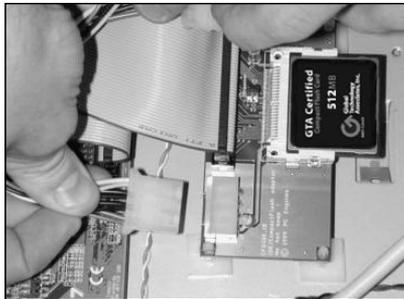
Insert one end of the IDE cable into the primary IDE controller port with the red-striped side of the cable lined up with pin #1 of the IDE controller port. Insert the other end of the IDE cable into the IDE port of the adapter board with the red-striped side of the IDE cable nearest to the 4-pin power port.



*Attaching the IDE Cable to the Compact Flash IDE Adapter Board*

### Connecting the Power Supply

Locate a 4-pin power connector on your system's power supply, and connect a power cable from it to the 4-pin power port of the adapter board.



*Connecting the Power Supply to the 4-pin Power Port of the IDE Adapter Board*

Close the case and power on your firewall to test for operational error.

If you have not yet installed GB-Ware on the Compact Flash card, see the installation chapter to continue installing GB-Ware.

## Moving an Old Configuration to GB-Ware

These instructions guide an upgrade to GB-Ware from another GNAT Box firewall (including another GB-Ware firewall). To upgrade, you must have an existing viable GNAT Box System Software configuration file from another firewall and an installed GB-Ware firewall

## Note

Those upgrading from GNAT Box System Software version 2.x or lower should record all configuration data and use it as a guide to enter new configuration data manually. You may use the web interface to print the configuration or manually record it.

- 1) Once you have installed GB-Ware on a Compact Flash card or hard drive, power up the GB-Ware firewall.
- 2) Overwrite the default GB-Ware configuration with your network information. See the configuration chapter for instructions on entering this information.

If you have installed the SIO (“serial console only”) version of the runtime, when the boot process is complete, the firewall will be un-registered and configured with factory default settings; use the web interface, GBAdmin or the serial console to enter your network settings. If you have installed the video console version of the GNAT Box runtime, use the video console’s Setup Wizard.

- 3) Access the GB-Ware firewall on its protected network interface to test firewall connectivity.

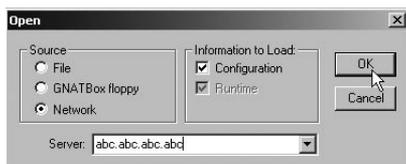
## Note

For the upgrade, connectivity with the protected network interface is particularly important; you will use the protected interface to connect to the GB-Ware firewall using GBAdmin or the web interface, and transfer the GB-Ware firewall configuration.

## Merging Configurations Using GBAdmin

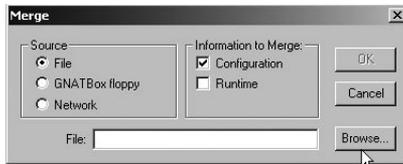
Unless you are uploading a new version of GNAT Box System Software to the same firewall, you will need to merge the configuration of the old firewall with the new GB-Ware configuration. Configuration merging can currently only be achieved by using GBAdmin.

- 1) Start your new version of GBAdmin. (In Windows, go to **Start Menu/Programs/GTA/GB-Ware 3.x.x/GBAdmin.**)
- 2) Make sure the GB-Ware firewall is powered on and connectivity is possible.
- 3) In GBAdmin, click **File** then **Open**. Select the **NETWORK** radio button. In the **SOURCE** field, enter the GB-Ware firewall’s protected network interface IP address. Click the **OK** button.



*File>Open the Firewall’s Protected Network IP Address using GBAdmin*

- 4) GBAdmin will connect to the GB-Ware firewall and prompt you for the user ID and password selected during installation; when successfully authenticated, GBAdmin will load the GB-Ware configuration.
- 5) Merge the old configuration with the GB-Ware firewall configuration. Click **File** then **Merge**. A warning will ask if you wish to overwrite your current settings. Click **YES**. In the MERGE dialog box, select **FILE** in the SOURCE field. In the INFORMATION TO MERGE field, select **CONFIGURATION**. **Do not check the RUNTIME check box.**



*File>Merge the GB360.GBcfg using GBAdmin*

- 6) Click **Browse** and find the directory where you saved the old GNAT Box firewall configuration. Select the configuration file and click **OK**.
- 7) Enter the login for your old configuration file. After entering it, press **RETURN** to load the GB-Ware firewall configuration.
- 8) Click **Basic Configuration** then **Features**. Enter the GB-Ware serial number and activation code if necessary. (This step should be completed during installation of GB-Ware.)

GNAT-Box Features		
Serial number: <input type="text" value="12145678"/>		
	Activation Code	Description
1	AAAAAAAA-BBBBBBBB-CCCCCCC-DDDDDDDD	GB-Ware 3.5 - Interfaces (3)

*Entering the Serial Number and Activation Codes using GBAdmin*

- 9) Click **Basic Configuration** then **Network Information**. Verify that all your interfaces have been recognized and that they have the proper NICs selected.

Logical Interfaces					
	Name	Type	IP Address	NIC	DHCP
1	EXTERNAL	External	199.199.199.9/24	ri1	<input type="checkbox"/>
2	PROTECTED	Protected	192.168.71.84/24	ri0	<input type="checkbox"/>

*Configuring Logical Interfaces using GBAdmin*

**Note**

If your NIC is not listed, it's possible that you are upgrading from an older version in which that NIC was supported. Please contact support with any questions. If you are placing the configuration on new hardware with different NICs, you will need to select your cards.

- 10) Save the configuration to the firewall by clicking on the **SAVE ALL** button on the tool bar or by selecting **File** then **Save All**. This will save the entire configuration and any changes you have made to the GB-Ware firewall.

**Note**

If your firewall's logical network differs from the previous network that you used to access the firewall, you may not be able to access the firewall until you alter your computer's network settings to join the firewall's new logical network.



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