

# WatchGuard® Firebox® System Reference Guide

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WatchGuard Firebox System



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Part No:

WFS Software Number 7.0

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# Internet Protocol Reference

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Internet Protocol (IP) specifies the format of packets and the addressing scheme for sending data over the Internet. By itself, it functions like a postal system allowing you to address a package and drop it into the system. There is, however, no direct link between you and the recipient. In other words, there is no package.

Most networks combine IP with higher-level protocols like Transmission Control Protocol (TCP). Unlike simple IP, TCP/IP establishes a connection between two host servers so that they can send messages back and forth. TCP/IP provides the “packaging.”

## Internet Protocol Header

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IP is an Internet standard that enables the shipment of datagrams — self-contained packets of information that include their own address and delivery instructions. IP prepends a header to each datagram. The IP header contains a minimum of twelve attributes as well as additional optional attributes.

Attribute	Size	Description
Version	4 bits	IP format number (Current version = 4)
IHL	4 bits	Header length in 32-bit words (Minimum = 5)
TOS	8 bits	Type of service sets routing priorities. It is generally under-utilized because few application layers can set it.
Tot_Len	16 bits	Total length of packet measured in octets. It is used in reassembling fragments.
ID	16 bits	Packet ID, used for reassembling fragments.
Flags	3 bits	Miscellaneous flags
Frag_Off	13 bits	Identifies fragment part for this packet.
TTL	8 bits	Time to live. It sets the maximum time the datagram remains alive in the system.
Protocol	8 bits	IP protocol number. Indicates which of TCP, UDP, ICMP, IGMP, or other Transport protocol is inside.
Check	16 bits	Checksum for the IP header
Sour_Addr	32 bits	Source IP address
Dest_Addr	32 bits	Destination IP address
Options	24 bits	IP Options (Present if IHL is 6)

## IP header number list

The IP Protocol header contains an 8-bit field that identifies the protocol for the transport layer for the datagram.

Keyword	Number	Protocol
	0	Reserved
ICMP	1	Internet Control Message
IGMP	2	Internet Group Management
GGP	3	Gateway-to-Gateway
IP	4	IP-within-IP (encapsulation)
ST	5	Stream

<b>Keyword</b>	<b>Number</b>	<b>Protocol</b>
TCP	6	Transmission Control Protocol
UCL	7	UCL
EGP	8	Exterior Gateway Protocol
IGP	9	Any private interior gateway
BBN-RCC-MON	10	BBN RCC Monitoring
NVP-II	11	Network Voice Protocol
PUP	12	PUP
ARGUS	13	ARGUS
EMCON	14	EMCON
XNET	15	Cross Net Debugger
CHAOS	16	Chaos
UDP	17	User Datagram Protocol
MUX	18	Multiplexing
DCN-MEAS	19	DCN Measurement Subsystems
HMP	20	Host Monitoring
PRM	21	Packet Radio Measurement
XNS-IDP	22	XEROX NS IDP
TRUNK-1	23	Trunk-1
TRUNK-2	24	Trunk-2
LEAF-1	25	Leaf-1
LEAF-2	26	Leaf-2
RDP	27	Reliable Data Protocol
IRTP	28	Internet Reliable Transaction
ISO-TP4	29	ISO Transport Protocol Class 4
NETBLT	30	Bulk Data Transfer Protocol
MFE-NSP	31	MFE Network Services Protocol
MERIT-INP	32	MERIT Internodal Protocol
SEP	33	Sequential Exchange Protocol
3PC	34	Third Party Connect Protocol

<b>Keyword</b>	<b>Number</b>	<b>Protocol</b>
IDPR	35	Inter-Domain Policy Routing Protocol
XTP	36	XTP
DDP	37	Datagram Delivery Protocol
IDPR-CMTP	38	IDPR Control Message Transport Protocol
TP++	39	TP++ Transport Protocol
IL	40	IL Transport Protocol
SIP	41	Simple Internet Protocol
SDRP	42	Source Demand Routing Protocol
SIP-SR	43	SIP Source Route
SIP-FRAG	44	SIP Fragment
IDRP	45	Inter-Domain Routing Protocol
RSVP	46	Reservation Protocol
GRE	47	General Routing Encapsulation
MHRP	48	Mobile Host Routing Protocol
BNA	49	BNA
ESP	50	Encapsulated Security Payload
AH	51	Authentication Header
I-NLSP	52	Integrated Net Layer Security TUBA
SWIPE	53	IP with Encryption
NHRP	54	NBMA Next Hop Resolution Protocol
	55-60	Unassigned
	61	Any host internal protocol
CFTP	62	CFTP
	63	Any local network
SAT-EXPAK	64	SATNET and Backroom EXPAK
KRYPTOLAN	65	Kryptolan
RVD	66	MIT Remote Virtual Disk Protocol
IPPC	67	Internet Pluribus Packet Core
	68	Any distributed file system

<b>Keyword</b>	<b>Number</b>	<b>Protocol</b>
SAT-MON	69	SATNET Monitoring
VISA	70	VISA Protocol
IPCV	71	Internet Packet Core Utility
CPNX	72	Computer Protocol Network Executive
CPHB	73	Computer Protocol Heart Beat
WSN	74	Wang Span Network
PVP	75	Packet Video Protocol
BR-SAT-MON	76	Backroom SATNET Monitoring
SUN-ND	77	SUN NDPROTOCOL-Temporary
WB-MON	78	WIDEBAND Monitoring
WB-EXPAK	79	WIDEBAND EXPAK
ISO-IP	80	ISO Internet Protocol
VMTP	81	VMTP
SECURE-VMTP	82	SECURE-VMTP
VINES	83	VINES
TTP	84	TTP
NSFNET-IGP	85	NSFNET-IGP
DGP	86	Dissimilar Gateway Protocol
TCF	87	TCF
IGRP	88	IGRP
OSPFIGP	89	OSPFIGP
SPRITE-RPC	90	Sprite RPC Protocol
LARP	91	Locus Address Resolution Protocol
MTP	92	Multicast Transport Protocol
AX.25	93	AX.25 Frames
IPIP	94	IP-within-IP Encapsulation Protocol
MICP	95	Mobile Internetworking Control Protocol

<b>Keyword</b>	<b>Number</b>	<b>Protocol</b>
SCC-SP	96	Semaphore Communications Security Protocol
ETHERIP	97	Ethernet-within-IP Encapsulation
ENCAP	98	Encapsulation Header
	99	Any private encryption scheme
GMTP	100	GMTP
	101-254	Unassigned
	255	Reserved

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## Internet Protocol Options

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Internet Protocol options are variable-length additions to the standard IP header. Unfortunately, enabling IP options can be risky; hackers can use them to specify a route that helps them gain access to your network. Because most applications make it very obscure or difficult to use IP options, they are rarely used.

There are several kinds of IP options:

### *Security*

Control routing of IP packets that carry sensitive data. Security options are rarely supported.

### *Stream ID (SID)*

The stream ID option is rarely supported.

### *Source Routing*

Both the loose source route option and the strict source route option enable the source of an Internet packet to provide routing information. Source routing options can be very dangerous, because a clever attacker might use them to masquerade as another site. However, loose source routing and the traceroute facility can also help debug some obscure routing problems.

### *Record Route*

The record route option was originally intended for use in testing the Internet. Unfortunately, record route can record only ten IP

addresses. On the present Internet, typical long-haul transmissions can involve twenty or thirty hops, rendering the record route option obsolete.

### *Time Stamp*

The time stamp option helps measure network propagation delays. This task is done more effectively, however, with higher-level time protocols or time-stamp messages.

## **Transfer Protocols**

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The IP protocol encapsulates information contained in the transport layer. The transport layer has several protocols that specify how to transmit data between applications: for example, UDP, TCP, ICMP, and others.

### **UDP**

User Datagram Protocol (UDP) is a connectionless, potentially unreliable datagram protocol. It trades reliability for speed and low overhead. To ensure accurate transmission, it requires that the application layer verify that packets arrive at their destination.

Characteristics of UDP include:

- Often used for services involving the transfer of small amounts of data where retransmitting a request is not a problem.
- Used for services such as time synchronization in which an occasionally lost packet will not affect continued operation. Many systems using UDP resend packets at a constant rate to inform their peers about interesting events.
- Primarily used on LANs, in particular for Network File System (NFS) services where its low overhead gives it a substantial performance advantage. (Network File System is a popular TCP/IP service for providing shared file systems over a network.) A lack of congestion control means that using UDP for bulk data transfer over long-haul connections is not recommended.
- Supports broadcasts.
- Provides abstraction of ports.

- A connection is described by its source and destination ports and its source and destination IP addresses. In typical usage, port numbers below 1024 are reserved for well-known services (destinations), and the client side is supposed to use ports above 1023 for the source of the connection. However, this rule has many notable exceptions. In particular, NFS (port 2049) and Archie (port 1525) use server ports at numbers above 1024. Some services use the same source and destination port for server-to-server connections. Common examples are DNS (53), NTP (123), syslog (514), and RIP (520).

## TCP

Transmission Control Protocol (TCP) provides reliable stream-oriented services. It trades speed and overhead for increased reliability. Like UDP, TCP provides source and destination ports that are used in a similar fashion.

TCP uses a rather complicated state machine to manage connections. There are several attribute bits that control the state of a connection. Three very important attribute bits of TCP packets are the SYN, ACK, and FIN bits. The SYN bit is set only on the first packet sent in each direction for a given connection. The ACK bit is set when the other side is acknowledging the receipt of data to the peer. The FIN bit is set when either side chooses to close the connection.

## ICMP

The Internet Control Message Protocol (ICMP) is used primarily to deliver error information about other services. It is otherwise quite similar in practical operation to UDP. That is, it is connectionless and does not guarantee that packets are delivered to their destination. One dangerous ICMP packet is the ICMP redirect packet, which can change routing information on the machines that receive it.

## Other protocols

The vast majority of the traffic on the Internet uses one of the three protocols mentioned in the previous section. Some other protocols are as follows:

***IGMP (Internet Group Multicast Protocol)***

A protocol primarily designed for hosts on multiaccess networks to inform locally attached routers of their group membership information.

***IPIP (IP-within-IP)***

An encapsulation protocol used to build virtual networks over the Internet.

***GGP (Gateway-Gateway Protocol)***

A routing protocol used between autonomous systems.

***GRE***

A protocol used for PPTP.

***ESP***

An encryption protocol used for IPSec.

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## **Standard Ports and Random Ports**

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UDP and TCP encapsulate information contained within the application layer. The appropriate application processes are designated by source and destination port numbers. These port numbers, along with the source and destination IP addresses, specify a unique connection on the Internet.

For example, it is reasonable to have two telnet sessions from one host to another. However, since telnet uses a well-known service number of 23, something must distinguish these two connections. The other port in these cases will be a port that is typically greater than 1023. This alternative port designation is dynamically allocated by the operating system on the client side.

Random ports can cause a great amount of trouble if they happen to match a well-known service on a port above 1023. If some client machine assigns a random port of 2049, the connection may mysteriously fail. Similar problems can occur with the X Window and Archie services.

In practice, most operating systems cycle port numbers between 1024 and a number somewhere in the range of 2100, depending on how many TCP connections are currently open and whether a recently closed connection used a similar port number. This makes the above problem rare.



# MIME Content Types

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A content-type header is used by applications to determine what kind of data they are receiving, thus allowing them to make decisions about how it should be handled. It allows clients to correctly identify and display video clips, images, sound, or non-HTML data. People are probably most familiar with the MIME content types sent in email.

The WatchGuard Proxied HTTP service uses content-type headers to determine whether to allow or deny an HTTP transaction. Use Policy Manager to configure the Proxied HTTP service to allow or deny content-types. Content types are also used in SMTP and are configurable in the SMTP proxy. This chapter contains a list of the more commonly used MIME content-types.

Wildcards may be used to select all subtypes within a type, thereby denying all or allowing all of that MIME type. For example, to allow all content-types that are text (including text/enriched, text/plain, and others), use the content-type `text/*`.

New, registered MIME content types appear regularly. WatchGuard recommends frequent checking of an online reference for the most current list. One source of current MIME types is:

<ftp://ftp.isi.edu/in-notes/iana/assignments/media-types>

In addition, WatchGuard encourages you to email requests for inclusion of new content types in our master list to:

[manual@watchguard.com](mailto:manual@watchguard.com)

<b>Type</b>	<b>Subtype</b>	<b>Reference</b>
text	plain	[RFC2646, RFC2046]
	richtext	[RFC2045, RFC2046]
	enriched	[RFC1896]
	tab-separated-values	[Paul Lindner]
	html	[RFC2854]
	sgml	[RFC1874]
	vnd.latex-z	[Lubos]
	vnd.fmi.flexstor	[Hurтта]
	uri-list	[RFC2483]
	vnd.abc	[Allen]
	rfc822-headers	[RFC1892]
	vnd.in3d.3dml	[Powers]
	prs.lines.tag	[Lines]
	vnd.in3d.spot	[Powers]
	css	[RFC2318]
	xml	[RFC3023]
	xml-external-parsed-entity	[RFC3023]
	rtf	[Lindner]
	directory	[RFC2425]
	calendar	[RFC2445]
	vnd.wap.wml	[Stark]
	vnd.wap.wmlscript	[Stark]
	vnd.motorola.reflex	[Patton]
	vnd.fly	[Gurney]
	vnd.wap.sl	[WAP-Forum]
	vnd.wap.si	[WAP-Forum]

	t140	[RFC2793]
	vnd.ms-mediapackage	[Nelson]
	vnd.IPTC.NewsML	[IPTC]
text	vnd.IPTC.NITF	[IPTC]
	vnd.curl	[Hodge]
	vnd.DMClientScript	[Bradley]
	parityfec	[RFC3009]
multipart	mixed	[RFC2045, RFC2046]
	alternative	[RFC2045, RFC2046]
	digest	[RFC2045, RFC2046]
	parallel	[RFC2045, RFC2046]
	appledouble	[MacMime, Patrick Faltstrom]
	header-set	[Dave Crocker]
	form-data	[RFC2388]
	related	[RFC2387]
	report	[RFC1892]
	voice-message	[RFC2421, RFC2423]
	signed	[RFC1847]
	encrypted	[RFC1847]
	byteranges	[RFC2068]
message	rfc822	[RFC2045, RFC2046]
	partial	[RFC2045, RFC2046]
	external-body	[RFC2045, RFC2046]
	news	[RFC 1036, Henry Spencer]
	http	[RFC2616]
	delivery-status	[RFC1894]
	disposition-notification	[RFC2298]
	s-http	[RFC2660]
application	octet-stream	[RFC2045, RFC2046]

	postscript	[RFC2045, RFC2046]
	oda	[RFC2045, RFC2046]
	atomicmail	[atomicmail, Borenstein]
application	andrew-inset	[andrew-inset, Borenstein]
	slate	[slate, terry crowley]
	wita	[Wang Info Transfer, Larry Campbell]
	dec-dx	[Digital Doc Trans, Larry Campbell]
	dca-rft	[IBM Doc Content Arch, Larry Campbell]
	activemessage	[Ehud Shapiro]
	rtf	[Paul Lindner]
	applefile	[MacMime, Patrick Faltstrom]
	mac-binhex40	[MacMime, Patrik Faltstrom]
	news-message-id	[RFC1036, Henry Spencer]
	news-transmission	[RFC1036, Henry Spencer]
	wordperfect5.1	[Paul Lindner]
	pdf	[Paul Lindner]
	zip	[Paul Lindner]
	macwriteii	[Paul Lindner]
	msword	[Paul Lindner]
	remote-printing	[RFC1486, Rose]
	mathematica	[Van Nostern]
	cybercash	[Eastlake]
	commonground	[Glazer]
	iges	[Parks]
	riscos	[Smith]
	eshop	[Katz]

	x400-bp	[RFC1494]
	sgml	[RFC1874]
	cals-1840	[RFC1895]
application	pgp-encrypted	[RFC3156]
	pgp-signature	[RFC3156]
	pgp-keys	[RFC3156]
	vnd.framemaker	[Wexler]
	vnd.mif	[Wexler]
	vnd.ms-excel	[Gill]
	vnd.ms-powerpoint	[Gill]
	vnd.ms-project	[Gill]
	vnd.ms-works	[Gill]
	vnd.ms-tnef	[Gill]
	vnd.svd	[Becker]
	vnd.music-niff	[Butler]
	vnd.ms-artgalry	[Slawson]
	vnd.truedoc	[Chase]
	vnd.koan	[Cole]
	vnd.street-stream	[Levitt]
	vnd.fdf	[Zilles]
	set-payment-initiation	[Korver]
	set-payment	[Korver]
	set-registration-initiation	[Korver]
	set-registration	[Korver]
	vnd.seemail	[Webb]
	vnd.businessobjects	[Imoucha]
	vnd.meridian-slingshot	[Wedel]
	vnd.xara	[Matthewman]
	sgml-open-catalog	[Grosso]
	vnd.rapid	[Szekely]
	vnd.enliven	[Santinelli]

	vnd.japannet-registration-wakeup	[Fujii]
	vnd.japannet-verification-wakeup	[Fujii]
	vnd.japannet-payment-wakeup	[Fujii]
	vnd.japannet-directory-service	[Fujii]
application	vnd.intertrust.digibox	[Tomasello]
	vnd.intertrust.nncp	[Tomasello]
	prs.alvestrand.titrax-sheet	[Alvestrand]
	vnd.noblenet-web	[Solomon]
	vnd.noblenet-sealer	[Solomon]
	vnd.noblenet-directory	[Solomon]
	prs.nprend	[Doggett]
	vnd.webturbo	[Rehem]
	hyperstudio	[Domino]
	vnd.shana.informed.formtemplate	[Selzler]
	vnd.shana.informed.formdata	[Selzler]
	vnd.shana.informed.package	[Selzler]
	vnd.shana.informed.interchange	[Selzler]
	vnd.\$commerce_battelle	[Applebaum]
	vnd.osa.netdeploy	[Klos]
	vnd.ibm.MiniPay	[Herzberg]
	vnd.japannet-jpnstore-wakeup	[Yoshitake]
	vnd.japannet-setstore-wakeup	[Yoshitake]
	vnd.japannet-verification	[Yoshitake]
	vnd.japannet-registration	[Yoshitake]
	vnd.hp-HPGL	[Pentecost]
	vnd.hp-PCL	[Pentecost]
	vnd.hp-PCLXL	[Pentecost]
	vnd.musician	[Adams]
	vnd.FloGraphIt	[Floersch]
	vnd.intercon.formnet	[Gurak]

	vemmi	[RFC2122]
	vnd.ms-asf	[Fleischman]
	vnd.ecdis-update	[Buettgenbach]
	vnd.powerbuilder6	[Guy]
	vnd.powerbuilder6-s	[Guy]
application	vnd.lotus-wordpro	[Wattenberger]
	vnd.lotus-approach	[Wattenberger]
	vnd.lotus-1-2-3	[Wattenberger]
	vnd.lotus-organizer	[Wattenberger]
	vnd.lotus-screencam	[Wattenberger]
	vnd.lotus-freelance	[Wattenberger]
	vnd.fujitsu.oasys	[Togashi]
	vnd.fujitsu.oasys2	[Togashi]
	vnd.swiftview-ics	[Widener]
	vnd.dna	[Searcy]
	prs.cww	[Rungchavalnont]
	vnd.wt.stf	[Wohler]
	vnd.dxr	[Duffy]
	vnd.mitsubishi.misty-guard.trustweb	[Tanaka]
	vnd.ibm.modcap	[Hohensee]
	vnd.acucobol	[Lubin]
	vnd.fujitsu.oasys3	[Okudaira]
	marc	[RFC2220]
	vnd.fujitsu.oasysprs	[Ogita]
	vnd.fujitsu.oasysgp	[Sugimoto]
	vnd.visio	[Sanda]
	vnd.netfpx	[Mutz]
	vnd.audiograph	[Slusanschi]
	vnd.epson.salt	[Nagatomo]
	vnd.3M.Post-it-Notes	[O'Brien]

	vnd.novadigm.EDX	[Swenson]
	vnd.novadigm.EXT	[Swenson]
	vnd.novadigm.EDM	[Swenson]
	vnd.claymore	[Simpson]
	vnd.comsocaller	[Dellutri]
application	pkcs7-mime	[RFC2311]
	pkcs7-signature	[RFC2311]
	pkcs10	[RFC2311]
	vnd.yellowriver-custom-menu	[Yellow]
	vnd.ecowin.chart	[Olsson]
	vnd.ecowin.series	[Olsson]
	vnd.ecowin.filerequest	[Olsson]
	vnd.ecowin.fileupdate	[Olsson]
	vnd.ecowin.seriesrequest	[Olsson]
	vnd.ecowin.seriesupdate	[Olsson]
	EDIFACT	[RFC1767]
	EDI-X12	[RFC1767]
	EDI-Consent	[RFC1767]
	vnd.wrq-hp3000-labelled	[Bartram]
	vnd.minisoft-hp3000-save	[Bartram]
	vnd.ffsns	[Holstage]
	vnd.hp-hps	[Aubrey]
	vnd.fujixerox.docuworks	[Taguchi]
	xml	[RFC3023]
	xml-external-parsed-entity	[RFC3023]
	xml-dtd	[RFC3023]
	vnd.anser-web-funds-transfer-initiation	[Mori]
	vnd.anser-web-certificate-issue-initiation	[Mori]
	vnd.is-xpr	[Natarajan]

	vnd.intu.qbo	[Scratchley]
	vnd.publishare-delta-tree	[Ben-Kiki]
	vnd.cybank	[Helmee]
	batch-SMTP	[RFC2442]
application	vnd.uplanet.alert	[Martin]
	vnd.uplanet.cacheop	[Martin]
	vnd.uplanet.list	[Martin]
	vnd.uplanet.listcmd	[Martin]
	vnd.uplanet.channel	[Martin]
	vnd.uplanet.bearer-choice	[Martin]
	vnd.uplanet.signal	[Martin]
	vnd.uplanet.alert-wbxml	[Martin]
	vnd.uplanet.cacheop-wbxml	[Martin]
	vnd.uplanet.list-wbxml	[Martin]
	vnd.uplanet.listcmd-wbxml	[Martin]
	vnd.uplanet.channel-wbxml	[Martin]
	vnd.uplanet.bearer-choice-wbxml	[Martin]
	vnd.epson.quickanime	[Gu]
	vnd.commonspace	[Chandhok]
	vnd.fut-misnet	[Pruulmann]
	vnd.xfdl	[Manning]
	vnd.intu.qfx	[Scratchley]
	vnd.epson.ssf	[Hoshina]
	vnd.epson.msf	[Hoshina]
	vnd.powerbuilder7	[Shilts]
	vnd.powerbuilder7-s	[Shilts]
	vnd.lotus-notes	[Laramie]
	pkixcmp	[RFC2510]
	vnd.wap.wmlc	[Stark]
	vnd.wap.wmlscriptc	[Stark]
	vnd.motorola.flexsuite	[Patton]

	vnd.wap.wbxml	[Stark]
	vnd.motorola.flexsuite.wem	[Patton]
	vnd.motorola.flexsuite.kmr	[Patton]
	vnd.motorola.flexsuite.adi	[Patton]
	vnd.motorola.flexsuite.fis	[Patton]
application	vnd.motorola.flexsuite.gotap	[Patton]
	vnd.motorola.flexsuite.ttc	[Patton]
	vnd.ufdl	[Manning]
	vnd.accpac.simply.imp	[Leow]
	vnd.accpac.simply.aso	[Leow]
	vnd.vcx	[T.Sugimoto]
	ipp	[RFC2910]
	ocsp-request	[RFC2560]
	ocsp-response	[RFC2560]
	vnd.previewsystems.box	[Smolgovsky]
	vnd.mediastation.cdkey	[Flurry]
	vnd.pg.format	[Gandert]
	vnd.pg.osasli	[Gandert]
	vnd.hp-hpid	[Gupta]
	pkix-cert	[RFC2585]
	pkix-crl	[RFC2585]
	vnd.Mobius.TXF	[Kabayama]
	vnd.Mobius.PLC	[Kabayama]
	vnd.Mobius.DIS	[Kabayama]
	vnd.Mobius.DAF	[Kabayama]
	vnd.Mobius.MSL	[Kabayama]
	vnd.cups-raster	[Sweet]
	vnd.cups-postscript	[Sweet]
	vnd.cups-raw	[Sweet]
	index	[RFC2652]
	index.cmd	[RFC2652]

	index.response	[RFC2652]
	index.obj	[RFC2652]
	index.vnd	[RFC2652]
	vnd.triscape.mxs	[Simonoff]
	vnd.powerbuilder75	[Shilts]
application	vnd.powerbuilder75-s	[Shilts]
	vnd.dpgraph	[Parker]
	http	[RFC2616]
	sdp	[RFC2327]
	vnd.eudora.data	[Resnick]
	vnd.fujixerox.docuworks.binder	[Matsumoto]
	vnd.vectorworks	[Pharr]
	vnd.grafeq	[Tupper]
	vnd.bmi	[Gotoh]
	vnd.ericsson.quickcall	[Tidwell]
	vnd.hzn-3d-crossword	[Minnis]
	vnd.wap.slc	[WAP-Forum]
	vnd.wap.sic	[WAP-Forum]
	vnd.groove-injector	[Joseph]
	vnd.fujixerox.ddd	[Onda]
	vnd.groove-account	[Joseph]
	vnd.groove-identity-message	[Joseph]
	vnd.groove-tool-message	[Joseph]
	vnd.groove-tool-template	[Joseph]
	vnd.groove-vcard	[Joseph]
	vnd.ctc-posml	[Kohlhepp]
	vnd.canon-lips	[Muto]
	vnd.canon-cpdl	[Muto]
	vnd.trueapp	[Hepler]
	vnd.s3sms	[Tarkkala]
	iotp	[RFC2935]

	vnd.mcd	[Gotoh]
	vnd.httpphone	[Lefevre]
	vnd.informix-visionary	[Gales]
	vnd.msign	[Borcherding]
	vnd.ms-lrm	[Ledoux]
application	vnd.contact.cmsg	[Patz]
	vnd.epson.esf	[Hoshina]
	whoispp-query	[RFC2957]
	whoispp-response	[RFC2958]
	vnd.mozilla.xul+xml	[McDaniel]
	parityfec	[RFC3009]
	vnd.palm	[Peacock]
	vnd.fsc.weblaunch	[D.Smith]
	vnd.tve-trigger	[Welsh]
	dvcs	[RFC3029]
	sieve	[RFC3028]
	vnd.vividence.scriptfile	[Risher]
	vnd.hhe.lesson-player	[Jones]
	beep+xml	[RFC3080]
	font-tdpfr	[RFC3073]
	vnd.mseq	[Le Bodic]
	vnd.aether.imp	[Moskowitz]
	vnd.Mobius.MQY	[Devasia]
	vnd.Mobius.MBK	[Devasia]
	vnd.vidsoft.vidconference	[Hess]
	vnd.ibm.afplinedata	[Buis]
	vnd.irepository.package+xml	[Knowles]
	vnd.sss-ntf	[Bruno]
	vnd.sss-dtf	[Bruno]
	vnd.sss-cod	[Dani]
	vnd.pvi.ptid1	[Lamb]

	isup	[RFCISUP]
	qsig	[RFCISUP]
	timestamp-query	[RFC3161]
	timestamp-reply	[RFC3161]
	vnd.pwg-xhtml-print+xml	[Wright]
image	jpeg	[RFC2045,RFC2046]
	gif	[RFC2045,RFC2046]
	ief	[RFC1314]
	g3fax	[RFC1494]
	tiff	[RFC2302]
	cgm	[Francis]
	naplps	[Ferber]
	vnd.dwg	[Moline]
	vnd.svf	[Moline]
	vnd.dxf	[Moline]
	png	[Randers-Pehrson]
	vnd.fpx	[Spencer]
	vnd.net-fpx	[Spencer]
	vnd.xiff	[SMartin]
	prs.btif	[Simon]
	vnd.fastbidsheet	[Becker]
	vnd.wap.wbmp	[Stark]
	prs.pti	[Laun]
	vnd.cns.inf2	[McLaughlin]
	vnd.mix	[Reddy]
	vnd.fujixerox.edmics-rlc	[Onda]
	vnd.fujixerox.edmics-mmr	[Onda]
	vnd.fst	[Fuldseth]
audio	basic	[RFC2045,RFC2046]
	32kadpcm	[RFC2421,RFC2422]
	vnd.qcelp	[Lundblade]

	vnd.digital-winds	[Strazds]
	vnd.lucent.voice	[Vaudreuil]
	vnd.octel.sbc	[Vaudreuil]
	vnd.rhetorex.32kadpcm	[Vaudreuil]
	vnd.vmx.cvsd	[Vaudreuil]
audio	vnd.nortel.vbk	[Parsons]
	vnd.cns.anp1	[McLaughlin]
	vnd.cns.inf1	[McLaughlin]
	L16	[RFC2586]
	vnd.everad.plj	[Cicelsky]
	telephone-event	[RFC2833]
	tone	[RFC2833]
	prs.sid	[Walleij]
	vnd.nuera.ecelp4800	[Fox]
	vnd.nuera.ecelp7470	[Fox]
	mpeg	[RFC3003]
	parityfec	[RFC3009]
	MP4A-LATM	[RFC3016]
	vnd.nuera.ecelp9600	[Fox]
	G.722.1	[RFC3047]
	mpa-robust	[RFC3119]
	vnd.cisco.nse	[Kumar]
video	mpeg	[RFC2045,RFC2046]
	quicktime	[Paul Lindner]
	vnd.vivo	[Wolfe]
	vnd.motorola.video	[McGinty]
	vnd.motorola.videop	[McGinty]
	vnd.fvt	[Fuldseth]
	pointer	[RFC2862]
	parityfec	[RFC3009]
	vnd.mpegurl	Recktenwald]

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	MP4V-ES	[RFC3016]
	vnd.nokia.interleaved-multimedia	[Kangaslampi]
model	*	[RFC2077]
	iges	[Parks]
	vrml	[RFC2077]
model	mesh	[RFC2077]
	vnd.dwf	[Pratt]
	vnd.gtw	[Ozaki]
	vnd.flatland.3dml	[Powers]
	vnd.vtu	[Rabinovitch]
	vnd.mts	[Rabinovitch]
	vnd.gdl	[Babits]
	vnd.gs-gdl	[Babits]
	vnd.parasolid.transmit.text	[Dearnaley, Juckes]
	vnd.parasolid.transmit.binary	[Dearnaley, Juckes]



# Services and Ports

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Well-known services are a combination of port number and transport protocol for specific, standard applications. This chapter contains several tables that list service names, port number, protocol, and description.

## Ports Used by WatchGuard Products

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The WatchGuard Firebox, Management Station, and WatchGuard Security Event Processor use several ports during normal functioning.

<b>Port #</b>	<b>Protocol</b>	<b>Purpose</b>
4100	TCP	Authentication applet
4101	TCP	WSEP and Management Station
4105	TCP	WatchGuard service
4106	TCP	WebBlocker
4107	TCP	WSEP and Firebox
4103	TCP	Retrieve WebBlocker database
4102	TCP	Used only in Firebox System (LSS) 3.0x or earlier for logs

## Ports used by Microsoft Products

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Port #	Protocol	Purpose
137, 138	UDP	Browsing
67, 68	UDP	DHCP Lease
135	TCP	DHCP Manager
138	UDP	Directory Replication
139	TCP	
135	TCP	DNS Administration
53	UDP	DNS Resolution
139	TCP	Event Viewer
139	TCP	File Sharing
137, 138	UDP	Logon Sequence
139	TCP	
138	UDP	NetLogon
137, 138	UDP	Pass Through Validation
139	TCP	
139	TCP	Performance Monitor
1723	TCP	PPTP
47	IP	
137, 138	UDP	Printing
139	TCP	
139	TCP	Registry Editor
139	TCP	Server Manager
137, 138	UDP	Trusts
139	TCP	
139	TCP	User Manager
139	TCP	WinNT Diagnostics
137, 138	UDP	WinNT Secure Channel
139	TCP	
42	TCP	WINS Replication
135	TCP	WINS Manager
137	TCP	WINS Registration

<b>Port #</b>	<b>Protocol</b>	<b>Purpose</b>
135	TCP	Client/Server Communications
135	TCP	Exchange Administrator
143	TCP	IMAP
993	TCP	IMAP (SSL)
389	TCP	LDAP
636	TCP	LDAP (SSL)
102	TCP	MTA - X.400 over TCP/IP
110	TCP	POP3
995	TCP	POP3 (SSL)
135	TCP	RCP
25	TCP	SMTP
137	UDP	SMB
138	UDP	SMB
139	TCP	SMB
445	TCP/UDP	SMB
119	TCP	NNTP
563	TCP	NNTP (SSL)

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## Well-Known Services List

In addition to the ports used by services described above, WatchGuard maintains a list of well-known services. Because software developers regularly add new services, this does not represent a comprehensive list of all possible services. For more information, see J. Reynolds and J. Postel, *Assigned Numbers, RFC1700*, available at these Web sites:

<http://www.cis.ohio-state.edu/htbin/rfc/rfc1700.html>

<http://www.iana.org/assignments/port-numbers>

If you would like to recommend additions to this list, please send them to: [manual@watchguard.com](mailto:manual@watchguard.com).

<b>Service Name</b>	<b>Port #</b>	<b>Protocol</b>	<b>Description</b>
tcpmux	1	TCP/UDP	TCP Port Service Multiplexer
compressnet	2,3	TCP/UDP	Management Utility
rje	5	TCP/UDP	Remote Job Entry
echo	7	TCP/UDP	Echo
discard	9	TCP/UDP	Discard
systat	11	TCP/UDP	Active Users
daytime	13	TCP/UDP	Daytime
qotd	17	TCP/UDP	Quote of the Day
mosp	18	TCP/UDP	Message Send Protocol
chargen	19	TCP/UDP	Character Generator
ftp-data	20	TCP/UDP	File Transfer [Default Data]
ftp	21	TCP/UDP	File Transfer [Control]
ssh	22	TCP/UDP	SSH Remote Login Protocol
telnet	23	TCP/UDP	Telnet
smtp	25	TCP/UDP	Simple Mail Transfer
nsw-fe	27	TCP/UDP	NSW User system FE
msg-icp	29	TCP/UDP	MSG ICP
msg-auth	31	TCP/UDP	MSG Authentication
dsp	33	TCP/UDP	Display Support Protocol
time	37	TCP/UDP	Time
rap	38	TCP/UDP	Route Access Protocol
rlp	39	TCP/UDP	Resource Location Protocol
graphics	41	TCP/UDP	Graphics
nameserver	42	TCP/UDP	Host Name Server
nicname	43	TCP/UDP	whois
mpm-flags	44	TCP/UDP	MPM Flags
mpm	45	TCP/UDP	MPM
mpm-snd	46	TCP/UDP	MPM Send
ni-ftp	47	TCP/UDP	NI FTP

<b>Service Name</b>	<b>Port #</b>	<b>Protocol</b>	<b>Description</b>
auditd	48	TCP/UDP	Digital Audit Daemon
tacacs	49	TCP/UDP	Login Host Protocol (TACACS)
re-mail-ck	50	TCP/UDP	Remote Mail Checking Protocol
la-maint	51	TCP/UDP	IMP Logical Address Maintenance
xns-time	52	TCP/UDP	XNS Time Protocol
domain	53	TCP/UDP	Domain Name Server
xns-ch	54	TCP/UDP	XNS Clearinghouse
isi-gl	55	TCP/UDP	ISI Graphics Language
xns-auth	56	TCP/UDP	XNS Authentication
xns-mail	58	TCP/UDP	XNS Mail
ni-mail	61	TCP/UDP	NI MAIL
acas	62	TCP/UDP	ACA Services
whois++	63	TCP/UDP	whois++
covia	64	TCP/UDP	Communications Integrator (CI)
tacacs-ds	65	TCP/UDP	TACACS-Database Service
sql*net	66	TCP/UDP	Oracle SQL*NET
bootps	67	TCP/UDP	Bootstrap Protocol Server
bootpc	68	TCP/UDP	Bootstrap Protocol Client
tftp	69	TCP/UDP	Trivial File Transfer
gopher	70	TCP/UDP	Gopher
netrjs-1	71	TCP/UDP	Remote Job Service
netrjs-2	72	TCP/UDP	Remote Job Service
netrjs-3	73	TCP/UDP	Remote Job Service
netrjs-4	74	TCP/UDP	Remote Job Service
deos	76	TCP/UDP	Distributed External Object Store
vettcp	78	TCP/UDP	vettcp
finger	79	TCP/UDP	Finger
www-http	80	TCP/UDP	World Wide Web HTTP
hosts2-ns	81	TCP/UDP	HOSTS2 Name Server
xfer	82	TCP/UDP	XFER utility

<b>Service Name</b>	<b>Port #</b>	<b>Protocol</b>	<b>Description</b>
mit-ml-dev	83	TCP/UDP	MIT ML device
ctf	84	TCP/UDP	Common Trace Facility
mit-ml-dev	85	TCP/UDP	MIT ML device
mfcobol	86	TCP/UDP	Micro Focus Cobol
kerberos	88	TCP/UDP	Kerberos
sug-mit-tug	89	TCP/UDP	SU/MIT Telnet gateway
dnsix	90	TCP/UDP	DNSIX Secure Application Token Map
mit-dov	91	TCP/UDP	MIT Dover Spooler
npp	92	TCP/UDP	Network Printing Protocol
dcp	93	TCP/UDP	Device Control Protocol
objcall	94	TCP/UDP	Tivoli Object Dispatcher
supdup	95	TCP/UDP	SUPDUP
dixie	96	TCP/UDP	DIXIE Protocol Specification
swift-rvf	97	TCP/UDP	Swift Remote Virtual File Protocol
tacnews	98	TCP/UDP	TAC News
metagram	99	TCP/UDP	Metagram Relay
newacct	100	TCP	[unauthorized use]
hostname	101	TCP/UDP	NIC Host Name Server
iso-tsap	102	TCP/UDP	ISO-TSAP
gppitnp	103	TCP/UDP	Genesis Point-to-Point Trans Net
acr-nema	104	TCP/UDP	ACR-NEMA Digital Imag. Comm. 300
cso	105	TCP/UDP	CCSO name server protocol
csnet-ns	105	TCP/UDP	Mailbox Name Nameserver
3com-tsmux	106	TCP/UDP	3COM-TSMUX
rtelnet	107	TCP/UDP	Remote Telnet Service
snagas	108	TCP/UDP	SNA Gateway Access Server
pop2	109	TCP/UDP	Post Office Protocol - Version 2
pop3	110	TCP/UDP	Post Office Protocol - Version 3
sunrpc	111	TCP/UDP	SUN Remote Procedure Call
mcidas	112	TCP/UDP	McIDAS Data Transmission Protocol

<b>Service Name</b>	<b>Port #</b>	<b>Protocol</b>	<b>Description</b>
auth(ident)	113	TCP/UDP	Authentication Service
audionews	114	TCP/UDP	Audio News Multicast
sftp	115	TCP/UDP	Simple File Transfer Protocol
ansanotify	116	TCP/UDP	ANSA REX Notify
uucp-path	117	TCP/UDP	UUCP Path Service
sqlserv	118	TCP/UDP	SQL Services
nntp	119	TCP/UDP	Network News Transfer Protocol
cfdpkt	120	TCP/UDP	CFDPTKT
erpc	121	TCP/UDP	Encore Expedited RPC
smakynet	122	TCP/UDP	SMAKYNET
ntp	123	TCP/UDP	Network Time Protocol
ansatrader	124	TCP/UDP	ANSA REX Trader
locus-map	125	TCP/UDP	Locus PC-Interface Net Map
unitary	126	TCP/UDP	Unisys Unitary Login
locus-con	127	TCP/UDP	Locus PC-Interface Conn Server
gss-xlicen	128	TCP/UDP	GSS X License Verification
pwdgen	129	TCP/UDP	Password Generator Protocol
cisco-fna	130	TCP/UDP	cisco FNATIVE
cisco-tna	131	TCP/UDP	cisco TNATIVE
cisco-sys	132	TCP/UDP	cisco SYSMANT
statsrv	133	TCP/UDP	Statistics Service
ingres-net	134	TCP/UDP	INGRES-NET Service
epmap	135	TCP/UDP	DCE-RPC Endpoint resolution
profile	136	TCP/UDP	PROFILE naming system
netbios-ns	137	TCP/UDP	NETBIOS Name Service
netbios-dgm	138	TCP/UDP	NETBIOS Datagram Service
netbios-ssn	139	TCP/UDP	NETBIOS Session Service
imap	143	TCP/UDP	Internet Message Access Protocol
news	144	TCP/UDP	NewS
jargon	148	TCP/UDP	Jargon

<b>Service Name</b>	<b>Port #</b>	<b>Protocol</b>	<b>Description</b>
sql-net	150	TCP/UDP	SQL-NET
bftp	152	TCP/UDP	Background File Transfer
sgmp	153	TCP/UDP	SGMP
sqlsrv	156	TCP/UDP	SQL Service
pcmail-srv	158	TCP/UDP	PCMail Server
sgmp-traps	160	TCP/UDP	SGMP-TRAPS
snmp	161	TCP/UDP	SNMP
snmptrap	162	TCP/UDP	SNMPTRAP
cmip-man	163	TCP/UDP	CMIP/TCP Manager
cmip-agent	164	TCP	CMIP/TCP Agent
smip-agent	164	UDP	CMIP/TCP Agent
namp	167	TCP/UDP	NAMP
rsvd	168	TCP/UDP	RSVD
send	169	TCP/UDP	SEND
xyplex-mux	173	TCP/UDP	Xyplex MUX
xdmcp	177	TCP/UDP	X Display Manager Control Protocol
NextStep	178	TCP/UDP	NextStep Window Server
bgp	179	TCP/UDP	Border Gateway Protocol
unify	181	TCP/UDP	Unify
irc	194	TCP/UDP	Internet Relay Chat Protocol
at-rtmp	201	TCP/UDP	AppleTalk Routing Maintenance
at-nbp	202	TCP/UDP	AppleTalk Name Binding
at-3	203	TCP/UDP	AppleTalk Unused
at-echo	204	TCP/UDP	AppleTalk Echo
at-5	205	TCP/UDP	AppleTalk Unused
at-zis	206	TCP/UDP	AppleTalk Zone Information
at-7	207	TCP/UDP	AppleTalk Unused
at-8	208	TCP/UDP	AppleTalk Unused
qmtpt	209	TCP/UDP	Quick Mail Transfer Protocol
z39.50	210	TCP/UDP	ANSI Z39.50 (WAIS)

<b>Service Name</b>	<b>Port #</b>	<b>Protocol</b>	<b>Description</b>
ipx	213	TCP/UDP	IPX
imap3	220	TCP/UDP	Interactive Mail Access Protocol v3
fln-spx	221	TCP/UDP	Berkeley rlogind with SPX auth
rsh-spx	222	TCP/UDP	Berkeley rshd with SPX auth
backweb	371	UDP	BackWeb
ulistserv	372	TCP/UDP	Unix Listserv
netware-ip	396	TCP/UDP	Novell Netware over IP
biff	512	UDP	Used by mail system to notify users
exec	512	TCP	Remote process execution
login	513	TCP/UDP	Login Host Protocol
who	513	UDP	Maintains databases showing who's who
cmd	514	TCP	Like exec, but automatic
syslog	514	UDP	logging facilities
printer	515	TCP/UDP	Spooler
talk	517	TCP/UDP	Talk protocol
ntalk	518	TCP/UDP	another Talk
utime	519	TCP/UDP	Unixtime
router	520	UDP	RIP local routing process (on site)
timed	525	TCP/UDP	Timeserver
tempo	526	TCP/UDP	Newdate
courier	530	TCP/UDP	Rpc
conference	531	TCP/UDP	Chat
netnews	532	TCP/UDP	Readnews
netwall	533	TCP/UDP	For emergency broadcasts
uucp	540	TCP/UDP	Uucpd
uucp-rlogin	541	TCP/UDP	Uucp-rlogin Stuart Lynne
klogin	543	TCP/UDP	Kerberos (v4/v5)
kshell	544	TCP/UDP	krcmd Kerberos (v4/v5)
dhcpv6-client	546	TCP/UDP	DHCPv6 Client
dhcpv6-server	547	TCP/UDP	DHCPv6 Server

<b>Service Name</b>	<b>Port #</b>	<b>Protocol</b>	<b>Description</b>
cybercash	551	TCP/UDP	Cybercash
remotefs	556	TCP/UDP	Rfs server
9pfs	564	TCP/UDP	Plan 9 file service
whoami	565	TCP/UDP	Whoami
msn	569	TCP	Microsoft Network
doom	666	TCP/UDP	Doom Id Software
kerberos-adm	749	TCP/UDP	Kerberos administration
webster	765	TCP/UDP	Network dictionary
phonebook	767	TCP/UDP	Phone
socks	1080	TCP/UDP	Socks
hermes	1248	TCP/UDP	Hermes
lotusnote	1352	TCP/UDP	Lotus Notes
netware-csp	1366	TCP/UDP	Novell NetWare Comm Service Platform
novell-lu6.2	1416	TCP/UDP	Novell LU6.2
netopia	1419 8000	UDP TCP	Netopia Virtual Office
ms-sql-s	1433	TCP/UDP	Microsoft-SQL-Server
ms-sql-m	1434	TCP/UDP	Microsoft-SQL-Monitor
winframe	1494	TCP	WinFrame
watcom-sql	1498	TCP/UDP	Watcom-SQL
ingreslock	1524	TCP/UDP	Ingres
groupwise	1677	TCP	GroupWise
nfs	2049	TCP/UDP	Network File Server
www-dev	2784	TCP/UDP	World Wide Web - development
Squid	3128	TCP/UDP	Web proxy/caching service -- frequently scanned for vulnerabilities
ccmail	3264	TCP/UDP	Cc:mail/lotus
ICQ	2109 4000	TCP UDP	Used for chat
Firstclass	3000 30004	TCP	FirstClass (ftp channel on 510 TCP)

<b>Service Name</b>	<b>Port #</b>	<b>Protocol</b>	<b>Description</b>
compuserve	4144	TCP	CompuServe Online
rfe	5002	TCP/UDP	Radio free ethernet
aol	5190	TCP	America Online
x11	6000	TCP/UDP	X Window System (through 6063)
font-service	7100	TCP/UDP	X Font Service
nas	8000	TCP/UDP	NCD Network Audio Server
iphone	6670	TCP	for connecting to the phone server
iphone	22555	UDP	for audio
iphone	25793	TCP	for the address server, in 4.x and 5.0
iphone	1490	TCP	for the conference engine in 4.x and 5.0

# Types of Services

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This chapter describes well-known services, their protocols, and their ports as well as special considerations for adding the service to a security policy configuration. Rather than explain every service in detail, this chapter explains the telnet service thoroughly as an example from which to extrapolate configuration details for similar services. Services fall into two broad categories—packet filters and proxies.

## Packet Filter Services

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Packet filter services examine the source and destination headers of each packet. Packets are then either allowed or denied passage based on whether the headers appear to be coming from and going to legitimate addresses.

### **Any**

The Any service should be used only to allow ALL traffic between any two specific, trusted IP or network addresses. Configuring the Any service opens a “hole” through the Firebox, allowing all traffic to flow unfiltered between specific hosts. WatchGuard strongly recommends that the Any service be used only for traffic over a VPN.

The Any service has different semantics from other services. For example, if you allow FTP to a specific host, all other FTP sessions are implicitly denied by that service (unless you have also configured other FTP service icons). The Any service, however, does not implicitly deny like other services.

You also cannot use an Any service unless specific IP addresses, network addresses, host aliases, group names, or user names are used in the From or To lists — otherwise the Any service is deemed too permissive and will not function.

### **Characteristics**

- Protocol: Any
- Client Port: Ignore
- Port Number: None

### **AOL**

The America Online proprietary protocol allows access to the AOL service through a TCP/IP network, instead of the usual dial-up connection. The AOL client must be specifically configured to use TCP/IP instead of a modem.

### **Characteristics**

- Protocol: TCP
- Server Port(s): 5190
- Client Port(s): client

### **archie**

archie is a search protocol used to find files on FTP servers. Because there are a limited number of archie servers, it is safe to provide outgoing archie service. A current list of archie servers is available via anonymous FTP from:

`ftp://microlib.cc.utexas.edu/microlib/mac/info/archie-servers.txt`

External hosts can be spoofed; WatchGuard cannot verify that these packets were actually sent from the correct location. You can configure

WatchGuard to add the source IP address to the Blocked Sites List whenever an incoming archie connection is denied. All of the usual logging options can be used with archie.

WatchGuard recommends that you use the available WWW interfaces to archie, such as: <http://www.macsch.com/stress/archie.html>

### **Characteristics**

- Protocol: UDP
- Server Port(s): 1525
- Client Port(s): greater than 1023

### **auth (ident)**

auth (ident) is a protocol used to map TCP connections back to a user name. It is used primarily by large public SMTP and FTP servers and certain security packages. While useful for logging, the information is seldom reliable, as attackers can make modified servers that return incorrect information. Incoming auth service responds with “fake” information to hide internal user information.

When using SMTP with incoming static NAT, you must add auth to the Services Arena. Configure auth to allow incoming to the Firebox. This enables outgoing mail messages to flow unrestricted from behind the Firebox to the numerous SMTP servers on the Internet that use auth to verify other mail servers’ identities, and allows these servers to return messages through the Firebox to their senders.

If you are not using incoming static NAT, allow incoming auth to the IP address of your mail server.

WatchGuard recommends that both incoming and outgoing auth services be allowed, but be aware that such services can collect valid user names which can be used for hacking purposes.

### **Characteristics**

- Protocol: TCP
- Server Port(s): 113
- Client Port(s): greater than 1023

- RFC: 1413

## **Citrix ICA (WinFrame)**

Citrix ICA is a protocol used by Citrix for their applications, including the Winframe product. Winframe is a server-based application from Citrix that provides access to Windows from a variety of clients. ICA uses TCP port 1494 for its WinFrame software.

Adding the Citrix ICA service could compromise network security because it allows traffic inside the firewall without authentication. In addition, your Winframe server may be subject to denial of service attacks. WatchGuard recommends using VPN options to provide additional security for such a configuration. All of the usual logging options can be used with WinFrame.

### **Characteristics**

- Protocol: TCP
- Server Port(s): 1494, 1604
- Client Port(s): client

For more information on adding the Citrix ICA service, refer to the Advanced FAQs in the Knowledge Base. (Go to [www.watchguard.com/support](http://www.watchguard.com/support) and log in to the LiveSecurity Service.)

## **Clarent-gateway**

Clarent Corporation is an IP telephony technology supplier to mainstream carriers and service providers. Clarent products enable voice-over-IP for doing voice calls between Clarent gateways across the Internet. This service supports the Clarent v3.0 product and later.

Clarent products use two sets of ports, one for gateway-to-gateway communications (UDP ports 4040, 4045, and 5010) and one for gateway-to-command center communications (UDP ports 5001 and 5002). Use the Clarent-command service icon for the latter.

Enable incoming connections only from specific external gateways to your gateway or command center.

Clarent also supports the use of PCAnywhere for management. Refer to the PCAnywhere implementation notes for further information.

Adding the Clarent-gateway service could compromise network security because it allows traffic inside the firewall based only on network address which is not a reliable method of authentication. In addition, your Clarent server may be subject to denial of service attacks in this configuration. Where possible, WatchGuard recommends using VPN options to provide additional security for such a configuration.

### **Characteristics**

- Protocol: UDP
- Client Port: ignore
- Port Number(s): 4040, 4045, 5010

### **Clarent-command**

Clarent Corporation is an IP telephony technology supplier to mainstream carriers and service providers. Clarent products enable voice-over-IP for doing voice calls between Clarent gateways across the Internet. This service supports the Clarent v3.0 product and later.

The Clarent products use two sets of ports, one for gateway-to-gateway communications (UDP ports 4040, 4045, and 5010) and one for gateway-to-command center communications (UDP ports 5001 and 5002). Use the Clarent-gateway service icon for the former.

Enable incoming connections only from specific external gateways to your gateway or command center.

Clarent also supports the use of PCAnywhere for management. Refer to the PCAnywhere implementation notes for further information.

Adding the Clarent-command service could compromise network security because it allows traffic inside the firewall based only on network address which is not a reliable method of authentication. In addition, your Clarent server may be subject to denial of service attacks in this configuration. Where possible, WatchGuard recommends using VPN options to provide additional security for such a configuration.

### **Characteristics:**

- Protocol: UDP
- Client Port: ignore
- Port Numbers(s): 5001, 5002

### **CU-SeeMe**

CU-SeeMe is a program used to do video conferencing over the Internet. For CU-SeeMe to work through the Firebox, you must ensure that you are not on a network using outgoing dynamic NAT, and configure the CU-SeeMe service for both incoming and outgoing access.

The nature of the CU-SeeMe protocol dictates that you configure this service for both incoming and outgoing, regardless of which side is originating the connection. The CU-SeeMe icon allows the proper combination of ports to enable use of CU-SeeMe versions 2.X and 3.X. CU-SeeMe Version 2.X runs on UDP port 7648. Version 3.X, in addition to UDP port 7648, runs on UDP port 24032 (for H.323 conferences) and TCP port 7648 (video conference directories).

### **Characteristics**

Because CU-SeeMe has a three-step send/receive/send sequence, its protocol and port information is grouped in triads.

- Port Protocol, UDP; Source Port, port; Destination Port, 7648
- Port Protocol, TCP; Source Port, client; Destination Port, 7648
- Port Protocol, UDP; Source Port, ignore; Destination Port, 24032

### **DHCP-Server/Client**

Dynamic Host Configuration Protocol (DHCP) provides a means of dynamically allocating IP addresses to devices on a network.

### **Characteristics**

- Service Name: DHCP-Server or DHCP-Client
- Protocol: UDP
- Client Port: client
- Port Number: Server: 68; Client: 67

## DNS

Domain Name Service (DNS) maps host names to IP addresses. You will probably not need to add a DNS service icon unless you maintain a public DNS server behind the Firebox, because outgoing UDP traffic is enabled by default. The DNS multi-service icon allows UDP DNS traffic, as well as TCP zone transfers to occur as specified. All of the usual logging options can be used with DNS.

### Characteristics

- Protocol: Multi: TCP (for server-server zone transfers) and UDP (for client-server lookups)
- Server Port(s): 53
- Client Port(s): ignore
- RFC: 883

## Filtered-HTTP

The multi-service rule Filtered-HTTP combines configuration options for incoming HTTP on port 80 with a rule allowing all outgoing TCP connections by default. Using Filtered-HTTP will not result in applying the HTTP proxy rule set to any traffic. To proxy HTTP traffic, use the Proxied-HTTP service. WatchGuard recommends that incoming HTTP be allowed only to any public HTTP servers maintained behind the Firebox.

External hosts can be spoofed. WatchGuard cannot verify that these packets were actually sent from the correct location. Configure WatchGuard to add the source IP address to the Blocked Sites List whenever an incoming HTTP connection is denied. All of the usual logging options can be used with HTTP.

### Characteristics

- Protocol: Multi (includes top and http)
- Client Port: ignore
- Port Number: 80

## Filtered-SMTP

Filtered SMTP allows SMTP traffic (email) without using the SMTP proxy. One use of Filtered-SMTP eliminates the need for outgoing mail to be routed through the SMTP proxy twice. With the Filtered SMTP icon between the trusted network and the mail server on the optional network, mail is only proxied when it is outbound to the Internet.

### Characteristics

- Protocol: TCP
- Server Port(s): 25
- Client Port(s): client

## finger

finger is a protocol used to list information about users on a given host. Although this information is often useful, it can also reveal too much information that can be abused.

WatchGuard does not recommend putting finger servers on the trusted interface.

### Characteristics

- Protocol: TCP
- Server Port(s): 79
- Client Port(s): greater than 1023

### Common Scenario

#### *Description*

There is a specially built finger server running on the optional interface.

#### *Icons in the Services Arena*

A finger service icon—Incoming allow from Any to the finger server on the optional interface.

## Gopher

Gopher is a data-retrieval protocol developed at the University of Minnesota. As HTML has proliferated and Web browsers improved Gopher servers replaced by Web servers. It is unlikely that you will ever need to run a Gopher server.

### Characteristics

- Protocol: TCP
- Server Port(s): 70 although servers can and are configured to use other ports
- Client Port(s): greater than 1023

## HTTPS

HTTPS is a secured and encrypted version of the HTTP protocol. The client and the web server set up an encrypted session over TCP port 443. Because this session is encrypted on both ends, the proxy cannot examine packet contents; therefore, this icon enables a packet-filter service, not a proxy.

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### NOTE

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The HTTPS service is needed only if you are hosting an HTTPS server, or if you do not have an Outgoing, Filtered-HTTP, Proxy or Proxied HTTP icon in your configuration.

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### Characteristics

- Protocol: TCP
- Server Port(s): 443
- Client Port(s): client

## IMAP

Internet Mail Access Protocol (IMAP) is a method of accessing email or bulletin board messages residing on a remote mail server as if they were local. Thus e-mail stored on an IMAP server can be accessed from

multiple sites (such as home, work, or laptop) without the need to transfer messages and files back and forth.

### **Characteristics**

- Protocol: TCP
- Server Port(s): 143
- Client Port(s): client

### **LDAP**

Lightweight Directory Access Protocol (LDAP) is an open-standard protocol for accessing online directory services. The protocol runs over Internet transport protocols, such as TCP, and can be used to access stand-alone directory servers or X.500 directories.

### **Characteristics**

- Protocol: TCP
- Server Port(s): 389
- Client Port(s): client

### **Lotus Notes**

Lotus Notes is an integrated client/server platform for conferencing, databases, e-mail, and publishing and accessing compound documents. Adding an icon for this service enables the proprietary Lotus Notes protocol. Because the protocol supports encapsulation and tunneling, as well as access to internal data, WatchGuard does not recommend adding the Lotus Notes service for addresses outside of the trusted network.

### **Characteristics**

- Protocol: TCP
- Server Port(s): 1352
- Client Port(s): client

## NNTP

Network News Transfer Protocol (NNTP) is used to transmit Usenet news articles.

The best way to use NNTP is to set internal hosts to internal news servers, and external hosts to news feeds. In most cases NNTP has to be enabled in both directions. If you are running a public newsfeed, you must allow NNTP connections from all external hosts. External hosts can be spoofed; WatchGuard cannot verify that these packets were actually sent from the correct location.

Configure WatchGuard to add the source IP address to the Blocked Sites List whenever an incoming NNTP connection is denied. All of the usual logging options can be used with NNTP.

### Characteristics

- Protocol: TCP
- Server Port(s): 119
- Client Port(s): greater than 1023
- RFC: 977

### Common Scenarios

#### *Scenario 1*

##### *Description*

There exists a “public” NNTP server on the optional network.

##### *Icons in the Services Arena*

An NNTP icon—Incoming Allow From Any To the server.

#### *Scenario 2*

##### *Description*

There exists a “public” NNTP server on the Trusted network.

##### *Icons in the Services Arena*

The configuration will be the same as for Scenario 1.

## **NTP**

Network Time Protocol (NTP) is a protocol built on TCP/IP that ensures accurate local timekeeping by synchronizing computer clocks with other clocks located on the Internet. NTP is capable of synchronizing times within milliseconds over extended time periods.

### **Characteristics**

- Protocol: UDP, TCP
- Server Port(s): 123
- Client Port(s): client

## **Outgoing Services**

Outgoing TCP connections can be allowed or denied. This service icon serves as a default setting for all outgoing TCP connections, and is overridden by other service settings. Outgoing connections will not work unless Proxied-HTTP, Filtered-HTTP, Outgoing, or Proxy icons are present in the Services Arena. This icon will not enable outgoing FTP which will function only with an FTP service.

## **pcAnywhere**

pcAnywhere is an application used to remotely access Windows computers. To enable this protocol, add the PCAnywhere service, and then allow incoming access from the hosts on the Internet that need to gain access to internal pcAnywhere servers, and to the internal pcAnywhere servers.

pcAnywhere is not a particularly secure service and may compromise network security, because it allows traffic inside the firewall without authentication. In addition, your pcAnywhere server may be subject to denial of service attacks. WatchGuard recommends using VPN options to provide additional security.

### **Characteristics**

- Protocol: Multi: UDP and TCP
- Server Port(s):
  - 22/UDP

- 5632/UDP
- 5631/TCP
- 65301/TCP
- Client Port: ignore (all cases)

## ping

ping can be used to determine whether a host can be reached and is operable and on the network). To intercept DOS-based or Windows-based traceroute packets, configure the ping service.

Like traceroute, it is generally a bad idea to allow ping into a network; however, outgoing ping is useful for troubleshooting.

### Characteristics

- Protocol: ICMP
- Server Port(s): Not Applicable
- Client Port(s): Not Applicable

## POP2 and POP3

POP2 and POP3 (Post Office Protocol) are mail transport protocols, generally used to retrieve individual users' mailboxes from a POP server.

### Characteristics

- Protocol: TCP
- Server Port(s): 109 (POP2), and 110 (POP3)
- Client Port(s): greater than 1023

### Common Scenarios

#### *Scenario 1*

#### *Description*

A POP server on the Trusted interface, generally running on the same machine as the SMTP server.

### *Icons in the Services Arena*

No icons are needed for this scenario as the connections will never reach the Firebox.

### *Scenario 2*

#### *Description*

A POP server on the Optional interface, generally running on the same machine as the SMTP server.

#### *Icons needed in the Services Arena*

Either a Proxy icon or an Outgoing icon allowing all outgoing TCP connections. In the absence of one of these, a POP icon allowing outgoing connections to the server.

## **PPTP**

PPTP is a VPN tunnelling protocol with encryption. It uses one TCP port (for negotiation and authentication of a VPN connection) and one IP protocol (for data transfer) to connect the two peers in a VPN. Configure the PPTP service to allow incoming access from Internet hosts to an internal network PPTP server. PPTP cannot access hosts' static NAT because incoming NAT cannot forward IP protocols. Because this service enables a tunnel to the PPTP server and does not perform any security checks at the firewall, use of this service should be limited. In addition, older versions of PPTP were less secure and were prone to password sniffing and denial of service attacks.

### **Characteristics**

- Protocol: TCP, IP
- Server Port(s): 1723 (TCP); 47 (IP)
- Client Port(s): client

## **RADIUS**

The Remote Authentication Dial-In User Service (RADIUS) provides remote users with secure access to corporate networks. RADIUS is a client-server system that stores authentication information for users, remote access servers, and VPN gateways in a central user database that is available to all servers. Authentication for the entire network happens

from one location. RADIUS prevents hackers from intercepting and responding to authentication requests by transmitting an authentication key that identifies it to the RADIUS client.

### **Characteristics**

- Protocol: UDP
- Server Port(s): 1645
- Client Port(s): client

## **RIP**

RIP is a routing protocol that predates IP, making it one of the oldest protocols on the Internet. It is used to automatically build routing tables for local routers. Because it is directionless, it is quite similar to DNS in configuration. You should enable RIP only if your Internet service provider requires that you run a routing daemon.

Incorrect or deceptive routing information can wreak havoc with local networks, could cause service denial problems, and possibly completely compromise the local network. Enable this service only after careful consideration.

### **Characteristics**

- Protocol: UDP
- Server Port(s): 520
- Client Port(s): greater than 1023

## **SMB (Windows Networking)**

Server Message Block (SMB) is used by Windows to share files, computers, printers, and other network resources.

If you set up replication, you may see repeated attempts to use the port mapper service on port 135. This will eventually fail, and fall back to using port 42. Refer to the RFC for DCE, and the DCE-RPC proxy sections for more details.

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**NOTE**

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Allowing SMB through the Firebox is extremely insecure, and is strongly discouraged unless used through a VPN connection. These configuration settings are to be used only if there is no other alternative, and service icon settings should be as specific as possible.

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### **Characteristics**

- Protocol: SMB (over TCP and UDP)
- Server Port(s): 137 (UDP), 138 (UDP), 139 (TCP), 42 (TCP for WINS replication), 445 (TCP and UDP)
- Client Port(s): 136 (UDP), 137 (UDP), 139 (TCP)
- RFC: No RFC, but see:  
<http://www.microsoft.com>

### **Common Scenarios**

#### *Scenario 1*

##### *Description*

Clients on the trusted interface need to talk to a Windows NT server on the optional network. Although not required, WINS servers should be installed on both trusted and optional networks; configure the clients on the optional network to use the optional WINS server as a primary and the trusted WINS server as a secondary.

Configure the clients on the trusted interface to use the trusted WINS server as a primary and the optional WINS server as a secondary. If you choose to use two WINS servers, it would be beneficial to allow WINS replication across the Firebox as well as adding the browser service to the WINS servers.

##### *Icons in the Services Arena*

SMB is a multi-service icon. You may, however, need to add these icons to your services arena:

- One UDP icon for port 137. Set client port to “port” to enable NetBIOS lookups.

- One UDP icon for port 138. Set client port to “port” to enable the NetBIOS datagram service to transfer information between hosts.
- One TCP icon for port 139. Set client port to “client.” This sets up a NetBIOS TCP channel for passing information between hosts.

## SNMP

Simple Network Management Protocol (SNMP) can be used to collect information about and configure remote computers. This has proven to be dangerous. A great many Internet attacks have used SNMP.

### Characteristics

- Protocols: UDP, TCP
- Server Port(s): 161 (trap servers use 162)
- Client Port(s): greater than 1023

Because SNMP could cause quite unpredictable changes in a network if enabled, carefully consider alternatives and log everything.

## SNMP-Trap

Simple Network Management Protocol (SNMP) traps are notification messages that an SNMP agent (for example, a router) sends to a network management station. These messages generally report an important event that should be logged or otherwise investigated.

### Characteristics

- Protocols: UDP
- Server Port(s): 162
- Client Port(s): greater than 1023

## SQL\*Net

Oracle uses one port for its sql\*net software. By default, this port is either 1526/tcp or port 1521/tcp, but it is user-configurable by editing the tnsnames.ora file. To allow sql\*net through the Firebox, set up a service icon for the port that your sql\*net server is using, with a protocol of tcp,

and a client port of ignore. Then set up incoming access from the allowed external hosts to the sql\*net server.

### **Characteristics**

- Protocols: TCP
- Server Port(s): 1521, 1526
- Client Port(s): ignore

### **Sybase SQL-Server**

Sybase uses one port for the Sybase Central and SQL Advantage software. There is no factory default port. Rather, the administrator configures the port during the installation process using the Sybase Network Connections dialog box. For WinSock TCP/IP, the port number is specified as the number following the host name. For example, specify `MyHost,10000` as your connection information to set the Sybase SQL-Server port to 10000.

The Sybase SQL-Server service is set to server port 10000. Verify that your Sybase SQL-Server is configured for port 10000. If it is not, either reconfigure the SQL-Server to port 10000 or create a new service with the server port to the number that matches the SQL-Server installation. In that case make sure to set the protocol to TCP and the client port to ignore, as shown under Characteristics below.

With both the WatchGuard SQL-Server and a custom built service, configure the rest of the service the same way: list the external clients that should be allowed to connect to the Sybase server as Incoming From, and the Sybase server address as Incoming To.

### **Characteristics**

- Protocols: TCP
- Server Port(s): 10000
- Client Port(s): ignore

### **ssh**

Secure Shell (ssh) is a free program which allows remote login, command execution, and file transfer to another computer over a network. It

provides strong authentication and secure (encrypted) communications. WatchGuard recommends the use of ssh instead of more vulnerable protocols like telnet, rssh, and rlogin.

If you use ssh, you should also use its strong authentication mechanisms. Strong encryption mechanisms are available for U.S. customers, Canadian customers, and customers who have been approved for use of strong encryption by WatchGuard and/or the U.S. Government. If you would like to use strong encryption (128 bit, 3DES) or IPSec, please contact WatchGuard Technical Support.

UNIX versions are available from [ftp.cs.hut.fi](ftp://ftp.cs.hut.fi/pub/ssh) (see <ftp://ftp.cs.hut.fi/pub/ssh>), and information on versions for Windows can be found at DataFellows (<http://www.datafellows.com>).

## Characteristics

- Protocol: TCP
- Server Port(s): 22
- Client Port(s): less than 1024
- RFC: No number yet, but see:  
<http://www.cs.hut.fi/ssh/>

## Common Scenario

### *Description*

There are one or more ssh servers on the trusted network.

### *Icons in the Services Arena*

An ssh icon — Allowing Incoming To the desired trusted servers, and Allowing Outgoing From Any To Any.

## syslog

syslog is a service used to log operating system events on UNIX hosts. The most common reason to enable syslog data on a firewall is to collect data from a host outside the firewall.

Because the syslog port is blocked by default, to allow one log host to collect logs from multiple Fireboxes:

- Remove port 514 from the Blocked Ports list

- Add the WatchGuard Logging icon to the Services Arena

---

**NOTE**

---

Attacks often focus on flooding syslog with log entries so that attacks are either lost in the noise or the disk fills up and attack attempts are not recorded. Generally, syslog traffic should not pass through the Firebox.

---

### **Characteristics**

- Protocol: UDP
- Server Port(s): 514

### **TACACS**

TACACS user authentication is a server that uses existing user accounts to authenticate users into a dial-up modem pool, eliminating the need to maintain duplicate accounts on a UNIX system. TACACS does not support TACACS+ or RADIUS.

### **Characteristics**

- Protocol: UDP
- Server Port(s): 49
- Client Port(s): greater than 1023

### **TACACS+**

TACACS+ user authentication is a server that uses existing user accounts to authenticate users into a dial-up modem pool, eliminating the need to maintain duplicate accounts on a UNIX system. TACAS+ supports RADIUS.

### **Characteristics**

- Protocol: TCP
- Server Port(s): 49
- Client Port(s): greater than 1023

## telnet

The telnet service is used to log in to a remote computer, and is similar to using dial-up access except that the connection is made over a network.

### Characteristics

- Protocol: TCP
- Server Port(s): 23
- Client Port(s): greater than 1023
- RFC: 854

### Common Scenario

#### *Description*

Telnet access is not allowed in to any machines on the trusted network, but access is allowed out to external and/or optional machines.

#### *Icons in the Services Arena*

The Proxied-HTTP, Filtered-HTTP, Proxy, or Outgoing icon in the Services Arena automatically set to Allow Outgoing but Deny Incoming connections (the default WatchGuard stance). For a different stance (for example, to allow selected Incoming, or to restrict Outgoing), add the telnet services and configure as needed.

## TFTP

Trivial File Transfer Protocol (TFTP) is a simple file transfer protocol similar to FTP that is usually used to download boot code to diskless workstations. It supports timeout and retransmission techniques.

Use of this protocol is not recommended because it can allow unauthorized remote access to system or user files without asking for a password. WatchGuard recommends TFTP be used only for accessing limited subdirectory trees that cannot result in root access. TFTP should be restricted by using a TCP wrapper and filtering packets coming in on port 111.

## Characteristics

- Protocols: UDP
- Server Port(s): 69
- Client Port(s): generally greater than 1023

## Timbuktu

Timbuktu Pro is remote control and file transfer software used to gain access to Windows computers. The protocol uses TCP port 1417 and UDP port 407. Add the Timbuktu service and allow incoming access from the hosts on the Internet that need to gain access to internal Timbuktu servers, and to the internal Timbuktu servers.

Timbuktu is not a particularly secure service and may compromise network security. It allows traffic inside the firewall without authentication. In addition, the Timbuktu server may be subject to denial of service attacks. WatchGuard recommends using VPN options to provide additional security.

## Characteristics

- Protocols: UDP, TCP
- Server Port(s): UDP 407, TCP 1417
- Client Port(s): ignore (both cases)

## Time

The Time service is similar to NTP and used to synchronize clocks between hosts on a network. Time is generally less accurate and less efficient than NTP over a WAN. WatchGuard recommends using NTP.

## Characteristics

- Protocols: UDP
- Server Port(s): 37

## traceroute

traceroute is an application that can be used to build maps of networks. It is very helpful for network debugging, analyzing routes, and determining

a site's Internet service provider. The WatchGuard traceroute service is for filtering UNIX-based UDP-style traceroute only. For DOS-based or Windows-based traceroute packet filtering, use the ping service instead (see "ping" on page 51).

traceroute uses ICMP and UDP packets to build pathways across networks using the UDP TTL field to return packets from every router and machine between a source and a destination. Letting traceroute into a network may enable an outsider to create a map of your private network. However, outbound traceroute can be useful for troubleshooting.

### **Characteristics**

- Protocols: UDP, ICMP
- Server Port(s): Not Applicable
- Client Port(s): generally greater than 32768

### **WAIS**

Wide Area Information Services (WAIS) is a protocol used to search for documents over the Internet originally developed at Thinking Machines Incorporated. Although WAIS servers are becoming rare, some WWW sites use WAIS to scan searchable indices, so it might be a good idea to enable outgoing WAIS.

WAIS is based on the ANSI Z39.50 search protocol, and the terms Z39.50 and WAIS are often used interchangeably.

### **Characteristics**

- Protocol: TCP
- Server Port(s): 210 although servers can be (and often are) configured on other ports, much like HTTP servers
- Client Port(s): greater than 1023

### **WatchGuard**

The basic WatchGuard service allows configuration and monitoring connections to be made to the Firebox. WatchGuard recommends allowing this service only to the Management Station. The service is typically set up on the trusted interface.

### **Characteristics**

- Protocol: TCP
- Server Port(s): 4105
- Client Port(s): client

## **WatchGuard Encrypted Connections**

WatchGuard uses one of three levels of encrypted connections to allow remote configuration and monitoring on ports 4101, 4102, and 4103. The levels are low, medium, and strong encryption. The level you have depends on your purchase agreement with WatchGuard. This service allows or denies connections, and without it, you will not be able to access a Firebox remotely. If you would like to use strong encryption (128 bit, TripleDES) or IPsec, please contact WatchGuard Technical Support.

## **WatchGuard Logging**

The WatchGuard Logging service is necessary only if a second Firebox needs access to a log host on the trusted interface of a Firebox. If there is only one Firebox, this icon is unnecessary.

### **Characteristics**

- Protocol: TCP
- Server Port(s): 4107

## **WGAgent**

WatchGuard Agent is a service that is primarily used for the management of software and security policies. It uses one TCP port allowing WatchGuard Agents to communicate with each other using an SSL secured connection. For this service to work properly, add the HTTPS service as well.

### **Characteristics**

- Protocol: TCP
- Server Port(s): 4114
- Client Port(s): client

## whois

The whois protocol gives information about who administers Internet sites and networks. It is often useful for finding administrative contacts at other sites.

Because very few sites run whois servers, the only service necessary to access these sites is an Outgoing or a Proxy icon. In the absence of these, use a whois icon allowing outgoing connections to the required whois servers, the most common one being `rs.internic.net`.

### Characteristics

- Protocol: TCP
- Server Port(s): 43
- Client Port(s): greater than 1023

## Proxied Services

---

This section describes the services proxied by the WatchGuard Firebox System, including a separate description of the transparent proxies, HTTP, SMTP, and FTP. The proxied service opens packets of its particular type, strips out any embedded forbidden data types, and reassembles the packets with the proxy's own origin and destination headers.

Configuring and activating proxies is done the same way you add packet filtering services.

### DCE-RPC

The Distributed Computing Environment (DCE) Remote Procedure Call (RPC) service allows connections bound for a trusted machine's port 135. Initial calls typically result in a response from the trusted machine that redirects the client to a new port for the actual service the client wants. This service allows the initial port mapper requests used by remote Windows Name Service (WINS) administration, remote Exchange administration, Outlook, and other software that relies on DCE RPC. Be aware that the standard SMB or NetBios ports may also need to be allowed so that the above software will work properly.

---

**NOTE**

DCE-RPE allows *a//*DCE RPC traffic through the firewall (to and from the configured addresses and ports as appropriate)—it does not filter any of the packets for harmful content.

---

### **Characteristics**

- Service Name: DCE-RPC
- Protocol: DCE-RPC
- Client Port: client
- Port Number: 135

### **FTP**

FTP is File Transfer Protocol, one of the most common ways to move files over the Internet.

### **Characteristics**

- Protocol: TCP
- Server Port(s): 20 (command channel), 21 (data channel)
- Client Port(s): greater than 1023
- RFC: 414

### **Common Scenarios**

#### *Scenario 1*

##### *Description*

There is a “public” FTP server on the optional network.

##### *Icons in the Services Arena*

An FTP icon must be present for FTP to work. Incoming connections must be Allowed To the FTP server. Outgoing connections are usually Allowed From Any to To Any.

#### *Scenario 2*

##### *Description*

There is a “public” FTP server on the Trusted network.

### *Icons in the Services Arena*

Configuration is the same as for Scenario 1.

## **H323**

The H323 service enables applications based on the H.323 protocol to be used through the Firebox. Popular products that use this protocol include:

- Microsoft NetMeeting
- Intel Internet VideoPhone

This service does not do any filtering for harmful content. It does not support QoS or rsvp protocol, nor does it support any type of NAT.

## **Considerations**

For incoming connections:

- Any external host must be able to route to the internal host directly. Use the ping utility if necessary to ensure that the connection is valid.
- Dynamic NAT must be turned off for the incoming H323 connection to work properly.

There are no equivalent special considerations for outgoing H323 connections.

## **Characteristics**

- Service Name: H323
- Protocol: Multi (control, data, LDAP)
- Client Port: client
- Port Numbers: 1720 (control), 1503 (data), 389 (LDAP)

## **HTTP**

HTTP is the Hypertext Transfer Protocol used by the World Wide Web to move information around the Internet.

---

### **NOTE**

---

The WatchGuard service called HTTP Proxy is not to be confused with an HTTP caching proxy. An HTTP caching proxy is a separate machine, and it performs caching of Web data. If you use an external caching proxy,

you must explicitly enable (by adding service icons) any outgoing services you intend to use. If you do not, outgoing TCP connections won't work properly.

---

## Characteristics

- Protocol: TCP
- Server Port(s): 80 (although servers can be run on any port, a common alternative is 8080, and Secure Socket Layer (SSL) connections are generally served on port 443)
- Client Port(s): greater than 1023
- RFC: 1945

## Common Scenarios

### *Scenario 1*

#### *Description*

“Public” HTTP server on the optional network.

#### *Icons in the Services Arena*

An HTTP icon, with Incoming From Any to the HTTP server.

### *Scenario 2*

#### *Description*

“Public” HTTP server on the trusted network.

#### *Icons in the Services Arena*

Even with dynamic NAT, the HTTP server must have a “public” address. Configuration is exactly the same as in Scenario 1.

## Proxied-HTTP

Proxied-HTTP combines configuration options for HTTP on port 80 with a rule allowing all outgoing TCP connections by default. Using the Proxied-HTTP rule ensures that all outgoing HTTP traffic, regardless of port, will be proxied according to the HTTP proxy rules.

WatchGuard recommends that you allow incoming HTTP only to any public HTTP servers maintained behind the Firebox. External hosts can be

spoofed, as WatchGuard cannot verify that these packets were actually sent from the correct location.

Configure WatchGuard to add the source IP address to the Blocked Sites List whenever an incoming HTTP connection is denied. Adjusting the settings and MIME types is the same as for the HTTP Proxy.

## RTSP

The Real-Time Streaming Protocol (RTSP) establishes and controls either a single or several time-synchronized streams of continuous media such as audio and video. It is the protocol used by RealNetworks G2 and Apple QuickTime real time streaming media players.

### Characteristics

- Protocol: RTSP
- Server Port: 554
- Client Port: any
- RFC: 2326

---

#### NOTE

---

In addition to these TCP ports, there are some UDP ports that both the client and the server use. The ports are determined dynamically but the mostly commonly used ports on the client side are 6970 and 6971.

---

## SMTP

Simple Mail Transfer Protocol (SMTP) is the Internet standard protocol for transmitting and receiving email. Generally SMTP servers are (by nature) “public” servers.

When using incoming static NAT with SMTP, auth must be added (see “auth (ident)” on page 41) to the Services Arena. Configure auth to allow incoming auth to the Firebox. This enables outgoing mail messages to flow unrestricted from behind the Firebox to the numerous SMTP servers on the Internet that use auth to verify other mail servers’ identities and allows these servers to return messages through the Firebox to the senders.

Logging incoming SMTP is recommended, but may produce copious log output. If you do not want to use the SMTP proxy, create a new service using the Services dialog box with the TCP protocol and port 25.

### **Characteristics**

- Protocol: TCP
- Server Port(s): 25
- Client Port(s): greater than 1023
- RFC: 821

### **Common Scenarios**

#### *Scenario 1*

##### *Description*

There is an SMTP server on the optional interface.

##### *Icons in the Services Arena*

A SMTP service icon — The Incoming tab should Allow To the SMTP server from Any. The Outgoing tab should Allow To Any from Any.

#### *Scenario 2*

##### *Description*

There is an SMTP server on the trusted interface.

##### *Icons in the Services Arena*

This scenario is configured exactly as in Scenario 1.

# Common Log Messages

---

This chapter provides explanations for many of the log messages most commonly generated by the Firebox. For more information on log messages, refer to the In-Depth FAQs in the WatchGuard Knowledge Base. Go to the following Web site and log into the LiveSecurity Service:

<http://www.watchguard.com/support>

Log messages in this chapter are arranged alphabetically.

`xxx.xxx.xxx.xxx's mac address changed to XX:XX:XX:XX:XX:XX`

Reports that the ARP table was changed or updated to reflect the MAC address of a particular IP address. This occurs most frequently in the case of High Availability where the active Firebox has failed over and the standby Firebox assumes its IP address.

`authentication[] Time limit exceeded`

Indicates that a user's authentication timed out. Because some authentication methods are time-sensitive, the Firebox allows you to configure a timeout value when waiting for user input. The defaults vary depending on the authentication method being used.

`chat-ttyS0[x]: Failed`

The Firebox failed to communicate with the modem. This is not a problem if you do not have a modem and are not using out-of-

band management. The Firebox always attempts to communicate with a PCMCIA modem and will report this error if none is found.

```
controld: ERROR: Receiving another configuration file from  
firebox 10.1.16.2.
```

Indicates that the current configuration file is corrupted or incomplete. The Event Processor will close the connection.

```
deny in eth0 tcp www.xxx.yyy.zzz www.xxx.yyy.zzz 25 1200 80  
psh ack
```

A psh ack is an acknowledgement of a push. Push is a type of TCP message that tells the receiving process to push the data directly to the receiving application instead of caching it locally for transmit. This message appears either because the source is a blocked site or port, a spoofed source address, or an Any service with logging enabled.

```
deny in eth0 tcp www.xxx.yyy.zzz www.xxx.yyy.zzz 2981 80 rst  
(blocked site)
```

TCP connections are controlled through a series of packets exchanged by the two computers involved in the connection. Old, stale TCP connections are reset with an RST packet. RST packets have a sequence number that must be valid according to certain TCP rules. For example, Denial of Service (DoS) attacks can be launched against some hosts by spoofing TCP RST packets against connections that conflict with current connections. Bare TCP RST packets can also be sent as a type of OS fingerprinting to determine the target's operating system.

```
dns-proxy[xx] dns_setup_connect_udp: Unable to create UDP  
socket for port: Invalid argument
```

The DNS proxy has only 256 file descriptors available for its use, which limits the number of DNS connections in a NAT environment. Every UDP request that uses dynamic NAT uses a file descriptor for the duration of the UDP timeout. Every TCP session that uses dynamic, static, or 1-to-1 NAT uses a file descriptor for the duration of the session.

The file descriptor limit is rarely a problem, but an occasional site may notice slow name resolution and many instances of the above log message

You can work around this problem in two ways (the first method is the most secure):

- 
- Avoid using dynamic NAT between your clients and your DNS server.
  - Disable the outgoing portion of the DNS proxied service and replace it with a filtered DNS service.

```
firewalld[xxx] cs_server() failed (keys didn't match)
```

The `cs_server` is the process that listens for management connections to the Firebox. There are two conditions under which the error shown above occurs:

- Incorrectly entered passphrase
- Attempt to make two concurrent read-write connections to the Firebox

```
firewalld[xxx]: cs_server() failed (response incomplete)
```

Firebox System Manager was unable to successfully complete a connection to the Firebox. There are several potential causes of this error; a common one is a very high traffic load at the time of connection.

```
firewalld[] deny in eth0 68 54 24 29 www.xxx.yyy.zzz  
www.xxx.yyy.zzz unknown ? (ip options)
```

IP options are obsolete IP parameters now used primarily for OS fingerprinting and other types of IP stack-based probes. Most routers strip IP options. By default, the Firebox denies them. This feature can be modified using the Default Packet Handling dialog box in Policy Manager.

```
firewalld[]: File synchronization completed
```

Indicates that the Management Station successfully completed the transfer of a configuration file to the Firebox.

```
firewalld[] Pid xxx, died from signal 6.
```

A `Pid` is a process ID. In the Linux kernel, any new application is assigned a process ID. In any case where a `Pid` dies, it is important to determine what process was associated with the `Pid` number. For instance, the `Pid` in a real log message may be 106. Earlier logs could show that the HTTP Proxy was the process assigned `Pid` 106. In that case, this message would indicate that the HTTP-proxy process aborted abnormally.

```
firewalld [xxx] proxy accept() failed (Connection reset by peer)
```

Indicates that a Web browser reset or failed to complete a connection. This occurs if the user clicks the Stop or Reload buttons during load.

```
firewalld[]: Putting file wg.cfg (from x.x.x.x)
```

Indicates that the Management Station at x.x.x.x sent a new configuration file to the Firebox.

```
firewalld[]: Restarted by x.x.x.x
```

Indicates that the Firebox was issued a restart command by a Management Station at IP address x.x.x.x.

```
ftp-proxy []: Proxy bind() failed (Address already in use)
```

On rare occasions, the FTP Proxy attempts to bind to a port used by a static process on the Firebox such as 4105 or 4110. When this happens, the bind fails.

```
ftp-proxy[]: [x.x.x.x:11323 x.x.x.x:21] proxy connect failed (Connection timed out)
```

Indicates that the proxy was unable to connect to a FTP server.

The Proxy Connect Timeout defines the amount of time (in seconds) that the proxies will wait before giving up trying to forward a connection to an unreachable or non-responsive host. After a connection is established, the standard proxy timeout values apply. The default value for Proxy Connect Timeout is 10 seconds. If you experience trouble reaching sites through the proxy that normally require more than 10 seconds before a connection can be acknowledged (such as systems over slow links in distant parts of the world, or heavily loaded servers), you can try raising this value by adding (or editing) the following property in the configuration file:

```
services.<service name>.proxies.ftp.connect_timeout:  
<value>
```

Because this property is per proxy service, it may be different for each FTP proxy icon configured.

```
fwcheck[x] fwcheck in low memory mode
```

Indicates that fwcheck is active because the Firebox passed its predefined low memory threshold.

---

```
fwcheck[] Killing process http-proxy (pid x)
```

Fwcheck is the process responsible for low memory scavenging on the Firebox. If Firebox memory is overloaded for some reason, fwcheck kills other processes until memory usage returns to a safer state.

```
http-proxy[] [x.x.x.x:1091 x.x.x.x:80] Request denied: No URI found
```

This message indicates a connection to a Web server was not compliant with RFC 2068. The problem is not with the code of the Web page but with the server itself. Web servers create headers when sending packets to clients. These headers contain information about the page, including information the HTTP Proxy requires to process the traffic. Part of this is a URI (Uniform Resource Identifier). According to RFC 2068:

Uniform Resource Identifiers, (URIs) have been known by many names: WWW addresses, Universal Document Identifiers, Universal Resource Identifiers, and finally the combination of Uniform Resource Locators (URL) and Names (URN). As far as HTTP is concerned, Uniform Resource Identifiers are simply formatted strings which identify—via name, location, or any other characteristic—a resource.

RFC 2068 defines the syntax for a URI. "URI not found" means either the URI was not defined or it was defined incorrectly. By default, HTTP Proxy blocks pages with non-compliant URIs.

Solutions for this problem include:

- Contacting the Web server admin to request an update to make their server RFC 2068-compliant
- Creating a Filtered-HTTP service for that site

```
http-proxy[] [x.x.x.x:1091 x.x.x.x:80] removing bogus HTTP header '? HTTP\1.0'
```

Most browsers are lax about requiring precise HTTP header syntax. If the Firebox HTTP Proxy encounters HTTP headers either with incorrect syntax or not defined per RFC 2068, it strips them during transfer. The rest of the document still transfers.

```
http-proxy[] can't read proxy info file
```

The proxy info file is a file on the Firebox describing the map between HTTP Proxy services and their internal ports. It is created by firewalld at the start of the boot sequence. Difficulty reading

this file indicates that firewalld is taking a long time to create it. A possible cause is that the configuration file is corrupted.

```
http-proxy[]: no proxy services configured -- exiting
```

Indicates that no services defined on the Firebox make use of the HTTP Proxy. The HTTP Proxy process starts, determines there are no rules for the process, and then exits.

```
http-proxy[] proxy connect timeout
```

Indicates that the HTTP proxy sent a SYN to either an internal or external HTTP server, but did not receive a SYN-ACK response within the period of time specified in the Firebox configuration file. The cause may be a downed HTTP server. The Proxy Connect Timeout defines the amount of time (in seconds) that proxies wait before they stop trying to forward a connection to an unreachable or non-responsive host. After a connection is established, the standard proxy timeout values apply. You may try raising this value by adding (or editing) the following property in the configuration file:

```
default.proxies.http.timeout: 600
```

```
http-proxy[] [x.x.x.x:1620 x.x.x.x:80] server was  
unexpectedly closed
```

Indicates that the server closed the connection before the data transfer was complete. This can be caused by busy Web servers or bad network connectivity.

```
http-proxy[668] [x.x.x.xx:4584 x.x.x.x:80\] Response  
denied: Content type required
```

One feature of the HTTP Proxy is MIME type content checking. Web servers should send this information, but some do not. The message above tells you that the HTTP Proxy denied the page because it lacks a content type.

Some custom applications transfer data using pseudo-HTTP transfers to enable them to work through most types of HTTP proxies. If this message appears when a Web page is not being accessed, it may be because data transfers are being attempted using HTTP on ports other than 80. The Proxied-HTTP service (as distinct from the HTTP proxy) proxies any outgoing port, not just 80.

---

```
http-proxy[205]: [x.x.x.x:8921 x.x.x.x:80] Error while
sending/receiving: Invalid transfer-encoding type
"Identity"
```

HTTP has a provision for defining the encoding type used in the page data transfer. The default is called "Identity," which means that no encoding or transformations are performed on the page data. The RFC for HTTP 1.1 says the following about identity: identity: The default (identity) encoding; the use of no transformation whatsoever. This content-coding is used only in the Accept-Encoding header, and SHOULD NOT be used in the Content-Encoding header.

The HTTP Proxy strictly enforces the "should not" provision of the RFC. It denies the content-encoding type as invalid. Connections to the offending server should be made through a packet filtered port 80 service.

```
init[1]: Pid xx: exit 0 (could also be 1)
```

This message appears when a process that finished whatever it was doing is now exiting normally. The xx indicates the Process ID number.

```
ipseccfg[] Error, cfg entry (networking.ipsec.
remote_gw.195.sharedkey) must contain a shared key.
```

Indicates that the ipseccfg was unable to parse a shared key hash from the configuration file, possibly due to a corrupted configuration file. Try reconfiguring your VPN tunnel options and/or Mobile User IPsec options.

```
ipseccfg[] Isec inbound policy (12) maps to a nonexistent
tunnel (xxxxxxxxx)
```

Indicates that the ipseccfg was unable to determine the correct routing, possibly due to a corrupted configuration file. Try reconfiguring your VPN tunnel options and/or Mobile User IPsec options.

```
ipseccfg[] No inbound policies configured, aborting ipsecfg
```

This indicates that your Firebox has the IPsec component, but no tunnels configured. It is harmless if you are not using IPsec VPN. If you are using IPsec VPN when this message appears, your configuration file might be corrupted. Try reconfiguring your VPN tunnel options and/or your mobile user IPsec tunnel options.

`ipseccfg[] No remote gateway associated with xxx`

Indicates that the ipsecfg was unable to parse a preconfigured remote gateway from the configuration file, possibly due to a corrupted configuration file. Try reconfiguring your VPN tunnel options and/or Mobile User IPsec options.

`ipseccfg[]: No Remote Gateways configured, aborting ipsecfg`

Indicates there are no IPsec tunnels configured on the Firebox.

`ipseccfg[] Unable to verify inbound remote user policy(12), aborting ipsec config`

If this error appears, your configuration file might be corrupted. Try reconfiguring your VPN tunnel options and/or your mobile user IPsec tunnel options.

`ipseccfg[] Will proxyarp for x.x.x.x on ethx`

ipseccfg is the process responsible for managing IPsec tunnels. This message indicates that the ipsecfg determined that it needs to proxy-ARP for this IP address. This usually occurs for Mobile User VPN IP addresses.

`kernel: eth2: Setting full-duplex based on MII#31 link partner capability of 45e1`

Indicates that the Firebox determined it can set the Ethernet interface to full-duplex. Earlier Fireboxes had software-type link negotiation. Later transceivers did this automatically in hardware. This message should be seen only on older Fireboxes.

`kernel GRE: short packet: 30984\\12)`

A GRE packet was corrupted on its way to the Firebox. In other words, the length in the packet was changed and reported an incorrect number of bytes.

`kernel MASQ failed tcp/udp checksum from 205.181.115.231`

Usually indicates packet corruption. A checksum is a count of the number of bits in a transmission unit. This number is included with the unit so that the receiver can check to see whether the specified number of bits arrived. If the counts match, the receiver assumes that it received a complete transmission.

`kernel Memory use at 90 percent, low memory condition in effect`

Indicates that fwcheck will activate because the Firebox passed its predefined low memory threshold.

---

kernel Problem: block on freelist at xxxxxxxxxx isn't free

If you see this log message, contact WatchGuard Technical Support immediately. A small number of Fireboxes experienced a manufacturing problem with their power supply, which causes this symptom.

kernel: Temporarily blocking host x.x.x.x

Indicates that an IP address was dynamically added to the blocked site list.

Pid(x) exited status 1

Indicates that a process on the Firebox exited normally.

RBCAST: Error sending data on [some interface]: Network is unreachable

The Firebox has a rebroadcaster service designed to take UDP-directed broadcast packets from one interface and put them on the other interfaces. This service is infrequently used. It is enabled when certain PPTP and MUVPN options are activated.

RBCAST only rebroadcasts directed broadcasts originating on a primary interface IP address. In other words, secondary networks will not be the source of an RBCAST. In addition, it will not rebroadcast to remote interfaces such as PPTP and IPSec addresses.

RBCAST errors most commonly indicate that your configuration does not support its use. RBCAST is automatically enabled on UDP ports 137 and 138 when VPN options are turned on. In almost all cases, it is safe to ignore these messages.

If you want to obtain more information on this process, open your configuration file with a text editor. Immediately after the line that says:

```
options.proxies.rbcast.ports: 137 138 (might be
additional port numbers)
```

Insert this line:

```
options.proxies.rbcast.verbose: ON
```

If you do not want to see RBCAST messages, use the text editor to remove the line that says:

```
options.proxies.rbcast.ports: 137 138
```

Save this file with the text editor. Open it with Policy Manager, and save it to the Firebox.

```
rbcast[] Error sending data on optional--will not use  
anymore: Network is unreachable
```

The RBCAST service is unable to send broadcasts on the optional interface. Possible causes include:

- Nothing connected to the interface
- Improper or no rule regarding the traffic

The RBCAST service sends directed broadcasts on UDP ports to other networks. An Outgoing service rule must be associated with it.

```
received an unencrypted packet when crypto active
```

This message can be safely ignored. It indicates that an unencrypted packet, (normally a connection notification that has no data and no bearing on the actual connection), has been received.

```
Request blocked by WebBlocker (proxy access blocked)
```

This generally indicates that some browser on the network is trying to connect to an http proxy server. WebBlocker interprets this as an attempt to bypass its protections and denies the attempt.

```
smtp-proxy[]: [x.x.x.x:35105 x.x.x.x:25] Bad command:  
XXXXXX"
```

The client attempted a non-standard SMTP command not recognized by the SMTP Proxy.

```
smtp-proxy[630]: [x.x.x.x:11323 x.x.x.x:25] proxy connect  
failed (Connection timed out)
```

Indicates that the proxy was unable to connect to a mail server. The Proxy Connect Timeout defines the amount of time (in seconds) that the proxies will wait before giving up trying to forward a connection to an unreachable or non-responsive host. After a connection is established, the standard proxy timeout values apply. The default value for Proxy Connect Timeout is 10 seconds. If you have trouble reaching sites through the proxy that normally require more than 10 seconds before a connection can be acknowledged (such as systems over slow links in distant parts of the world, or heavily loaded servers), you can try raising this value by adding (or editing) the following property in the configuration file:

- 
- For SMTP:

```
default.proxies.smtp.connect_timeout: <value>
```

Note that this property is global to all SMTP services, unlike the FTP version described previously.

```
smtp-proxy[589]: [x.x.x.x:1098 x.x.x.x:25] proxy connect failed (Operation now in progress)
```

This message indicates a Proxy Backlog. The Proxy Backlog defines the number of connection requests held by the Firebox until a proxy can be started to handle the connection. The default Proxy Backlog value is 20. To raise (or lower) this value, add (or edit) the following property in the configuration file:

```
options.proxies.backlog: <value>
```

```
smtp-proxy[703] [x.x.x.x:1327 x.x.x.x:25] removing ESMTP keyword "AUTH"
```

This message indicates that a client attempted to send an unsupported ESMTP command through the SMTP Proxy.

```
Tried to restart iked 3 times within 5 seconds of each other--something's wrong!
```

Iked is the Firebox process responsible for negotiating IPsec tunnels. This message usually occurs when IPsec mobile users are in the configuration file with no associated network routing policies. You can edit the configuration file with a text editor and remove references to IPsec mobile users. If this error appears in your logs, iked will not run and no IPsec tunnels will start.

```
tunneld[]: parse_ranges: some addresses may not be in channel stack (stack is full)
```

This message indicates that you have a network range with more than 50 IP addresses used for PPTP tunnels. The Firebox is limited to 50 PPTP tunnels. Only the first 50 IP addresses are added to the stack of available addresses.

```
webblocker[]: received new WebBlocker database from server x.x.x.x (nnnn bytes, generated on day-month-year-time)
```

Indicates that the Webblocker process successfully retrieved the WebBlocker database from the management station.



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You can draw upon many resources to support your efforts to improve network security. This chapter lists several sources of information commonly used by WatchGuard engineers, developers, and Technical Support teams to learn more about network security in general and the WatchGuard product line in particular. These include:

- Publishers
- Books
- White Papers and Requests for Comments
- Mailing Lists
- Web Sites
- Newsgroups

## Publishers

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Several publishers emphasize network security in their offerings.

### *Addison-Wesley & Benjamin Cummings*

Publishes a Computer Science series that includes several titles about networking and network security.

<http://www.awl.com/>

### ***O'Reilly***

Publishes many books on network security.

<http://www.ora.com/>

## **Books**

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### **Non-Fiction**

Amoroso, Edward and Bellovin, Steven. *Intranet and Internet Firewall Strategies*. Indianapolis: Que Corporation, 1996. ISBN 1562764225

Chapman, Brent, and Zwicky, Elizabeth D. *Building Internet Firewalls*. Sebastopol: O'Reilly & Associates, 1994. ISBN 1-56592-124-0.

Cheswick and Bellovin. *Firewalls and Internet Security: Repelling the Wily Hacker*. Reading, MA: Addison Wesley Longman, Inc., 1994. ISBN 0-201-63357-4.

Curry, David A. *UNIX System Security: A Guide for Users and System Administrators*. Reading, MA: Addison Wesley Longman, Inc., 1992.

Denning, Dorothy E. *Information Warfare and Security*. Addison-Wesley, 1999. ISBN 0201433036.

Farley, Stearns, and Mark Farley Hsu, Tom Stearns, and Jeffrey Hsu, *LAN Times Guide to Security and Data Integrity*. Berkeley: Osborne McGraw-Hill, 1996. ISBN 0-07-882166-5.

Garfinkel and Spafford, Simson Garfinkel and Gene Spafford. *Practical Unix and Internet Security*. Sebastopol: O'Reilly & Associates, 1994. ISBN 1565921488.

Goncalves, Marcus, *Firewalls Complete*. New York: McGraw-Hill, 1998. ISBN 0-07-024645-9.

McClure, Stewart; Scambray, Joel; and Kurtz, George. *Hacking Exposed*. Second Edition. McGraw-Hill Publishing, January 2000. ISBN 0072127481.

Power, Richard. *Tangled Web: Tales of Digital Crime from the Shadows of Cyberspace*. Que; September 2000. ISBN 078973443x.

Schneier, Bruce. *Applied Cryptography*. Second Edition. New York: John Wiley & Sons, Inc., 1996. ISBN 0-471-11709-9.

Schwartau, Winn. *Cybershock: Surviving Hacker, Phreakers, Identity Thieves, Internet Terrorists and Weapons of Mass Disruption*. New York: Thunder's Mouth Press, 2000. ISBN 1-56025-246-4.

Sheldon, Tom (Editor); Cox, Phil. *Windows 2000 Security Handbook*. McGraw-Hill Publishing, November 2000. ISBN 0072124334.

Stevens, W. Richard. *TCP/IP Illustrated*. Reading MA: Addison Wesley Longman, Inc., 1994. ISBN 0201633469. (Note: This is a 3-volume set.)

Stoll, Cliff. *Cuckoo's Egg*. Pocket Books, 1995. ISBN 0671726889.

Vacca, John, *Intranet Security*. Rockland, MA: Charles River Media, Inc., 1997. ISBN 1-886801-56-8.

## **Fiction**

Stephenson, Neal. *Cryptonomicon*. New York, NY: HarperCollins Publishers, 1999. ISBN 0060512806.

## **White Papers & Requests for Comments**

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Reynolds, J. and J. Postel, Assigned Numbers. Available at this Web site:  
<http://www.cis.ohio-state.edu/htbin/rfc/rfc1700.html>

*Request for Comments Editor*  
<http://www.rfc-editor.org>

*Internet Request for Comments (RFC)*  
<http://www.cis.ohio-state.edu/hypertext/information/rfc.html>

## Mailing Lists

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*wg-users@watchguard.com*

WatchGuard sponsors a listserv for our customers. For more information, see the Technical Support chapter in the *User Guide*.

*firewall-wizards@nfr.net*

## Web Sites

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*WatchGuard Frequently Asked Questions*

<http://www.watchguard.com> (Click Support, Log into LiveSecurityService, click Knowledge Base, click In-Depth FAQs)

*Attrition*

<http://www.attrition.org/>

*Bugtraq*

<http://www.securityfocus.com>

*Center for Education and Research in Information Assurance and Security*

<http://www.cerias.purdue.edu/>

*Complete Intranet Firewalls Resource Page*

<http://www.intrack.com/intranet/firewall.shtml>

*CSI Firewall Product Search Center*

<http://www.gocsi.com/firewall.htm>

*Explanation of Firewall Logs*

<http://www.robertgraham.com/pubs/firewall-seen.html>

*Firewall.com*

<http://www.firewall.com>

*Firewall and Proxy Server How To*

<http://metalab.unc.edu/mdw/HOWTO/Firewall-HOWTO.html>

*FishNet Security Information*

<http://www.kcfishnet.com/secinfo/types.html>

***Gene Spafford's Homepage***

<http://www.cerias.purdue.edu/homes/spaf/>

***Honeynet Project***

<http://project.honeynet.org>

***Information Security Magazine***

<http://www.infosecuritymag.com>

***Internet Firewalls - Frequently Asked Questions***

<http://www.interhack.net/pubs/fwfaq>

***Internet Firewalls – Resources***

<http://www.cerias.purdue.edu/coast/firewalls>

***The Java Security Web Site***

<http://www.rstcorp.com/javasecurity/>

***National Institute of Standards and Technology, Computer Security Resource Center***

<http://www-08.nist.gov>

**Note:** Yes, the dash after “www” is correct.

***Microsoft Security***

<http://www.microsoft.com/security/>

***National Institute of Standards and Technology, Computer Security Division***

<http://csrc.nist.gov/>

***Network Computing: Technology Solution Center***

<http://www.networkcomputing.com>

***The RealPlayer Website***

<http://service.real.com/firewall>

***UNIX Security***

[http://www.itworld.com/nl/unix\\_sec](http://www.itworld.com/nl/unix_sec)

***Vicomsoft Network Definitions Webpage***

<http://www.vicomsoft.com/knowledge/reference/ks.reference.html>

*Dictionaries of Computer Terminology*

<http://www.webopedia.com/>

<http://www.whatis.com/>

<http://info.astrian.net/jargon/>

## **Newsgroups**

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*comp.security.firewalls*

Use your newsreader or electronic messaging application to subscribe to the comp.security.firewalls Usenet newsgroup.

*Deja.com*

Deja.com provides a Web-based alternative to news reader services. In addition to comp.security.firewalls, it includes several discussion groups and the occasional room discussing network security issues. It can be found at: <http://www.deja.com/>

# Out-of-Band Initialization Strings

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This chapter provides a reference list of PPP and modem initialization strings used to configure out-of-band (OOB) management.

The PPP client for Linux is called Pppd.

## PPP Initialization Strings

---

These are the strings and syntaxes available for use when configuring a Firebox for out-of-band management in Policy Manager:

*asynctest* <map>

Set the async character map to <map>. This map describes which control characters cannot be successfully received over the serial line. Pppd will ask the peer to send these characters as a 2-byte escape sequence. The argument is a 32-bit hex number with each bit representing a character to escape. Bit 0 (00000001) represents the character 0x00; bit 31 (80000000) represents the character 0x1f or ^\_. If multiple *asynctest* options are given, the values are ORed together. If no *asynctest* option is given, no async character map will be negotiated for the receive direction; the peer should then escape all control characters. To escape transmitted characters, use the *escape* option.

***escape xx,yy,..***

Specifies that certain characters should be escaped on transmission (regardless of whether the peer requests them to be escaped with its async control character map). The characters to be escaped are specified as a list of hex numbers separated by commas.

Almost any character can be specified for the escape option, unlike the asyncmap option which allows only control characters to be specified. The characters that may not be escaped are those with hex values 0x20 – 0x3f or 0x5e.

***mpfto <period>***

Specifies how long the PPP session should wait for a valid management session to begin. If no valid session starts, then PPP will disconnect after this timeout period. The default is 90 seconds.

***mru n***

Set the Maximum Receive Unit (MRU) value to *n*. Pppd will ask the peer to send packets of no more than *n* bytes. The minimum MRU value is 128. The default MRU value is 1,500. A value of 296 is recommended for slow links (40 bytes for TCP/IP header + 256 bytes of data).

***mtu n***

Set the Maximum Transmit Unit (MTU) value to *n*. Unless the peer requests a smaller value via MRU negotiation, pppd will request that the kernel networking code send data packets of no more than *n* bytes through the PPP network interface.

***passive***

Enables the “passive” option in the LCP. With this option, pppd will attempt to initiate a connection; if no reply is received from the peer, pppd will then wait passively for a valid LCP packet from the peer, instead of exiting, as it would without this option.

***bsdcomp nr,nt***

Request that the peer compress packets that it sends, using the BSD-Compress scheme, with a maximum code size of *nr* bits, and agree to compress packets sent to the peer with a maximum code size of *nt* bits. If *nt* is not specified, it defaults to the value given for *nr*. Values in the range 9 to 15 can be used for *nr* and *nt*; larger

values give better compression but consume more kernel memory for compression dictionaries. Alternatively, a value of 0 for *nr* or *nt* disables compression in the corresponding direction. Use `nobsdcomp` or `bsdcomp 0` to disable BSD-Compress compression entirely.

***debug***

Enables connection debugging facilities. When this option is given, `pppd` logs the contents of all control packets sent or received in a readable form.

***default-asynctest***

Disables `asynctest` negotiation, forcing all control.

***default-mru***

Disables Maximum Receive Unit (MRU) negotiation. With this option, `pppd` uses the default MRU value of 1,500 bytes for both the transmit and receive direction.

***deflate nr,nt***

Requests that the peer compress packets that it sends, using the Deflate scheme with a maximum window size of  $2^{nr}$  bytes, and agree to compress packets sent to the peer with a maximum window size of  $2^{nt}$  bytes. If *nt* is not specified, it defaults to the value given for *nr*. Values in the range 8 to 15 can be used for *nr* and *nt*; larger values give better compression but consume more kernel memory for compression dictionaries. Alternatively, a value of 0 for *nr* or *nt* disables compression in the corresponding direction. Use `nodeflate` or `deflate 0` to disable Deflate compression entirely.

---

**NOTE**

---

`pppd` requests Deflate compression in preference to BSD-Compress if the peer can do either.

---

***idle n***

Specifies that `pppd` should disconnect if the link is idle for *n* seconds. The link is idle when no data packets (that is, IP packets) are being sent or received. **Note:** It is not advisable to use this option with the `persist` option without the `demand` option. If the

active-filter option is given, data packets that are rejected by the specified activity filter also count as the link being idle.

***ipcp-accept-local***

With this option, pppd accepts the peer's idea of our local IP address, even if the local IP address was specified in an option.

***ipcp-accept-remote***

With this option, pppd accepts the peer's idea of its remote IP address, even if the remote IP address was specified in an option.

***ipcp-max-configure n***

Sets the maximum number of IPCP configure-request transmissions to *n* (default 10).

***ipcp-max-failure n***

Sets the maximum number of IPCP configure-NAKs returned before starting to send configure-rejects instead to *n* (default 10).

***ipcp-max-terminate n***

Sets the maximum number of IPCP terminate-request transmissions to *n* (default 3).

***ipcp-restart n***

Sets the IPCP restart interval (retransmission timeout) to *n* seconds (default 3).

***lcp-echo-failure n***

When this option is given, pppd presumes the peer to be dead if *n* LCP echo-requests are sent without receiving a valid LCP echo-reply. If this happens, pppd will terminate the connection. Use of this option requires a non-zero value for the lcp-echo interval parameter. This option can be used to enable pppd to terminate after the physical connection has been broken (for example, the modem has hung up) in situations where no hardware modem control lines are available.

***lcp-echo-interval n***

When this option is given, pppd sends an LCP echo-request frame to the peer every *n* seconds. Normally the peer should respond to the echo-request by sending an echo-reply. This option can be used with the lcp-echo-failure option to detect that the peer is no longer connected.

***lcp-max-configure n***

Sets the maximum number of LCP configure-request transmissions to *n* (default 10).

***lcp-max-failure n***

Sets the maximum number of LCP configure-NAKs.

***lcp-max-terminate n***

Sets the maximum number of LCP terminate-request transmissions to *n* (default 3).

***lcp-restart n***

Sets the LCP restart interval (retransmission time-out) to *n* seconds (default 3).

***local***

Do not use the modem control lines. With this option, `pppd` ignores the state of the CD (Carrier Detect) signal from the modem and does not change the state of the DTR (Data Terminal Ready) signal.

***maxconnect n***

Terminates the connection when it has been available for network traffic for *n* seconds; that is, *n* seconds after the first network control protocol comes up.

***modem***

Use the modem control lines. This option is the default. With this option, `pppd` will wait for the CD (Carrier Detect) signal from the modem to be asserted when opening the serial device (unless a connect script is specified), and it will drop the DTR (Data Terminal Ready) signal briefly when the connection is terminated and before executing the connect script.

***netmask n***

Sets the interface netmask to *n*, a 32-bit netmask in decimal dot notation (for example, 255.255.255.0). When this option is given, the value specified is ORed with the default netmask. The default netmask is chosen based on the negotiated remote IP address; it is the appropriate network mask for the class of the remote IP address, ORed with the netmasks for any non-point-to-point network interfaces in the system that are on the same network.

***noauth***

Do not require the peer to authenticate itself.

***nobsdcomp***

Disables BSD-Compress compression; pppd will not request or agree to compress packets using the BSD-Compress scheme.

***noccp***

Disables CCP (Compression Control Protocol) negotiation. This option should be required only if the peer is buggy and gets confused by requests from pppd for CCP negotiation.

***noctrlscts***

Disables hardware flow control (that is, RTS/CTS) on the serial port. If neither the *ctrlscts* nor the *noctrlscts* option is given, the hardware flow control setting for the serial port is left unchanged.

***noipdefault***

Disables the default behavior when no local IP address is specified, which is to determine (if possible) the local IP address from the hostname. With this option, the peer will have to supply the local IP address during IPCP negotiation (unless it was specified explicitly on the command line or in an options file).

***nomagic***

Disables magic number negotiation. With this option, pppd cannot detect a looped-back line. This option should be needed only if the peer is buggy.

***nopersist***

Exits once a connection has been made and terminated. This is the default unless the *persist* or *demand* option has been specified.

***novjccomp***

Disables the connection-ID compression option in Van Jacobson-style TCP/IP header compression. With this option, pppd will not omit the connection-ID byte from Van Jacobson-compressed TCP/IP headers, nor ask the peer to do so.

***silent***

Pppd does not transmit LCP packets to initiate a connection until a valid LCP packet is received from the peer (as for the “passive” option with older versions of pppd).

*xonxoff*

Uses software flow control (that is, XON/XOFF) to control the flow of data on the serial port.

## Modem Initialization Strings

These parameters specify a chat session that occurs between the Firebox and the modem to properly initialize the modem. In most cases the default initializations work with a wide variety of modems. The default initializations are known to work with the list of approved modems.

In the default initializations below, the parameters marked with ^ specify what the Firebox should expect back from the modem, while the portions marked with \_\_\_\_ specify what the Firebox sends to the modem:

"""	+\p+\p+\d\r\pATH	"""	\dAT&F	OK	ATE0	OK	ATS0=1	OK
^^	_____	^^	_____	^^	_____	^^	_____	^^
1	2	3	4	5	6	7	8	9

### Explanation of fields

- 1 Specifies that the Firebox should expect nothing back from the modem at this point in the chat.
- 2 Specifies that three plus characters (+++) should be sent with short pauses in between, then a 1-second delay, then a return character, a short pause, then the characters "ATH" are sent, finally followed by a carriage return (which is not shown, but implied). This sequence commands most modems to hang up.
- 3 Specifies that the Firebox should expect nothing back from the modem at this point in the chat.
- 4 Send a 1-second delay followed by the characters "AT&F" to command the modem to recall its factory-default configuration.
- 5 Expect "OK" back from the modem.
- 6 Send "ATE0" to the modem, which directs it not to echo back command characters sent.

- 7 Expect "OK" back.
- 8 Send "ATS0=1" to direct the modem to answer incoming calls after one ring.
- 9 Expect back a final "OK" from the modem.  
For an out-of-band management connection, the modem needs to be set up to answer the phone when it rings, and to use hardware flow control on the serial line. The Flow Control and Modem Initialization fields on the OOB tab enable you to make these settings.

## Common initialization string values

### *Auto-answer*

Send the string `ATS0=x`, where `x` = the number of rings before answering. For a pickup after one ring, enter `ATS0=1`.

## Special sequences

### *TIMEOUT value*

The initial timeout value is 45 seconds. Once changed, the timeout setting remains in effect until it is changed again.

### *EOT*

The special reply string of EOT indicates that the chat program should send an EOT character to the remote. This is normally the end-of-file character sequence. A return character is not sent following the EOT. The EOT sequence can be embedded into the send string using the sequence `Ctrl+D`.

### *BREAK*

The special reply string of BREAK will cause a break condition to be sent. The break is a special signal on the transmitter. The break sequence can be embedded into the send string using the `\K` sequence.

## Escape sequences

The expect and reply strings may contain escape sequences. All of the sequences are legal in the reply string. Many are legal in the expect sequence. Those that are not valid in the expect sequence are so indicated.

*"" or ''*

Expect or send a null string. If you send a null string, it will still send the return character. This sequence can either be a pair of apostrophes or quotes.

*\b*

Backspace.

*\c*

Suppress the new line at the end of the reply string. This is the only method to send a string without a trailing return character. It must be at the end of the send string. For example, the sequence hello\c will simply send the characters h, e, l, l, o (not valid in expect).

*\d*

Delay for 1 second (not valid in expect).

*\K*

Insert a BREAK (not valid in expect).

*\n*

Send a newline or linefeed character.

*\N*

Send a null character. The same sequence can be represented by \0 (not valid in expect).

*\p*

Pause for a fraction of a second. The delay is 1/10th of a second (not valid in expect).

*\q*

Suppress writing the string to the logging system. The string ?????? is written to the log in its place (not valid in expect).

*\r*

Send or expect a carriage return.

*\s*

A space character in the string. This can be used when it is not desirable to quote the strings that contain spaces. For example, the sequence 'HI TIM' and HI\sTIM are the same.

***\t***

Send or expect a tab character

***\\***

Send or expect a backslash character

***\ddd***

Collapse the octal digits (ddd) into a single ASCII character and send that character. Some characters are not valid in Ctrl+C; for these characters, substitute the sequence with the control character represented by C. For example, the character DC1 (17) is shown as Ctrl+Q. Some characters are not valid in expect.

# Firebox Read-Only System Area

---

WatchGuard ships all Fireboxes with a fixed, baseline set of functionality stored on the read-only system area of the Firebox flash disk memory. It is possible to start the Firebox using this read-only system area when the primary user area is misconfigured or corrupted. This functionality allows you to:

- Troubleshoot problems where all access to the Firebox is lost
- Reset Firebox passphrases when you do not know or have forgotten them

Fireboxes shipped before Firebox System (LiveSecurity System) 4.1 shipped with the original, standard functionality called the read-only system area. Fireboxes shipped with Firebox System 4.1 or later contain both the older functions and a new set of features designed to enhance usability, called the enhanced system area.

## Read-Only System Area

---

All Fireboxes, both new and old, have a read-only system area which the unit can be booted into utilizing the serial cable shipped with the Firebox. When a Firebox is running from the read-only system area, the Sys B light on the front panel is yellow and the Armed light is green.

With the Firebox running the read-only system area, use one of two methods to initialize the Firebox and prepare it for configuration:

- Out-of-band via a modem
- Direct via a serial cable

## Enhanced System Mode

---

By default, all Fireboxes (shipped with Firebox System 4.1 or later) boot into an Enhanced System Mode. When a Firebox is running from the Enhanced System Mode, the Sys A light on the front panel flickers yellow in a repeating pattern.

In a Firebox installed with Enhanced System Mode, the following methods are available to initialize the Firebox and prepare it for configuration:

- Out-of-band via a modem
- Direct via a serial cable
- Hands-Free Installation via a local area network
- IP connection using remote provisioning

Initializing an older Firebox with the Firebox System 4.1 or later automatically upgrades the Firebox and enables the Firebox to run in the Enhanced System Mode from that point forward. Until a Firebox is initialized with Firebox System 4.1 or later, it cannot run in Enhanced System Mode.

## Initializing a Firebox using TCP/IP

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TCP/IP is the recommended method for installing a new Firebox. It requires that a Firebox is capable of running in Enhanced System Mode. All Fireboxes shipped with Firebox System 4.1 or later can run in Enhanced System Mode; any older box already initialized using System 4.1 or later is automatically upgraded to run in Enhanced System Mode.

To confirm that your Firebox is upgraded to run in Enhanced System Mode, use a cross-over cable to connect any two Firebox Ethernet

interfaces. Turn on the Firebox. A flickering Sys A light indicates that the Firebox is running System 4.1 or later.

To perform this procedure, you must have:

- A newly shipped Firebox or any model of Firebox already initialized with System 4.1 or later
- Management Station running LSS/WFS that can attach via local LAN connection to the Trusted interface of the Firebox

1 Use a cross-over cable to connect the Firebox External and Optional ethernet interfaces.

A red, cross-over cable is included with the Firebox for this purpose.

2 Connect the Management Station to the same LAN as the Firebox Trusted interface.

3 Turn the Firebox off and then on. Allow time for the Firebox to boot, then confirm that the Sys A light is flickering.

If the Firebox Sys A light is not flickering, the Firebox is running release prior to System 4.1 and you must use either the serial or modem initialization methods.

4 Use the QuickSetup Wizard to configure and initialize the Firebox. When prompted to upload the security policy, select **Use TCP/IP to Configure**.

For more information, see the *QuickStart poster*.

## Initializing a Firebox Using a Serial Cable

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For Fireboxes that shipped prior to Firebox System 4.1, the read-only system area is accessible using the Flash Disk Management Tool. It is necessary to restart the Firebox from the read-only system area to

- Initialize a Firebox version 4.0 or prior for the first time
- Troubleshoot problems where all access to the Firebox is lost

Before starting this procedure, establish a connection between the Firebox console port and an available serial port on the Management Station. Use a null modem cable (not a standard serial cable). A null modem cable is shipped with the Firebox.

Also, make sure the Ethernet cables are plugged into the Trusted interface.

## Booting from the system area

From Control Center:

- 1 Select **Tools** ⇒ **Advanced** ⇒ **Flash Disk Management**.  
The Flash Disk Management Tool dialog box appears.
- 2 Select **Boot From the System Area**. Click **Continue**.  
The read-only system area Setup dialog box appears.
- 3 Enter the IP address you want to temporarily assign to the Firebox Trusted interface. Click **OK**.  
The Firebox uses this address for only a brief period of time until the Firebox reboots. However, the address *must* be available on the same IP subnet as the Management Station. The COM Port Setup dialog box appears.
- 4 Select the COM port you want to open.
- 5 Turn the Firebox off and then on.  
Check the Firebox front panel indicator lights. The Sys B light should be illuminated indicating that the Firebox is running from its read-only system area configuration. An Operation Complete dialog box appears.
- 6 Click **OK**.

## Working with a Firebox booted from the read-only system area

After you successfully boot the Firebox from the read-only system area, you can copy a new configuration file to the primary area of the Firebox flash disk and reset Firebox passphrases. The read-only system area configuration file enables you to communicate only with the Firebox Trusted interface; while booted from the read-only system area, the Firebox will not pass traffic or perform other normal operations.

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### NOTE

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Do not attempt to use the read-only system area configuration file as a base or template for your working configuration. It will not work. You must create a new configuration file using the QuickSetup Wizard or open an existing configuration file.

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- 1 Verify that you can communicate with the Firebox.  
The Firebox read-only system area configuration image allows the Firebox to respond to network pings. Ping the temporary address assigned to the Trusted interface. If the Firebox does not respond to the ping command, you may have a connectivity problem.

- 2 Start Policy Manager. Use it to copy a valid configuration file to the primary area of the Firebox flash disk.
  - **Initializing an older Firebox for the first time**— Create a valid configuration file using Policy Manager.
  - **Recovering a previously configured Firebox**— Use the configuration file on the Management Station hard drive.
  - **Attempting to solve some other problem**— Create a valid configuration file using the Policy Manager.
- 3 Save the configuration file to the primary area of the Firebox flash disk.  
 For instructions, see the User Guide chapter on Firebox Basics, "Saving a Configuration to the Firebox."
- 4 To test whether the configuration file saved successfully to the Firebox, use Policy Manager to open it.  
 For instructions, see the User Guide chapter on Firebox Basics, "Opening a Configuration File from the Firebox."

## Troubleshooting

*The COM was successful, but I didn't get the "Operation Complete" dialog box when I rebooted the Firebox.*

Check the cables. The null modem cable must be connected from the Console port of the Firebox to the COM port on the Management Station.

Confirm that the COM port is enabled.

Try a different cable or another device (like a modem) to test that the COM port is responding.

If these solutions do not work, contact WatchGuard Technical Support.

*Why is the Flash Disk Management Tool unable to open the COM port on my computer?*

Enable the serial port (COM). The COM port must be enabled for the Flash Disk Management Tool to recognize it.

Verify that you do not have two sessions of the Flash Disk Management Tool open.

## Initializing a Firebox Using a Modem

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The WatchGuard Firebox can accept both external and PCMCIA modems. Use a modem for out-of-band initialization and configuration in cases where the Firebox is located remotely from the Management Station

Before starting this procedure, make sure you have:

- Management Station running Firebox System 4.1 or later and equipped with a modem, Dial-Up Networking software, and a working telephone line
- Any Firebox model, equipped with an external modem and modem cable or PCMCIA modem and a working telephone line

To initialize a Firebox via out-of-band over a modem, the Firebox must first be prepared:

- Use the blue null serial cable and adaptors included with the Firebox to connect the Firebox Console port and external serial port in a loopback configuration. Connect the Firebox Console port and external serial.
- Turn the power on the Firebox off then on. Confirm that the Sys B light is lit.
- The Firebox is now ready to accept the out-of-band connection.

## Initializing using Remote Provisioning

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Use remote provisioning to initialize a Firebox in the case where a router sits between the Management Station and the Firebox network connection. Because of the flexibility of being able to initialize a Firebox from virtually any location on a network, it is a very versatile option. However, remote provisioning has the following restrictions:

- During provisioning, the Firebox and the router should be the only devices on the network
- You must be able to flush the local router's ARP tables, preferably by rebooting
- The Firebox must be running System 4.1 or later
- The Firebox is the only device behind a working router

- The management station is running System 4.1 or later that has IP connectivity to the network on which the Firebox is connected
- The network address and the netmask of the net behind the router must be known
- One or more unused IP connections are behind the router.

In order to provision a Firebox remotely via an IP connection, the Firebox must belong to one of the following categories:

- New Firebox— By default, newly shipped Fireboxes boot into Enhanced System Mode which supports remote provisioning.
- Older Firebox— For Fireboxes shipped before Firebox System 4.1, initialize the Firebox with Firebox System 4.1 software. Then use the red cross-over cable supplied with the Firebox to connect the Trusted and Optional Ethernet interfaces in a loopback configuration.

During remote provisioning, one light appears on the front panel Traffic Volume Indicator for each successful IP address the Firebox claims. The Firebox can claim up to eight addresses.

The Processor Load Indicator marks the total number of different MAC addresses the Firebox sees on the cable. If the number exceeds eight, the Firebox stops claiming addresses; the Sys A light remains lit. This feature is designed to prevent an uninitialized Firebox from claiming addresses on a busy LAN. (If this happens, reboot into Enhanced System Mode and try again.)

The Firebox and the router should be the only two devices on the LAN. Complete the following:

- 1 Attach both the Firebox External interface and the router's interface to a common local area network, or use the red cross-over cable to connect them directly.
- 2 Turn the Firebox off and then on. Allow time for the Firebox to boot. Confirm that there is a flashing pattern with a red, blinking, Trusted deny light on the lower edge of the Security Triangle Display.
- 3 Flush the router ARP cache.  
Rebooting the router will usually accomplish this.
- 4 From Policy Manager on the Management Station, select **File =>Open Firebox**.

- 5 Select an unused IP address behind the router on the same network to which the Firebox is attached. Set the Firebox's read-write passphrase to **wg**. Set the timeout to 90 seconds. Click **OK**.
- 6 If the procedure is successful, the open operation on the Management Station completes. You can then follow regular procedures described in the *User Guide* to configure and download a new flash image to the Firebox.

## Managing Flash Disk Memory

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The Flash Disk Management Tool performs specific tasks involving the Firebox flash memory. The flash disk is divided into three areas:

- System (Sys B)—Contains a permanently stored, basic Firebox software image with the passphrase **wg**.
- Primary (Sys A)—Contains the Firebox software image used in normal operation and the enhanced read-only system area.
- Sys A Continued—The remainder of the Firebox software image.
- PermFiles Area

The Flash Disk Management Tool performs three different tasks for manipulating the Firebox boot configuration file.

### Making a backup of the current configuration

To ensure that you always have a backup version of a current working configuration, the backup configuration (everything but Sys B) is stored on the management station. From Control Center:

- 1 Select **Tools** ⇒ **Advanced** ⇒ **Flash Disk Management**.
- 2 Select **Make Backup of Current Image**. Click **Continue**.  
A verification prompt appears. Verify that the Management Station connects to the Firebox Trusted interface either over the network (TCP/IP) or via a modem using out-of-band management.
- 3 Click **Yes**.  
The Connect To Firebox dialog box appears.
- 4 Use the **Firebox** drop list to select a Firebox or type the IP address used by the Management Station to communicate with the Firebox. Enter the configuration (read/write) passphrase. Click **OK**.

- 5 Select a file name for the Firebox backup.  
The Enter Encryption Key dialog box appears.
- 6 Enter a key for encrypting the backup file. Click **OK**.  
This ensures that no one can obtain sensitive information from the backup file. When the backup is successful, an Operation Complete alert appears.
- 7 Click **OK**.  
You do not need to reboot the Firebox.

## Restoring a backup configuration

Restoring a configuration takes the files (Sys A, Sys A continued, and PermFiles) and restores them to the Firebox.

Restore the backup configuration to the primary area of the Firebox flash disk when:

- You incorrectly overwrite the primary configuration file.
- The primary configuration file is incorrectly configured or is otherwise unusable.

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### NOTE

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This procedure is possible only when a backup configuration file is on the management station. See "Making a backup of the current configuration" on page 104.

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- 1 From System Manager, click the Main Menu button. Select **Tools** ⇒ **Advanced** ⇒ **Flash Disk Management**.  
The Flash Disk Management Tool dialog box appears.
- 2 Select **Restore Backup Image**. Click **Continue**.  
The Connect To Firebox dialog box appears.
- 3 Use the **Firebox** drop list to select a Firebox or type the IP address used by the Management Station to communicate with the Firebox. Enter the configuration (read/write) passphrase. Click **OK**.  
The Firebox copies the configuration files from the Management Station to the primary area of its flash disk and reboots.



# Glossary

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This glossary contains a list of terms, abbreviations, and acronyms frequently used when discussing networks, firewalls, and WatchGuard products.

***access control***

A method of restricting access to resources, allowing access only to privileged entities.

***active mode FTP***

One of two ways an FTP data connection is made. In active mode, the FTP server establishes the data connection. In passive mode, the client establishes the connection. In general, FTP user agents use active mode and Web user agents use passive mode.

***activity light***

An LED (light-emitting diode) that verifies that a piece of hardware is working, communicating with the network, and transmitting data.

***address learning***

A method by which hubs, switches, and routers determine the unique address number for each node on a network to enable accurate transmission to and from each node.

***Address Resolution Protocol (ARP)***

A TCP/IP protocol used to convert an IP address into a physical address such as an Ethernet address.

***address space probe***

An intrusion measure in which a hacker sequentially attacks IP addresses. These probes are usually attempts to map IP address space to look for security holes that a sender might exploit to compromise system security.

***agent***

A computer program that reports information to another computer or allows another computer access to the local system. Agents can be used for good or malice. Many security programs have agent components that report security information back to a central reporting platform. However, agents can also be remotely controlled programs hackers use to access machines.

***AH (authentication header)***

A protocol used in IPsec available for use with IPsec Branch Office VPN. AH provides authentication for as much of the IP header as possible (except for mutable fields that are nondeterministic, such as TTL fields) and all upper protocols and payload. It offers the functionality of ESP except for confidentiality, which ESP's encryption provides.

***algorithm (encryption)***

A set of mathematical rules (logic) used in the processes of encryption and decryption.

***algorithm (hash)***

A set of mathematical rules (logic) used in the processes of message digest creation and key/signature generation.

***alias***

A shortcut that enables a user to identify a group of hosts, networks, or users with one identifying name. Aliases are used to speed user authentication and service configuration.

***Application Program Interface (API)***

Software that allows dissimilar software products to interact upon one another.

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***armed***

A state of a Firebox in which it is actively guarding against intrusion and attack.

***ARP***

See *Address Resolution Protocol*.

***ARP table***

A table of active ARP addresses on a computer.

***ascending***

A method of ordering a group of items from lowest to highest, such as from A to Z.

***ASN.1 (Abstract Syntax Notation One)***

ISO/IEC standard for encoding rules used in ANSI X.509 certificates. Two types exist: DER (Distinguished Encoding Rules) and BER (Basic Encoding Rules).

***asymmetric keys***

A separate but integrated user key pair, composed of one public key and one private key. Each key is one way, meaning that a key used to encrypt information cannot be used to decrypt the same data.

***attack***

An attempt to hack into a system. Because not all security issues represent true attacks, most security vendors prefer the use of the word "event" or "incident."

***ATM (asynchronous transfer mode)***

High-speed packet switching with dynamic bandwidth allocation.

***authentication***

A method of mapping a user name to a workstation IP address, allowing the tracking of connections based on name rather than IP address. With authentication, it does not matter which IP address is used or from which machine a person chooses to work.

***autopartitioning***

A feature on some network devices that isolates a node within the workgroup when the node becomes disabled, so as to not affect the entire network or group.

***authorization***

To convey official access or legal power to a person or entity.

***backbone***

A term often used to describe the main network connections composing the Internet.

***backdoor***

A cipher design fault, planned or accidental, that allows the apparent strength of the design to be easily avoided by those who know the trick. When the design background of a cipher is kept secret, a back door is often suspected.

***bandwidth***

The rate at which a network can transfer data.

***Bandwidth Meter***

A monitoring tool that provides a real-time graphical display of network activities across a Firebox. Formerly known as the Mazameter.

***bastion host***

A computer placed outside a firewall to provide public services (such as WWW and FTP) to other Internet sites. The term is sometimes generalized to refer to any host critical to the defense of a local network. In WatchGuard documentation, also called the optional network.

***bitmask***

A pattern of bits for an IP address that determines how much of the IP address identifies the host and how much identifies the network.

***block cypher***

A symmetric cipher operating on blocks of plain text and cipher text, usually 64 bits.

***blocked port***

A security measure in which a specific port associated with a network service is explicitly disabled, blocking users outside the firewall from gaining access to that service port. A blocked port takes precedence over any service settings that are generally enabled.

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***blocked site***

An IP address outside the Firebox explicitly blocked so it cannot connect with hosts behind the Firebox. Blocked sites can be manual and permanent, or automatic and temporary.

***Blue Screen of Death (BSoD)***

A condition in which a Windows NT-based system encounters a serious error, the entire operating system halts, and a screen appears with information regarding the error. The name comes from the blue color of the error screen.

***boot up***

To start a computer.

***Branch Office Virtual Private Networking (BOVPN)***

A type of VPN that creates a secure tunnel over an unsecure network, between two networks that are protected by the WatchGuard Firebox System, or between a WatchGuard Firebox and an IPSec-compliant device. It allows a user to connect two or more locations over the Internet while protecting the resources on the trusted and optional networks.

***bridge***

A piece of hardware used to connect two or more networks so that devices on the network can communicate. Bridges can only connect networks running the same protocol.

***broadcast***

A network transmission sent to all nodes on a network.

***broadcast address***

An address used to broadcast a request to a network, usually to discover the presence of a machine.

***browser***

See *Web browser*.

***bus topology***

A networking setup in which a single cable, such as thin Ethernet, is used to connect one computer to another.

***cable segment***

A section of network cable separated by hubs, routers, or bridges to create a subnet.

***cascade***

A command that arranges windows so that they are overlapped, with the active window in front.

***cascading***

Connecting hubs with 10BASE-T cable; sometimes requires a crossover cable.

***Category 3 cabling***

A 10BASE-T unshielded twisted-pair cabling type commonly used in today's 10Mbps Ethernet networks.

***Category 5 cabling***

A higher grade of unshielded twisted-pair cabling required for networking applications such as 100Mbps Fast Ethernet.

***CBC***

See *cipher block chaining*.

***CD-ROM (Compact Disc Read-Only Memory)***

A disk on which data is stored.

***certificate***

An electronic document attached to a public key by a trusted third party, which provides proof that the public key belongs to a legitimate owner and has not been compromised.

***certificate authority (CA)***

A trusted third party (TTP) who creates certificates that consist of assertions on various attributes and binds them to an entity and/or to their public key.

***certificate revocation list (CRL)***

An online, up-to-date list of previously issued certificates that are no longer valid.

***certification***

Endorsement of functionality by a trusted entity.

***Challenge Authentication Protocol (CHAP)***

A session-based, two-way password authentication scheme.

***channel***

A communications path between two computers or devices.

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***checkbox***

A dialog box option that is not mutually exclusive with other options. Selecting a checkbox inserts or removes an X or a checkmark; clearing a checkbox removes it.

***CIDR (Classless Inter-Domain Routing)***

A routing mechanism designed to deal with the exhaustion of Class B network addresses, and the subsequent allocation of multiple Class C addresses to sites. CIDR is described in RFC 1519.

***cipher block chaining***

A form of DES encryption that requires the entire message to decrypt rather than a portion of the message.

***cipher text***

The result of manipulating either characters or bits by way of substitution, transposition, or both.

***Class A, Class B, Class C***

See *Internet address class*.

***clear-signed message***

A message that is digitally signed but not encrypted.

***clear text***

Characters in a human readable form prior to or after encryption. Also called *plain text*.

***client***

A computer process that requests a service of another computer and accepts the server's responses.

***Client/Server***

A network computing system in which individual computers (clients) use a central computer (server) for services such as file storage, printing, and communications. See *peer-to-peer*.

***coax (coaxial) cable***

A type of cable, used in Ethernet networking, with a solid central conductor surrounded by insulator, in turn surrounded by a cylindrical shield woven from fine wires.

***cold boot***

The process of starting a computer by turning on the power to the system unit.

***collisions***

Conflicts that occur when two packets are sent over the network simultaneously. Both packets are rejected; Ethernet will automatically resend them at altered timing.

***communications software***

Software such as email and faxing software that allows users to send or receive data.

***compress***

To compact a file or group of files so that they occupy less disk space. See also *decompress*.

***compression function***

A function that takes a fixed-size input and returns a shorter, fixed-sized output.

***connected enterprise***

A company or organization with a computer network exchanging data with the Internet or some other public network.

***Control Center***

See *System Manager*.

***Control Panel***

The set of Windows NT, Windows 2000, and Windows XP programs used to change system hardware, software, and Windows settings.

***conventional encryption***

Encryption that relies on a common passphrase instead of a public key cryptography. The file is encrypted using a session key, which encrypts using a passphrase that a user is asked to choose.

***cookie***

A file or token passed from the Web server to the Web client (a user's browser) that is used to identify a user and could record personal information such as ID and password, mailing address, or credit card number.

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***coprocessor***

A separate processor designed to assist in specific functions, such as handling complex mathematics or graphics, and to temporarily reduce the workload of the microprocessor.

***corporate signing key***

A public key that is designated by the security officer of a corporation as the system-wide key that all corporate users trust to sign other keys.

***CPU (central processing unit)***

The microprocessor chip that interprets and carries out instructions. Also, simply, a term for a computer.

***cracker***

A codebreaker; a person who attempts to break encryption, software locks, or network security. Can also be used as a synonym for hacker.

***CRL***

See *certificate revocation list*.

***cross-certification***

Two or more organizations or certificate authorities that share some level of trust.

***crossover cable***

A cable in which the receive and transmit lines (input and output) are crossed. Crossover cables are necessary to connect hubs.

***cryptanalysis***

The art or science of transferring cipher text into plain text without initial knowledge of the key used to encrypt the plain text.

***CRYPTOCard***

An authentication system that uses an offline card to hash encryption keys, which increases their safety against unauthorized decryption.

***cryptography***

The art and science of creating messages that have some combination of being private, signed, and unmodified with non-repudiation.

***CSLIP (Compressed Serial Line Internet Protocol)***

A protocol for exchanging IP packets over a serial line, which compresses the headers of many TCP/IP packets.

***custom filter rules***

Filter rules created in WatchGuard Policy Manager to allow specific content types through the Firebox.

***data***

Distinct pieces of information, usually formatted in a special way.

***data compression***

A way of storing data in a format that requires less space than usual. Data compression is particularly useful in communications because it enables devices to transmit the same amount of data in fewer bits.

***datagram***

A packet of data that stands alone. Generally used in reference to UDP and ICMP packets when talking about IP protocols.

***data transmission speed***

The number of bits that are transmitted per second over a network cable.

***DCERPC (Distributed Computing Environment Remote Procedure Call)***

A call that allows connections bound for port 135 on a machine. These initial calls typically result in a response from the trusted machine that redirects the client to a new port for the actual service the client wants.

***decompress***

To expand a compressed file or group of files so that the file or files can be opened. See also *compress*.

***decrypt***

To decode data that has been encrypted and turn it back into plain text.

***dedicated server***

A computer on a network that is assigned to function only as a resource server and cannot be used as a client.

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***default***

A predefined setting that is built into a program and is used when an alternative setting is not specified.

***default packet handling***

The practice of automatically and temporarily blocking hosts that originate probes and attacks against a network.

***denial of service attack (DoS)***

A way of monopolizing system resources so that other users are ignored. For example, someone could Finger an unsecured host continuously so that the system is incapable of running or executing other services.

***DES (Data Encryption Standard)***

A block-oriented cipher that encrypts blocks of 64 bits. The encryption is controlled by a key of 56 bits. See also *Triple DES*.

***descending***

A method of ordering a group of items from highest to lowest, such as from Z to A.

***device***

Networking equipment such as a hub, switch, bridge, or router.

***DHCP (Dynamic Host Configuration Protocol)***

A means of dynamically allocating IP addresses to devices on a network.

***DHCP server***

A device that automatically assigns IP addresses to network computers from a defined pool of numbers.

***dialog box***

A box that displays additional options when a command is chosen from a menu.

***dial-up connection***

A connection between a remote computer and a server using software, a modem, and a telephone.

***dictionary attack***

An attack that attempts to reveal a password by trying logical combinations of words.

***Diffie-Hellman***

A mathematical technique for securely negotiating secret keys over a public medium.

***digital signature***

An electronic identification of a person or thing created by using a public key algorithm. Intended to verify to a recipient the integrity of data and identity of the sender of the data.

***dimmed***

The grayed appearance of a command or option that is unavailable.

***disarmed***

The state of a Firebox when it is not actively protecting a network.

***DMZ (Demilitarized Zone)***

Another name for the optional bastion network. One common use for this network is as a public Web server.

***DNS (Domain Name System)***

A network system of servers that converts numeric IP addresses into readable, hierarchical Internet addresses.

***DoS***

See *denial of service attack*.

***dotted notation***

The notation used to write IP addresses as four decimal numbers separated by dots (periods), sometimes called dotted quad—123.212.12.4 is an example.

***double-click***

To press the primary mouse button twice rapidly.

***download***

To transfer a file from a remote computer to a local computer.

***driver***

A software program that manipulates the computer hardware in order to transmit data to other equipment.

***drop-in configuration***

A configuration in which the Firebox is physically located between the router and the LAN without any of the computers on

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the Trusted interface being reconfigured. This protects a single network that is not subdivided into smaller networks.

***drop-in network***

A configuration that allows for distribution of logical address space across the Firebox interface.

***DSA (Digital Signature Algorithm)***

A public key digital signature algorithm proposed by the National Institute of Standards and Technology for DSS.

***DSS (Digital Signature Standard)***

A standard for digital signatures using DSA proposed by the National Institute of Standards and Technology.

***DVCP (Dynamic VPN Configuration Protocol)***

A WatchGuard proprietary protocol that simplifies configuration of VPNs.

***dynamic NAT***

(Also known as IP masquerading or port address translation) A method of hiding network addresses from hosts on the external network. Hosts elsewhere on the Internet see only outgoing packets from the Firebox itself.

***dynamic packet filtering***

Filtering based not only on service types, but also on conditions surrounding the initiation of a connection.

***ECC (Elliptic Curve Cryptosystem)***

A method for creating public key algorithms based on mathematical curves over finite fields or with large prime numbers.

***encryption***

The process of disguising a message to hide its substance.

***entropy***

A mathematical measurement of the amount of uncertainty or randomness.

***ESMTP (Extended Simple Mail Transfer Protocol)***

A protocol that provides extensions to SMTP for sending email that supports graphics, audio, and video files, and text in various foreign languages.

***ESP (Encapsulation Security Payload)***

A protocol used in IPSec used with IPSec Branch Office VPN and MUVPN. ESP encapsulates and authenticates IP packets to be passed over the tunnel, providing confidentiality, data integrity, and origin authentication. ESP is similar to AH, except that it provides encryption.

***Ethernet***

Networking standards, originally developed in 1973 and formalized in 1980, involving the transmission of data at 10 Mbps using a specified protocol.

***Ethernet address***

A unique address that is obtained automatically when an Ethernet adapter is added to the computer. This address identifies the node as a unique communication item and enables direct communications to and from that particular computer.

***event***

Any network incident that prompts some kind of notification.

***event processor***

See *WatchGuard Security Event Processor*.

***expand***

To display all subordinate entries in an outline or in a folder.

***extension***

See *file extension*.

***external interface***

An interface connected to the external network that presents the security challenge, typically the Internet.

***external network***

The network presenting the security challenge.

***failover***

Configuration that allows a secondary machine to take over in the event of a failure in the first machine, allowing normal use to return or continue.

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***failover logging***

A process in which contact is automatically established with a secondary log host, in the event that the Firebox cannot communicate with the primary log host.

***fail-shut mode***

A condition in which a firewall blocks all incoming and outgoing traffic in the event of a firewall failure. This is the opposite of fail-open mode, in which a firewall crash opens all traffic in both directions. Fail-shut is the default failure mode of the WatchGuard Firebox System.

***fast Ethernet***

An Ethernet networking system that transmits data at 100 Mbps, based on the Ethernet 802.3 standard.

***field***

An area in a form or Web page in which to enter or view specific information about an individual task or resource.

***file extension***

A period and up to three characters at the end of a file name. The extension can help identify the kind of information a file contains.

***file server***

A dedicated network computer used by client computers to store and access files.

***filtering process***

An Ethernet switch or bridge process that reads the contents of a packet and discards it if it does not need to be forwarded.

***filtering rate***

The rate at which an Ethernet device can receive packets and drop them without any loss of incoming packets or delay in processing.

***filters***

Small, fast programs in a firewall that examine the header files of incoming packets and route or reject the packets based on the rules for the filter.

***fingerprint***

A unique identifier for a key that is obtained by hashing specific portions of the key data.

***FIPS (Federal Information Processing Standard)***

A U.S. government standard published by the National Institute of Standards and Technology.

***Firebox***

The WatchGuard firewall appliance, consisting of a red box with a purpose-built computer and input/output architecture optimized as the resident computer for network firewall software.

***Firebox System Manager***

A WatchGuard toolkit of applications run from a single location, enabling configuration, management, and monitoring of a network security policy. Formerly called *Control Center*.

***firewall***

Any technological measures taken to secure a computer network against unwanted use and abuse by way of net connections.

***firewalling***

The creation or running of a firewall.

***flash disk***

An 8-megabyte, on-board flash ROM disk that acts like a hard disk in a Firebox.

***FTP (File Transfer Protocol)***

The most common protocol for copying files over the Internet. See also *active mode FTP*.

***gateway***

A system or host that provides access between two or more networks. Gateways are typically used to connect networks that are dissimilar.

***graphical user interface (GUI)***

The visual representation on a computer screen that allows users to view, enter, or change information.

***hack***

To use a computer or network to perform illegal acts or gain unauthorized access.

***hacker***

An individual who uses a computer or network to perform illegal acts or gain unauthorized access. The term also can refer to an

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individual who is simply a computer enthusiast or expert; however, WatchGuard publications use the former definition.

***hash code***

A unique, mathematical summary of a document that serves to identify the document and its contents. Any change in the hash code indicates that the document's contents have been altered.

***header***

A series of bytes at the beginning of a communication packet that provide identification information about the packet such as its computer of origin, the intended recipient, packet size, and destination port number.

***Help system***

A form of online information about a software or hardware system.

***hexadecimal***

A numbering system containing 16 sequential numbers as base units before adding a new position for the next number. Hexadecimal uses the numbers 0–9 and the letters A–F.

***hierarchical trust***

A graded series of entities that distribute trust in an organized fashion, commonly used in ANSI X.509 to issue certifying authorities.

***High Availability***

A WatchGuard Firebox System option that enables the installation of two Fireboxes on one network in a failover configuration. At any given moment, one Firebox is in active mode while the other is in standby mode, ready to take over if the first box fails.

***Historical Reports***

A WatchGuard Firebox System application that creates HTML reports displaying session types, most active hosts, most used services, and other information useful in monitoring and troubleshooting a network.

***HMAC***

A key-dependent, one-way hash function specifically intended for use with MAC (Message Authentication Code), and based upon IETF RFC 2104.

*home page*

The first page of a Web site used as an entrance into the site.

*honeypot*

Programs that simulate one or more network services that you designate on your computer's ports. An attacker assumes you're running vulnerable services that can be used to break into the machine. A honeypot can be used to log access attempts to those ports including the attacker's keystrokes. This could give you advanced warning of a more concerted attack.

*host*

A computer connected to a network.

*host route*

A setup in which an additional router is behind the Firebox and one host is behind that router. A host route must be configured to inform the Firebox of this additional host behind the additional router.

*HostWatch*

A WatchGuard Firebox System application that provides a real-time display of the hosts that are connected from behind the Firebox to hosts on the Internet.

*HTML (HyperText Markup Language)*

A set of rules used to format Web pages, including methods to specify text characteristics, graphic placement, and links. HTML files are read and interpreted by a Web browser.

*HTTP (HyperText Transfer Protocol)*

A communications standard designed and used to transfer information and documents between servers or from a server to a client.

*HTTPS (Secure HTTP)*

A variation of HTTP enabling the secure transmission of data and HTML files. Generally used in conjunction with Secure Sockets Layer (SSL).

*hub*

A device that receives and sends signals along the network between the nodes connected to it.

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***hyperlink***

An object on a Web page such as a graphic or underlined text that represents a link to another location in the same file or a different file. When clicked, the page or graphic appears.

***IANA (Internet Assigned Number Authority)***

The central authority charged with assigning parameter values to Internet protocols. For example, IANA controls the assignment of well-known TCP/IP port numbers. Currently IANA manages port numbers 1 through 1023.

***ICMP (Internet Control Message Protocol)***

A protocol used to pass control and error messages back and forth between nodes on the Internet.

***identity certificate***

A signed statement that binds a key to the name of an individual and therefore delegates authority from that individual to the public key.

***IDS***

See *Intrusion Detection System*.

***IETF***

See *Internet Engineering Task Force*.

***IKE (Internet Key Exchange)***

A protocol used with IPSec virtual private networks. Automates the process of negotiating keys, changing keys, and determining when to change keys.

***implicit trust***

A condition reserved for pairs located on a local keyring. If the private portion of a key pair is found on a user's keyring, PGP assumes that user is the owner of the key pair and implicitly trusts himself or herself.

***initialization vector***

A block of arbitrary data that serves as the starting point for a block cipher using a chaining feedback mode. See also *cipher block chaining*.

***initialize***

To prepare a disk for information storage.

***installation wizard***

A wizard specifically designed to guide a user through the process of installing software. See *wizard*.

***integrity, data integrity***

Assurance that data is not modified by unauthorized persons during storage or transmittal.

***interface***

A boundary across which two independent systems meet and act on or communicate with each other. The term generally refers to a hardware interface—the wires, plugs, and sockets that hardware devices use to communicate with each other.

***Internet address class***

To efficiently administer the 32-bit IP address class space, IP addresses are separated into three classes that describe networks of varying sizes:

***Class A***—If the first octet of an IP address is less than 128, it is a Class A address. A network with a Class A address can have up to about 16 million hosts.

***Class B***—If the first octet of an IP address is from 128 to 191, it is a Class B address. A network with a Class B address can have up to 64,000 hosts.

***Class C***—If the first octet of an IP address is from 192 to 223, it is a Class C address. A network with a Class C address can have up to 254 hosts.

***Internet Engineering Task Force (IETF)***

A large, open international community of network designers, operators, vendors, and researchers concerned with the evolution of the Internet architecture and the smooth operation of the Internet.

***intranet***

A self-contained network that uses the same communications protocols and file formats as the Internet.

***Intrusion Detection System (IDS)***

A class of networking products devoted to detecting, monitoring, and blocking attacks from hackers. IDSs that operate on a host to detect malicious activity on that host are called host-based IDSs.

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IDSs that operate on network data flows are called network-based IDSs.

***IP (Internet Protocol)***

A protocol used by the Internet that enables computers to communicate over various physical media.

***IP address host***

The 32-bit address that identifies a host. Technically, a host is a network device connected to the Internet. In common usage, a host is a computer or some other device that has a unique IP address. Computers with more than one IP address are known as multihomed hosts.

***IP fragment***

An IP datagram that is actually part of a larger IP packet. IP fragments are typically used when an IP packet is too large for the physical media that the data must cross. For example, the IP standard for Ethernet limits IP packets to about 1,500 bytes, but the maximum IP packet size is 65,536 bytes. To send packets larger than 1,500 bytes over an Ethernet, IP fragments must be used.

***IP masquerading***

See *dynamic NAT*.

***IP options***

Extensions to the Internet Protocol used mainly for debugging and special applications on local networks. In general, there are no legitimate uses of IP options over an Internet connection.

***IP options attack***

A method of gaining network access by using IP options.

***IPSec (Internet Protocol Security)***

An open-standard methodology of creating a secure tunnel through the Internet, connecting two remote hosts or networks. IPSec provides several encryption and authentication options to maximize the security of the transmission over a public medium such as the Internet.

***IP spoofing***

The act of inserting a false sender IP address into an Internet transmission to gain unauthorized access to a computer system.

***ISA (Industry Standard Architecture)***

A unique network interface card on the motherboard of a computer.

***ISAKMP (Internet Security Association Key Management Protocol)***

Defines the procedures for authenticating a communicating peer, creation and management of security associations, key generation techniques, and threat mitigation; for example, denial of service and replay attacks.

***ISO (International Organization for Standardization)***

An organization responsible for a wide range of standards, like the OSI model and international relationship with ANSI on X.509.

***ISP (Internet service provider)***

A business that sells access to the Internet. A government organization or an educational institution may be the ISP for some organizations.

***ITU-T (International Telecommunication Union-Telecommunication)***

Formerly the CCITT (Consultative Committee for International Telegraph and Telephone), a worldwide telecommunications technology standards organization.

***IV***

See *initialization vector*.

***Java applet***

A program written in the Java programming language that can be included on an HTML page, much in the same way an image is included. When someone uses a Java technology-enabled browser to view a page that contains an applet, the applet's code is transferred to that user's system and carried out by the browser's Java virtual machine (JVM).

***Kerberos***

A trusted third-party authentication protocol developed at Massachusetts Institute of Technology.

***key***

A means of gaining or preventing access, possession, or control represented by any one of a large number of values.

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***key exchange***

A scheme for two or more nodes to transfer a secret session key across an unsecured channel.

***key fingerprint***

A uniquely identifying string of numbers and characters used to authenticate public keys.

***key ID***

A code that uniquely identifies a key pair. Two key pairs can have the same user ID, but they have different key IDs.

***key length***

The number of bits representing the key size; the longer the key, the stronger it is.

***key management***

The process and procedure for safely storing and distributing accurate cryptographic keys; the overall process of generating and distributing cryptographic key to authorized recipients in a secure manner.

***key pair***

A public key and its complementary private key.

***keyring***

A set of keys. Each user has two types of keyrings: a private keyring and a public one.

***key splitting***

The process of dividing a private key into multiple pieces and sharing those pieces among several users. A designated number of users must bring their shares of the key together to use the key. Also called secret sharing.

***LAN (local area network)***

A computer network that spans a relatively small area generally confined to a single building or group of buildings.

***LDAP (Lightweight Directory Access Protocol)***

A protocol that supports access and search operations on directories containing information such as names, phone numbers, and addresses across otherwise incompatible systems over the Internet.

***LED (light-emitting diode)***

A small indicator light on a networking device that provides indication of status and other information about the device.

***link***

See *hyperlink*.

***Linux***

An open source version of the UNIX operating system.

***LiveSecurity Service***

See *WatchGuard LiveSecurity Service*.

***LogViewer***

A WatchGuard Firebox System application that displays a static view of a log file.

***loopback interface***

A pseudo interface that allows a host to use IP to talk to its own services. A host is generally configured to trust packets coming from addresses assigned to this interface. The Class A address group 127.0.0.0 has been reserved for these interfaces.

***mail server***

Refers to both the application and the physical machine tasked with routing incoming and outgoing electronic mail.

***management station***

The computer on which the WatchGuard Firebox System Manager and Policy Manager runs; sometimes referred to as the administration host.

***name resolution***

The allocation of an IP address to a host name. See *Domain Name System*.

***NetBIOS (Network Basic Input / Output System)***

An extension of the DOS BIOS that enables a computer to connect to and communicate with a LAN (Local Area Network).

***NetBEUI (NetBIOS Extended User Interface)***

A non-routable networking protocol used by smaller, non-subnetted networks for internal communications. Because

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NetBEUI is not routable, network transmissions sent via NetBEUI cannot be transmitted over the Internet.

***network address translation (NAT)***

A method of hiding internal network addresses from hosts on an external network.

***MAC (Machine Authentication Code)***

A key-dependent, one-way hash function, requiring the use of the identical key to verify the hash.

***MAC address***

Media Access Control address that is unique to a computer, and is used to identify its hardware.

***masquerading***

A method of setting up addressing so that a firewall presents its IP address to the outside world in lieu of the IP addresses of the hosts protected by the firewall.

***Mazameter***

See *Bandwidth Meter*.

***MD2 (Message Digest 2)***

A 128-bit, one-way hash function that is dependent on a random permutation of bytes.

***MD4 (Message Digest 4)***

A 128-bit, one-way hash function that uses a simple set of bit manipulations on 32-bit operands.

***MD5 (Message Digest 5)***

An improved, more complex version of MD4, but still a 128-bit, one-way hash function.

***message digest***

A number that is derived from a message. A change to a single character in the message will cause it to have a different message digest.

***MIME (Multipurpose Internet Mail Extensions)***

Extensions to the SMTP format that allow binary data, such as that found in graphic files or documents, to be published and read on the Internet.

*modem*

A communications device that sends computer transmissions over a standard telephone line.

*motherboard*

The main printed circuit board in a computer, which contains sockets that accept additional boards (daughterboards).

*MSDUN*

Microsoft Dial-Up Networking is an executable program required for remote user VPN.

*multiple network configuration*

A configuration used in situations in which a Firebox is placed with separate logical networks on its interface.

*National Institute for Standards and Technology*

A division of the U.S. Department of Commerce that publishes open interoperability standards called Federal Information Processing Standards (FIPs).

*network address*

The network portion of an IP address. For a class A network, the network address is the first byte of the IP address. For a class B network, the network address is the first two bytes of the IP address. For a class C network, the network address is the first three bytes of the IP address. In each case, the remainder is the host address. In the Internet, assigned network addresses are globally unique.

*network address translation (NAT)*

A method of hiding or masquerading network addresses from hosts on another network, protecting the confidentiality and architecture of the network.

*netmask*

An inverse mask of the significant bits of a network address. On a local net, the range of addresses one can expect to be found directly connected to the network. Because netmasks generally occur with a Class C license address space of 8 bits, the netmask is 255.255.255.0. It can be a smaller number of bits if subnetting is in effect. Some systems require the netmask to be an even number of bits.

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***network adaptor, network interface card***

A device that sends and receives data between the computer and the network cabling. It may work either internally, such as a PCI, or externally, such as a SCSI adaptor which connects to a computer's SCSI port.

***network number***

The portion of an IP address that is common to all hosts on a single network and is normally defined by the set portion of the corresponding netmask.

***network range***

The portion of an IP address that is allocated to individual hosts on a single network and is normally defined by the cleared portion of the corresponding netmask.

***NFS (Network File System)***

A popular TCP/IP service for providing shared file systems over a network.

***NIST***

See *National Institute for Standards and Technology*.

***node***

A computer or CPU on a network.

***non-seed router***

A router that waits to receive routing information (the routing maintenance table) from other routers on the network before it begins routing packets.

***NTP (Network Time Protocol)***

An Internet service used to synchronize clocks between Internet hosts. Properly configured, NTP can usually keep the clocks of participating hosts within a few milliseconds of each other.

***Oakley***

The Oakley Session Key Exchange provides a hybrid Diffie-Hellman session key exchange for use within the ISA/KMP framework. Oakley provides the important property of Perfect Forward Secrecy.

***octet***

A byte. Used instead of “byte” in most IP documents because historically many hosts did not use 8-bit bytes.

***one-time pad***

A large, non-repeating set of truly random key letters used for encryption, considered the only perfect encryption scheme.

***one-way hash function***

A function that produces a message digest that cannot be reversed to produce the original.

***optional interface***

An interface that connects to a second secured network, typically any network of servers provided for public access.

***optional network***

A network protected by the firewall but still accessible from the trusted and external networks. Typically, any network of servers provided for public access.

***OSI (Open Systems Interconnection)***

A standard description or reference model for how messages should be transmitted between any two points in a telecommunication network. Its purpose is to guide product implementors so that their products will consistently work with other products.

***out-of-band (OOB)***

A management feature that enables the management station to communicate with the Firebox using a telephone line and a modem. OOB is very useful for remotely configuring a Firebox when Ethernet access is unavailable.

***packet***

A unit of information containing specific protocols and codes that allow precise transmittal from one node in a network to another.

***packet filtering***

A way of controlling access to a network by analyzing the incoming and outgoing packets and letting them pass or halting them based on the IP addresses of the source and destination.

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Packet filtering is one technique, among many, for implementing security firewalls.

***passive mode FTP***

See *active mode FTP*.

***passphrase***

An easy-to-remember phrase used for better security than a single password; key crunching converts it into a random key.

***password***

A sequence of characters or a word that a user submits to a system for purposes of authentication, validation, or verification.

***password caching***

The storage of a user's username and password in a network administrator database or encrypted file on a computer.

***Password Authentication Protocol (PAP)***

An authentication protocol that allows PPP peers to authenticate one another. It does not prevent unauthorized access, but identifies the remote end.

***PCI (peripheral component interconnect)***

A unique network interface card slot on the motherboard of a computer.

***PCMCIA (Personal Computer Memory Code International Association) card***

A standard compact physical interface used in personal computers. The most common application of PCMCIA cards is for modems and storage.

***perfect forward secrecy (PFS)***

A cryptosystem in which the cipher text yields no possible information about the plain text, except possibly the length.

***PEM***

See *Privacy Enhanced Mail*.

***peer-to-peer***

A network computing system in which all computers are treated as equals on the network.

***peripherals***

Equipment such as disk drives, CD-ROM drives, modems, and printers that are connected to a computer.

***permission***

Authorization to perform an action.

***PGP***

See *Pretty Good Privacy*.

***PGP/MIME***

An IETF standard (RFC 2015) that provides privacy and authentication using the Multipurpose Internet Mail Extensions (MIME) security content types described in RFC1847, currently deployed in PGP 5.0 and later versions.

***Phase 1, Phase 2***

Stages in the IKE negotiation. Phase 1 authenticates the two parties and sets up a key management security association for protecting the data. Phase 2 negotiates data management security association, which uses the data management policy to set up IPsec tunnels in the kernel for encapsulating and decapsulating data packets.

***ping (packet Internet groper)***

A utility for determining whether a specific IP address is accessible. It works by sending a packet to the specified address and waiting for a reply.

***PKCS***

See *Public Key Crypto Standards*.

***PKI***

See *Public Key Infrastructure*.

***plain text***

Characters in a human-readable form prior to or after encryption. Also called *clear text*.

***PLIP (Parallel Line Internet Protocol)***

A protocol for exchanging IP packets over a parallel cable.

***Plug and Play***

A standard in the personal computer market that assures the user that the product is as simple to install as possible.

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### ***Policy Manager***

One component in the WatchGuard Firebox System that provides a user interface for modifying and uploading a Firebox configuration file.

### ***pop-up window***

A window that suddenly appears (pops up) when an option is selected with a mouse or a function key is pressed.

### ***port***

A channel for transferring electronic information between a computer and a network, peripherals, or another computer.

### ***port address translation***

See *dynamic NAT*.

### ***portal***

A Web site that serves as a gateway to the World Wide Web and typically offers a search engine or links to other pages.

### ***port forwarding***

In the WatchGuard Firebox System, an option in which the Firebox redirects IP packets to a specific masqueraded host behind the firewall based on the original destination port number. Also called static NAT.

### ***port space probe***

An intrusion measure in which a hacker sequentially attacks port numbers. These probes are usually attempts to map port space to look for security holes which the sender might exploit.

### ***port, TCP or UDP***

A TCP or UDP service endpoint. Together with the hosts' IP addresses, ports uniquely identify the two peers of a TCP connection.

### ***PPP (Point-to-Point Protocol)***

A link-layer protocol used to exchange IP packets across a point-to-point connection, usually a serial line.

### ***PPPoE (Point-to-Point Protocol over Ethernet)***

A specification for connecting the users on an Ethernet to the Internet through a common broadband medium.

***PPTP (Point-to-Point Tunneling Protocol)***

A VPN tunnelling protocol with encryption. It uses one TCP port (for negotiation and authentication of a VPN connection) and one IP protocol (for data transfer) to connect the two peers in a VPN.

***Pretty Good Privacy (PGP)***

An application and protocol (RFC 1991) for secure email and file encryption. PGP uses a variety of algorithms, like IDEA, RSA, DSA, MD5, SHA-1, for providing encryption, authentication, message integrity, and key management.

***primary key (IPSec)***

An IPSec key responsible for creating a security association. Values can be set in time or data size.

***principle of precedence***

Rules that determine which permissions and prohibitions override which others when creating a combination of security policies.

***Privacy Enhanced Mail (PEM)***

A protocol to provide secure Internet mail (RFC 1421-1424), including services for encryption, authentication, message integrity, and key management. PEM uses ANSI X.509 certificates.

***private key***

The privately held "secret" component of an integrated asymmetric key pair, often referred to as the decryption key.

***protocol***

A set of formal rules describing how to transmit data, especially across a network. Low-level protocols define the electrical and physical standards to be observed, bit- and byte-ordering, and the transmission and error detection and correction of the bit stream. High-level protocols deal with the data formatting, including the syntax of messages, the terminal-to-computer dialog, character sets, and sequencing of messages.

***public key***

The publicly available component of an integrated asymmetric key pair, often referred to as the encryption key.

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***public key cryptography***

Cryptography in which a public and private key pair is used, and no security is needed in the channel itself.

***probe***

A type of hacking attempt characterized by repetitious, sequential access attempts. For example, a hacker might try to probe a series of ports for one that is more open and less secure.

***provisioning***

The process of setting the parameters of the Firebox or SOHO before it is sent to a customer. With respect to the Firebox, the minimum Policy Manager configuration is set with the most basic services on the box, Ping and WatchGuard. Provisioning also sets the IP addresses on the Firebox.

***proxy ARP***

The technique in which one host, usually a router, answers Address Resolution Protocol (ARP) requests intended for another machine. By “faking” its identity, the router accepts responsibility for routing packets to the “real” destination.

***proxy server***

A server that stands in place of another server. In firewalling, a proxy server poses as a specific service but has more rigid access and routing rules.

***protocol***

An agreed-upon format for transmitting data between two devices. The protocol determines the following: the type of error checking to be used, data compression method, if any; how the sending device will indicate that it has finished sending a message, and how the receiving device will indicate that it has received a message.

***pseudo-random number***

A number that results from applying randomizing algorithms to input derived from the computing environment, such as mouse coordinates. See also *random number*.

***Public Key Crypto Standards***

A set of standards for public key cryptography developed in cooperation with an informal consortium (Apple, DEC, Lotus,

Microsoft, MIT, RSA, and Sun) that includes algorithm-specific and algorithm-independent implementation standards.

***Public Key Infrastructure***

A widely available and accessible certificate system for obtaining an entity's public key.

***QuickSetup Wizard***

A wizard that creates a basic Firebox configuration. It consists of a series of windows that prompt for essential configuration information for drop-in or advanced network installations.

***RADIUS (Remote Authentication Dial-In User Service)***

A protocol for distributed security that secures remote access to networks and network services against unauthorized access. RADIUS consists of two pieces—authentication server code and client protocols.

***random number***

A necessary element in generating unique keys that are unpredictable to an adversary. True random numbers are typically derived from analog sources, and usually involve the use of special hardware.

***RC4 (Rivest Cipher 4)***

A variable key size stream cipher, once a proprietary algorithm of RSA Data Security, Inc.

***RC5 (Rivest Cipher 5)***

A block cipher with a variety of arguments, block size, key size, and number of rounds.

***related hosts***

A method to place hosts on the optional or external interface when using a simple or drop-in network configuration. Examples include placing a router on the external interface or an HTTP server on the optional interface.

***related networks***

Networks on the same physical wire as the Firebox interfaces but with network addresses that belong to an entirely different network.

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***repeater***

A network device that regenerates signals so that they can extend the cable length.

***report***

A formatted collection of information that is organized to provide project data on a specific subject.

***revocation***

Retraction of certification or authorization.

***RFC (Request for Comments)***

RFC documents describe standards used or proposed for the Internet. Each RFC is identified by a number, such as RFC 1700. RFCs can be retrieved either by email or FTP.

***ring topology***

A basic networking topology in which all nodes are connected in a circle with no terminated ends on the cable.

***route***

The sequence of hosts through which information travels to reach its destination host.

***routed configuration or network***

A configuration with separate network addresses assigned to at least two of the three Firebox interfaces. This type of configuration is intended for situations in which the Firebox is put in place with separate logical networks on its interfaces.

***router***

A device, connected to at least two networks, that receives and sends packets between those networks. Routers use headers and a forwarding table to forward packets to their destination. Most rely on ICMP to communicate with one another and configure the best route between any two hosts.

***RUVPN (Remote User VPN)***

Remote User Virtual Private Networking establishes a secure connection between an unsecured remote host and a protected network over an unsecured network.

***salt***

A random string that is concatenated with passwords (or random numbers) before being operated on by a one-way function. This concatenation effectively lengthens and obscures the password, making the cipher text less susceptible to dictionary attacks.

***scalable architecture***

Software and/or hardware constructed so that, after configuring a single machine, the same configuration can be propagated to a group of connected machines.

***screening router***

A machine that performs packet filtering.

***SCSI (Small Computer System Interface)***

A processor-independent standard for system-level interfacing between a computer and intelligent devices including hard disks, floppy disks, CD-ROM, printers, and scanners.

***secondary network***

A network on the same physical wire as a Firebox interface that has an address belonging to an entirely different network.

***secret key***

Either the private key in public key (asymmetric) algorithms or the session key in symmetric algorithms.

***secret sharing***

See *key splitting*.

***secure channel***

A means of conveying information from one entity to another such that an intruder does not have the ability to reorder, delete, insert, or read.

***Secure Sockets Layer (SSL)***

A protocol for transmitting private documents over the Internet. SSL works by using a private key to encrypt data transferred over an SSL connection.

***SecurID server***

Each time an end user connects to the specialized-HTTP server running on the Firebox on port 4100, a Java-enabled applet opens and prompts for the username, password, and whether or not to

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use SecurID (PAP) Authentication. The username and password are DES-encrypted using a secret key shared between the Java client and the Firebox. The Firebox then decrypts the name and password to create a RADIUS PAP Access-Request packet, and then sends it to the configured RADIUS server.

***Security Triangle Display***

An LED indicator on the front of a Firebox that indicates the directions of traffic between the three Firebox interfaces.

***seed router***

A router that supplies routing information (such as network numbers and ranges) to the network.

***segment***

One or more nodes in a network. Segments are connected to subnets by hubs and repeaters.

***self-extracting file***

A compressed file that automatically decompresses when double-clicked.

***server***

A computer that provides shared resources to network users.

***server-based network***

A network in which all client computers use a dedicated central server computer for network functions such as storage, security, and other resources.

***Server Message Block (SMB)***

A message format used by DOS and Windows to share files, directories, and devices. NetBIOS is based on the SMB format, and many network products use SMB. These SMB-based networks include LAN Manager, Windows for Workgroups, Windows NT, and LAN Server.

***Services Arena***

An area in Policy Manager that displays the icons that represent the services (proxied and filtered) configured for a Firebox.

***ServiceWatch***

A graphical monitor that provides a real-time display that graphs how many connections exist, by service.

***session key***

The secret (symmetric) key used to encrypt each set of data on a transaction basis. A different session key is used for each communication session.

***session stealing***

An intrusion maneuver whereby a hacker sends a command to an already existing connection in order to have that command provide the information needed to stage a separate attack.

***setup keys (IKE)***

IKE keys responsible for creating a security association.

***SHA-1 (Secure Hash Algorithm)***

The 1994 revision to SHA, developed by NIST, (FIPS 180-1). When used with DSS, it produces a 160-bit hash, similar to MD4.

***shared secret***

A passphrase or password that is the same on the host and the client computer. It is used for authentication.

***SHTTP***

See *HTTPS*.

***sign***

To apply a signature.

***signature***

A digital code created with a private key.

***single sign-on***

A sign-on in which one logon provides access to all resources on the network.

***slash notation***

A format for writing IP addresses in which the number of bits in the IP number is specified at the end of the IP address. For example: 192.168.44.0/24.

***SLIP (Serial Line Internet Protocol)***

A protocol for exchanging IP packets over a serial line.

***S/MIME (Secure Multipurpose Mail Extension)***

A proposed standard for encrypting and authenticating MIME data. S/MIME defines a format for the MIME data, the algorithms

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that must be used for interoperability (RSA, RC2, SHA-1) and the additional operational concerns such as ANSI X.509 certificates and transport over the Internet.

***SMS (Security Management System)***

The former name of the GUI used to configure a Firebox. Now known as WatchGuard Policy Manager.

***SMTP (Simple Mail Transfer Protocol)***

A protocol for sending electronic messages between servers.

***social engineering attack***

An attack in which an individual is persuaded or tricked into divulging privileged information to an attacker.

***SOCKS***

A protocol for handling TCP traffic through a proxy server. It can be used with virtually any TCP application, including Web browsers and FTP clients. It provides a simple firewall because it checks incoming and outgoing packets and hides the IP addresses of client applications.

***SOHO***

Small Office–Home Office. Also the name of the WatchGuard firewall devices designed for this segment of the market.

***spam***

Unsolicited email sent to many recipients, much like an electronic version of junk mail.

***spoofing***

Altering packets to falsely identify the originating computer to confuse or attack another computer. The originating computer is usually misidentified as a trusted computer within an organization.

***SSL***

See *Secure Sockets Layer*.

***stance***

The policy of a firewall regarding the default handling of IP packets. Stance dictates what the firewall will do with any given packet in the absence of explicit instructions. The WatchGuard default stance is to discard all packets that are not explicitly

allowed, often stated as “That which is not explicitly allowed is denied.”

***star topology***

A networking setup used with 10BASE-T cabling and a hub in which each node on the network is connected to the hub like points of a star.

***static NAT***

Network address translation in which incoming packets destined for a public address on an external network are remapped to an address behind the firewall.

***stream cypher***

A class of symmetric key encryption where transformation can be changed for each symbol of plain text being encrypted; useful for equipment with little memory to buffer data.

***subnet***

A network segment connected by hubs or repeaters. For example, one could take a class C network with 256 available addresses and create two additional netmasks under it that separate the first 128 and last 128 addresses into separate identifiable networks. Subnetting enables a client with a single network to create multiple networks; the advanced or multiple network configurations can then be used when setting up the Firebox.

***subnet mask***

A 32-bit number used to identify which part of an IP address is masked.

***substitution cypher***

A method in which the characters of the plain text are substituted with other characters to form the cipher text.

***switch***

A device that filters and forwards packets between LAN segments.

***symmetric algorithm***

Also called conventional, secret key, and single key algorithms; the encryption and decryption key are either the same or can be calculated from one another.

---

***SYN flood attack***

A method of denying service to legitimate users by overloading a network with illegitimate TCP connection attempts.

***syslog***

An industry-standard protocol used for capturing log information for devices on a network. Syslog support is included in Unix-based and Linux-based systems.

***System Manager***

A WatchGuard toolkit of applications run from a single location, enabling configuration, management, and monitoring of a network security policy. Formerly called *Control Center*.

***TCP (Transmission Control Protocol)***

A reliable byte-streaming protocol that implements a virtual connection. Most long-haul traffic on the Internet uses TCP.

***TCP/IP (Transmission Control Protocol/Internet Protocol)***

A common networking protocol with the ability to connect different elements.

***TCP session hijacking***

An intrusion in which an individual takes over a TCP session between two machines. A hacker can gain access to a machine because most authentication occurs only at the start of the TCP session.

***Telnet***

A terminal emulation program for TCP/IP networks. It runs on a computer and connects a workstation to a server on a network.

***terminator***

A resistor at the end of an Ethernet cable that absorbs energy to prevent reflected energy back along the cable (signal bounce). It is usually attached to an electrical ground at one end.

***Thick Ethernet cable***

Industry-standard Ethernet cable or any other cable that uses the IEEE 802.3 Media Access Unit interface. Also called 10-BASE-5.

***Thin Ethernet cable***

IEEE 802.3, 10BASE2 cable that connects to the Ethernet cable system with a cylindrical BNC connector. Usually, quarter-inch black coaxial cable.

***timestamping***

Recording the time of creation or existence of information.

***TLS***

See *Transport Layer Security*.

***TLSP***

See *Transport Layer Security Protocol*.

***token***

An abstract concept passed between cooperating agents to ensure synchronized access to a shared resource. Whoever has the token has exclusive access to the resource it controls.

***tooltip***

A name or phrase that appears when the mouse pointer pauses over a button or icon.

***topology***

A wiring configuration used for a network.

***Transport Layer Security (TLS)***

Based on the Secure Sockets Layer (SSL) version 3.0 protocol, TLS provides communications privacy over the Internet.

***Transport Layer Security Protocol (TLSP)***

ISO 10736, draft international standard.

***transposition cipher***

A cipher in which the plain text remains the same but the order of the characters is transposed.

***triple-DES***

An advanced form of encryption using three keys rather than one or two. It is roughly as secure as single DES would be if it had a 112-bit key.

***trust***

Confidence in the honesty, integrity, or reliability of a person, company, or other entity.

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***Trusted interface***

The interface on the Firebox that connects to the internal network, which should be protected to the maximum practical amount.

***Trusted network***

The network behind the firewall that must be protected from the security challenge—usually, the Internet.

***tunnel***

An entity through which one network sends its data by way of another network's connections. Tunneling works by encapsulating a network protocol within packets carried by the second network. For example, Microsoft's PPTP technology enables organizations to use the Internet to transmit data across a virtual private network (VPN). It does this by embedding its own network protocol within the TCP/IP packets carried by the Internet.

***twisted-pair cable***

A cable used for both network and telephone communications. Also known as UTP (unshielded twisted pair) and 10BASE-T/100BASE-T cable.

***UDP (User Datagram Protocol)***

A connectionless protocol. Used less frequently for long-distance connections, largely because it lacks TCP's congestion control features. Used quite heavily in local area networks for NFS.

***URL (Universal Resource Locator)***

The user-friendly address that identifies the location of a Web site such as <http://www.watchguard.com>.

***validation***

A means to provide timeliness of authorization to use or manipulate information or resources.

***verification***

The act of comparing a signature created with a private key to its public key. Verification proves that the information was actually sent by the signer and that the message has not been subsequently altered by anyone else.

***VPN (virtual private network)***

A virtual, secured network over a public or unsecure network (such as the Internet) where the alternative—a dedicated physical network—is either prohibitively expensive or impossible to create. Companies with branch offices commonly use VPNs to connect multiple locations.

***WAN (wide area network)***

A computer network that spans a relatively large geographical area. Typically, a WAN consists of two or more local area networks (LANs).

***WatchGuard installation directory***

The directory into which the WatchGuard Firebox System software is installed by default.

***WatchGuard LiveSecurity Service***

Part of the WatchGuard Firebox System offering, separate from the software and the Firebox, which keeps network defenses current. It includes the broadcast network that transmits alerts, editorials, threat responses, and software updates via email; a technical support contract; and a Web site containing information, archives, online training, and the latest software.

***WatchGuard Security Event Processor (WSEP)***

A program that controls notification and logging on the log hosts. It provides critical timing services for the Firebox and includes its own GUI.

***Web browser***

Software that interprets and displays documents formatted for the Internet or an intranet.

***Web of Trust***

A distributed trust model used by PGP to validate the ownership of a public key.

***Web page***

A single HTML-formatted file.

***Web site***

A collection of Web pages located in the directory tree under a single home page.

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***WebBlocker***

An optional WatchGuard software module that blocks users behind the Firebox from accessing undesirable Web sites based on content type, time of day, and/or specific URL.

***WINS (Windows Internet Name Service)***

WINS provides name resolution for clients running Windows NT and earlier versions of Microsoft operating systems. With name resolution, users access servers by name rather than needing to use an IP address.

***wizard***

A tool that guides a user through a complex task by asking questions and then performing the task based on responses.

***World Wide Web (WWW)***

The collection of available information on the Internet viewable using a Web browser.

***World Wide Web Consortium (W3C)***

An international industry consortium founded in 1994 to develop common protocols for the evolution of the World Wide Web.

***worm***

A program that seeks access into other computers. After a worm penetrates another computer, it continues seeking access to other areas. Worms often steal or vandalize computer data. Many viruses are actually worms that use email or database systems to propagate themselves to other victims.

***XOR***

Exclusive-or operation; a mathematical way to represent differences.

***X.509v3***

An ITU-T digital certificate that is an internationally recognized electronic document used to prove identity and public key ownership over a communication network. It contains the issuer's name, the user's identifying information, and the issuer's digital signature, as well as other possible extensions in version 3.



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## System Manager

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### Connect to Firebox dialog box

*Firebox*

Use the drop list or enter the IP address of the Firebox's Trusted interface.

*Passphrase*

Enter the Firebox passphrase. When opening the Firebox in System Manager, use the status (read-only) passphrase. When opening the Firebox using VPN Manager or for configuration changes using Policy Manager, enter the configuration (read/write) passphrase. There can be only one read/write session open to a Firebox at any time.

*Timeout*

Enter the time in seconds before an attempt to connect to the Firebox times out. You can type or use the arrows to input the time.

*Arrows*

Use the arrows to select your preferred value.

*OK*

Closes this dialog and saves any changes.

## **Enter Read/Write Passphrase dialog box**

*Passphrase*

Enter the configuration (read/write) passphrase for the Firebox. There can be only one read/write session open to a Firebox at any time.

*OK*

Closes this dialog box and saves any changes.

## **Polling dialog box**

*Polling Rate*

Enter the seconds used to update the status and light information. Frequent updates place more demand on the Firebox, although they make the display more accurate. You can type or use the arrows to input the seconds.

*Arrows*

Use the arrows to select your preferred value.

*Max Log Entries*

Enter the maximum of log entries maintained in Traffic Monitor. Entering 0 will allow the maximum number of log entries that can be displayed. You can type or use the arrows to input the seconds.

*Arrows*

Use the arrows to select your preferred value.

*Show Welcome message at startup*

Enable this checkbox to show the Welcome screen every time System Manager is launched.

## **Syslog Color dialog box**

*Display Logs in Color*

Enable this checkbox to display the Firebox logs according to the specifications below.

***Text Color***

Use to change the log's text color.

***Background Color***

Use to change the log's background color.

***Reset to Defaults***

Click to reset the format of the Logs to Default.

***Sample***

Displays a sample log with format changes.

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## **Flash Disk Management Tool**

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### **Enter Encryption Key dialog box**

***Encryption Key***

Enter an encryption key to be used to encrypt your backup image. An encryption key is the publicly available component of a key pair.

***Confirm***

Reenter the encryption key to verify.

***OK***

Closes this dialog box and saves any changes.

### **Flash Disk Management Tool dialog box**

***Restore Backup Image***

Select to copy the backup configuration file from the backup area of the flash disk to the primary area, then reboot the Firebox.

***Make Backup of Current Image***

Select to copy the primary area configuration file to the backup area of the Firebox flash disk.

***Boot from the System Area (Factory Default)***

Select to reboot the Firebox using the basic configuration file stored in the system area. The password is wg.

*Continue*

Click to continue with the selected Flask Disk Management option.

## Log Utility

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### Copy or Merge Logs dialog box

*Copy each file individually*

Select to copy an existing log file from one location or file name to another. You can use this command with the currently active log file or with another log file you specify below.

*Merge all files to one file*

Select to merge multiple log files into a single log file. Enter the name of the new log file. The extension is automatically .wgl.

*Merge all files text box*

Enter the name of the new log file. The extension is automatically .wgl.

*Files to copy*

Type or use the Browse button to find the full path and file name of the files to copy or merge.

*Browse*

Click to find the full path and file name of the files to copy or merge.

*Copy to This Directory*

Type or use the Browse button to specify the destination of the copied or merged files.

*Browse*

Click to specify the destination of the copied or merged files.

*Copy or Merge*

Click to execute the selected command (copy or merge log files). The name changes based on the checkbox enabled.

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# LogViewer

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## Find Keyphrase dialog box

### *Keyphrase*

Enter the keyphrase you want to find in the current log file.

### *Use Whole Words*

Select to use all the words in the keyphrase.

### *Case Insensitive*

Select to make the keyphrase case insensitive.

### *In the main window*

Select to show search results in the main window.

### *In a separate filter window*

Select to show results in a separate filter window. This is an interim window that pops up in which you can perform search functions.

### *By marking them in the main window*

Select to show results by marking them in the main window.

### *Find*

Click to start the search.

### *Cancel*

Closes this dialog box without saving any changes.

### *More or Less*

This control toggles a control to define where the search output appears.

More -- Click to access the results control.

Less -- Click to hide the results control.

## Preferences dialog box

### General tab

#### *Load this file always*

Specify the file to load when Log Viewer is launched. You can type or use the Browse button to specify the file.

#### *Browse*

Click this button to find the file to load when Log Viewer is launched.

#### *Load last file opened*

Select to load the last file opened when Log Viewer is launched.

#### *Don't load any files*

Select to not load any files when Log Viewer is launched.

#### *GMT Time*

Click to have time zone set to Greenwich Standard Time.

#### *Local Time*

Click to have time zone set to your local time. To set the local time, use Policy Manager (Setup => Time Zone).

#### *Refresh file every*

Select to set the time in seconds before the Firebox automatically refreshes every file. You can type or use the arrows to input the time.

#### *Arrows*

Use the arrows to select your preferred value.

### Filter Data tab

#### *Filter Data*

Enable the check box(es) next to the columns you would like to appear in the main window.

## Search Fields dialog box

#### *Search Parameters*

Set the search parameters using the Field and Value columns.

- Click the Field column. Use the Field drop list to select a field name.
- Click the Value column. Use the Value drop list to select a value, or type in a specific value.

***Search***

Click to search the fields.

***Close***

Closes this dialog box without saving any changes.

***More or Less***

This control toggles a control to define where the search output appears.

More -- Click to access the results control.

Less -- Click to hide the results control.

***Match all***

Select to match all values in the search.

***Match any***

Select to match any value in the search.

***Delete***

Click to delete the search fields selected.

***Clear All***

Click to clear all search fields.

***In the main window***

Select to show search results in the main window.

***In a separate filter window***

Select to show results in a separate filter window. This is an interim window that pops up in which you can perform search functions.

***By marking them in the main view***

Select to show results by marking them in the main window.

## Policy Manager

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### 1-to-1 Mapping dialog box

*Interface*

Select the interface from the drop list. The choices are external, trusted, optional, IPSec.

*Number of hosts to NAT*

Select the number of host that should be translated to NAT.

*Arrows*

Use the arrows to select your preferred value.

*NAT base*

Enter the base for the exposed NAT range.

*Real base*

Enter the base for the real IP address range.

*OK*

Closes this dialog box and saves any changes.

### Add Address dialog box

*Members*

Lists existing groups, configured aliases, networks, and users.

*Add*

Select an alias, network, group, or address from the Members list. Click Add to copy the selected member to the Members and Addresses list.

*Show Users*

Displays the users and groups associated with the selected member.

*NAT*

Click to open the NAT Setup dialog box. This dialog box enables you to specify the public address to be used for this service.

*Add Other*

Click to open the Add Member dialog box. This dialog box enables you to configure a new host or network member.

### *Selected Members and Addresses*

Lists the names and addresses of selected members.

#### **OK**

Closes this dialog box and saves any changes.

## **Add Dynamic NAT dialog box**

#### *From*

Select from the drop list or select the ... to enter the IP address or host alias of the origin of outgoing packets. For example, use the trusted host alias to enable NAT from the Trusted network.

...

Click to enter the IP address. The Add Address dialog box opens.

#### *To*

Use the drop list or enter the IP address to specify the destination of outgoing packets.

...

Click to enter the IP address. The Add Member dialog box opens.

#### **OK**

Closes this dialog box and saves any changes.

## **Add Exception dialog box**

#### *From*

Select from the drop list or select the ... to enter the IP address of the host alias on which to not perform dynamic NAT.

...

Click to enter the IP address. The Add Address dialog box opens.

#### *To*

Select from the drop list or select the ... to enter the IP address or host alias of the host on which to not perform dynamic NAT.

...

Click to enter the IP address. The Add Member dialog box opens.

#### **OK**

Closes this dialog box and saves any changes.

## Add External IP dialog box

### *Add External IP*

A list of IP addresses available for the Firebox External interface.

### *Add*

Enter the IP address available for the External Interface in the text box and click Add.

### *Delete*

Removes the selected IP address from the list of External IP addresses.

### *OK*

Closes this dialog box and saves any changes.

## Add Firebox Group dialog box

### *Add Firebox Group*

Enter the group name to add to Firebox users list. You use groups to define users accounts to such factors as authentication method or system used.

### *OK*

Closes this dialog box and saves any changes.

## Add IP Address dialog box

### *Enter IP Address*

Enter the IP address of the WatchGuard Security Event Processor. The WSEP must be on a network address accessible by the Firebox.

### *Log Encryption Key*

Enter the log encryption key for the WatchGuard Security Event Processor. The log encryption key must be identical on both the Firebox and the WSEP.

### *OK*

Closes this dialog box and saves any changes.

## Add Member dialog box

### *Choose Type*

Use the drop list to select the new type:

**Host IP Address** - Designate a single host by IP address.

**Network IP Address** - Designate an entire network by IP address using slash notation.

**Host Range** - Designate a range of IP addresses within a single network.

### *Value*

Enter the value identifying the selected type. For example, use a single IP address with a type of Host IP Address.

### *OK*

Closes this dialog box and saves any changes.

## Add Port dialog box

### *Protocol*

Use the drop list to select the protocol used for the service.

TCP - TCP-based services

UDP - UDP-based services

HTTP - Services examined by the HTTP proxy

IP - Filter a service using something other than TCP (protocol number 6) or UDP (protocol 17) for the next level protocol. Select IP to create a protocol number service.

### *Client Port*

Use the drop list to select the port number or numbers you want to use.

### *Port*

Enter the port number. For TCP and UDP services where you can enter a range of port numbers, enter the first number in the range.

### *OK*

Closes this dialog box and saves any changes.

## Add Route dialog box

### *Route*

Select to add a new route to the network protected by the Firebox.

Net - Select when an entire network is behind a router.

Host - Select when only one host is behind a router.

### *IP Address*

Enter the IP address of the host behind the router.

### *Network Address*

Enter the network address behind the router using slash notation.

### *Gateway*

Enter the gateway IP address. You must specify an address that is on the same network as the Firebox.

### *OK*

Closes this dialog box and saves any changes.

## Add Service dialog box

### *Name*

Enter the name of the new service.

### *Comments*

Enter comments or a description of this version of the service to assist with identification.

## Add Static NAT dialog box

### *External IP Address*

Select from the drop list the public address to be used for the service. If the public address does not appear in the drop list, click Edit to open the Add External IP Address dialog box.

### *Edit*

Click to open the Add External IP Address dialog box. You use this dialog box if the public address does not appear in the External IP Address drop list.

***Internal IP Address***

Enter the final destination of incoming packets on the Trusted network.

***Set internal port to different port than service***

This feature is rarely used. It enables you to redirect packets to not only a specific internal host but also to an alternative port.

***Internal Port***

If you enable the above checkbox, enter the final port destination of incoming packets to the Trusted network.

***OK***

Closes this dialog box and saves any changes.

**Advanced DVCP Policy Configuration dialog box*****Allow access to***

Select or enter the host or network and port/protocol/client port you want to allow access via DVCP.

***Dst Port***

Enter a port number to restrict the routing policy to a single destination port.

***Protocol***

Select a protocol type to restrict the routing policy to a particular protocol.

***Src Port***

Enter a port number to restrict the routing policy to a single source port.

***OK***

Closes this dialog box and saves any changes.

**Advanced Dynamic NAT dialog box*****Dynamic NAT***

List the hosts for which dynamic NAT will be disabled.

***Add***

Click to add a host.

*Remove*

Click to remove a host.

*Disable NAT between optional and trusted*

Enable this checkbox to disable NAT between the Optional and Trusted interfaces.

## **Advanced Export File Preferences dialog box**

*Make the security policy readonly in the Secure VPN Client*

Enable this checkbox to allow the Mobile User read-only access to their security policy.

*Virtual Adapter Settings of the Secure VPN Client*

Select the Virtual Adapter rule you want applied to the mobile user. Choose from the following in the drop list:

**Disabled:** The mobile user cannot use a Virtual Adapter to connect to the Secure VPN Client.

**Preferred:** It is preferred but not required for the mobile user to use a Virtual Adapter to connect to the Secure VPN Client.

**Required:** The mobile user must use a Virtual Adapter to connect to the Secure VPN Client.

*OK*

Closes this dialog box and saves any changes.

## **Advanced Mobile User VPN Policy Configuration dialog box**

*Allow access to*

Select or enter the host or network and port/protocol/client port you want to allow access via Mobile User VPN.

*Dst Port*

Enter a port number to restrict the routing policy to a single destination port.

*Protocol*

Select a protocol type to restrict the routing policy to a particular protocol.

***Src Port***

Enter a port number to restrict the routing policy to a single source port.

***OK***

Closes this dialog box and saves any changes.

## **Advanced NAT Settings dialog box**

### **Server-Based tab**

***Enable Service-Based NAT***

Enable this checkbox to allow service-based NAT, which is dynamic NAT on a per-service basis. Once enabled, use the Outgoing tab of each service icon to refine your NAT configuration.

### **1-to-1 NAT Setup tab**

***Enable 1-to-1 NAT***

Check to enable 1-to-1 NAT. This type of NAT redirects packets sent to one range of addresses to a different range of addresses.

***1-to-1 NAT Setup list***

Lists the IP addresses to be redirected.

***Add***

Select to add other IP addresses to be redirected. The 1-to-1 Mapping dialog box opens.

***Edit***

Select to edit the IP addresses chosen from the list above. The 1-to-1 Mapping dialog box opens.

***Remove***

Select to remove IP addresses chosen from the list above.

### **Dynamic NAT Exceptions tab**

***Exception entries***

Dynamic NAT Exceptions allows you to configure exceptions to simple dynamic NAT and service-based dynamic NAT. Dynamic NAT Exceptions do not apply to 1-to-1 NAT.

***Add***

Select to add an address to the exception entries list. The Add Exception dialog box appears.

***Remove***

Select to remove the address chosen from the exception entries list above.

## **Aliases dialog box**

***Aliases***

A list of host and network aliases.

***Add***

Click to add Aliases. The Host Alias dialog box opens.

***Edit***

Select an alias from the list and click to edit it. The Host Alias dialog box opens.

***Remove***

Click to remove the selected alias from the list.

***OK***

Closes this dialog box and saves any changes.

## **Authentication Servers dialog box**

### **Firebox Users tab**

***Users***

A list of configured Firebox users that belong to the groups below. Firebox groups identify currently active RUVPN and MUVPN users.

***Add***

Click to access the Setup Firebox User dialog box.

***Edit***

Click to modify the selected item in the list above. The Setup Firebox User dialog box opens.

***Remove***

Click to remove the selected item from the list above.

### *Groups*

A list of Firebox user groups. Groups enable you to configure services for multiple users at the same time. Two Firebox user groups used for remote user virtual private networking are automatically added to the basic configuration file: ipsec\_users and ruvpn\_users.

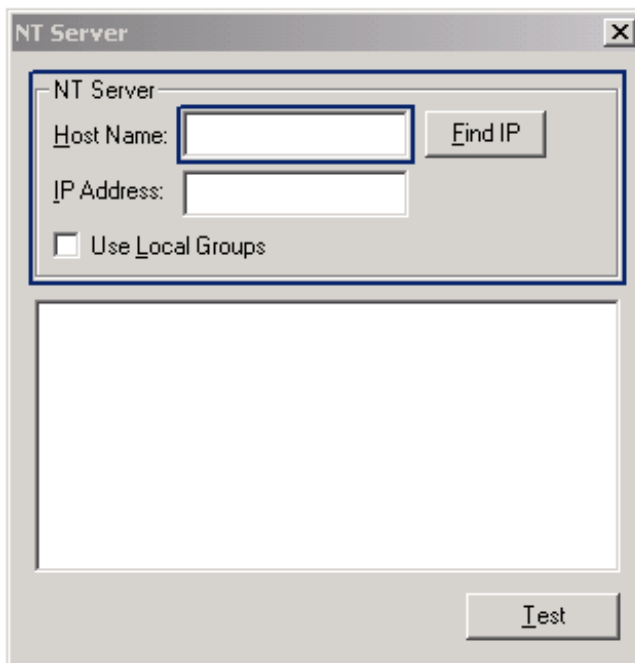
### *Add*

Click to open the Add Firebox Group dialog box.

### *Remove*

Click to remove the selected item from the list above.

## **NT Server tab**



The image shows a dialog box titled "NT Server" with a close button (X) in the top right corner. The dialog box contains the following elements:

- A tab labeled "NT Server".
- A "Host Name:" label followed by a text input field and a "Find IP" button.
- An "IP Address:" label followed by a text input field.
- A checkbox labeled "Use Local Groups" which is currently unchecked.
- A large empty rectangular area below the input fields.
- A "Test" button at the bottom right of the dialog box.

### *Host Name*

Enter the host name for the Windows NT Server.

***Find IP***

Click to find the host IP address.

***IP Address***

Enter the Windows NT server IP address.

***Use Local Groups***

Enable this checkbox to use local groups.

***NT Server list***

Lists all the NT Servers on the network.

***Test***

Click to test the connection.

**RADIUS Server tab**

***IP Address (primary)***

Enter the IP address of the primary RADIUS server. The server must be accessible by the Firebox.

***Port (primary)***

Enter the port number configured on the primary RADIUS server to receive authentication requests.

***Secret***

Enter the value of the secret between the Firebox and the RADIUS server. The shared secret is case-sensitive and must be identical on the Firebox and on the RADIUS server.

***Specify backup RADIUS server***

Enable this checkbox to specify a backup for the Radius server.

***IP Address (backup)***

Enter the IP address of the backup RADIUS server. The server must be accessible by the Firebox.

***Port (backup)***

Enter the port number configured on the backup RADIUS server to receive authentication requests.

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## **CRYPTOCARD Server tab**

### *IP Address*

Enter the IP address of the CRYPTOCARD server. The server must be accessible by the Firebox.

### *Port*

Enter the port number configured on the CRYPTOCARD server to receive authentication requests.

### *Administrator Password*

Enter the administrator password for the CRYPTOCARD server. This password must be represented identically on both the CRYPTOCARD server and the Firebox.

### *Timeout*

Enter the length of inactivity time before an authenticated session times out.

### *Secret*

Enter the CRYPTOCARD server shared secret. This secret must be identical on both the CRYPTOCARD server and the Firebox.

## **SecurID Server tab**

### *IP Address (Primary)*

Enter the IP address of the primary SecurID server. The server must be accessible by the Firebox.

### *Port (Primary)*

Enter the port number configured on the primary SecurID server to receive authentication requests.

### *Secret*

Enter the SecurID server's secret.

### *Specify backup SecurID server*

Enable this checkbox to specify a backup SecurID server.

### *IP Address (Backup)*

Enter the IP address of the backup SecurID server. The server must be accessible by the Firebox.

***Port (Backup)***

Enter the port number configured on the backup SecurID server to receive authentication requests.

**Basic DVCP Server Configuration dialog box**

***Basic DVCP Server Configuration***

A list of clients configured to use Dynamic VPN Configuration Protocol (DVCP) to connect to the Firebox.

***Add***

Click to add a new client to the list. The DVCP Client Wizard launches.

***Edit***

Click to edit the selected client from the list. The DVCP Client Wizard launches.

***Remove***

Click to remove the selected client from the list.

***OK***

Closes this dialog box and saves any changes.

***Cancel***

Closes this dialog box without saving any changes.

***Logging***

Click to access the Logging and Notification dialog box.

**Blocked Ports dialog box**

***Blocked Ports***

A list of currently blocked ports.

***Add***

Enter the port number to add to the Blocked Ports list and click Add.

***Remove***

Click to remove the selected blocked port from the Blocked Ports list.

***Auto-block sites that attempt to use blocked ports***

Enable the checkbox to ensure that attempts from a single location to penetrate your network are prevented without your direct intervention. You can click the Logging button to configure logging and notification of attempts on blocked ports.

***OK***

Closes this dialog box and saves any changes.

***Cancel***

Closes this dialog box without saving any changes.

***Logging***

Click to access the Logging and Notification dialog box. You can configure the Firebox to log all attempts to use blocked ports or to notify a network administrator when someone attempts to access a blocked port.

**Blocked Sites dialog box*****Blocked Sites***

A list of currently blocked sites.

***Add***

Click to access the Add Blocked Sites dialog box.

***Remove***

Click to remove the selected blocked site from the Blocked Sites list.

***Duration for Auto-Blocked Sites***

Enter the number of minutes for sites to be blocked when attempting to access a blocked site.

***OK***

Closes this dialog box and saves any changes.

***Cancel***

Closes this dialog box without saving any changes.

***Logging***

Click to access the Logging and Notification dialog box. You can configure the Firebox to log all attempts to use blocked sites or to

notify a network administrator when someone attempts to access on blocked sites.

***Import***

You can create a list of blocked sites in an external file. Click to load the external file into your blocked sites list.

## **Blocked Sites Exceptions dialog box**

***Blocked Sites Exceptions list***

A list of current blocked site exceptions.

***Add***

Open the Add Site dialog box to select the exception type and enter the host or network IP address.

***Remove***

Select the exception and click to remove it from the list above.

## **Certificate Authority Configuration**

***IP Address***

Enter the IP address of your Certificate Authority (CA) to get the certificate for the mobile user.

***Passphrase***

Enter the passphrase of your Certificate Authority (CA) to get the certificate for the mobile user.

***Timeout***

The duration in seconds the Management Station waits for a response from the Certificate Authority. Use the arrows to select your preferred value.

***Arrows***

Use the arrows to select your preferred value.

***OK***

Closes this dialog box and saves any changes.

---

## Configure Gateways dialog box

### *Configure Gateways*

A list of all currently configured gateways. A gateway specifies a point of connection for one or more tunnels.

### *Tunnels*

Click to access the Configure Tunnels dialog box.

### *Add*

Click to access the Remote Gateways dialog box where you can configure new gateways.

### *Edit*

Select a gateway from the list. Click Edit to access the Remote Gateways dialog box and modify gateway settings.

### *Remove*

Click to remove the selected gateway from the configured gateway list.

### *OK*

Closes this dialog box and saves any changes.

## Configure IPSec Tunnels dialog box

### *Gateway Name*

Displays the gateway name.

### *Key Negotiation*

Displays the key negotiation, either ISAKMP or Manual.

### *IP Address*

Enter the IP address used for the IPSec tunnel.

### *Shared Key*

Enter the shared key.

### *Tunnels*

Lists the tunnels configured for IPSec.

### *Add*

Click to add a tunnel.

### *Edit*

Click to edit a tunnel.

*Remove*

Click to remove a tunnel.

## **Configure Tunnels dialog box**

*Configure Tunnels*

A list of the gateway, name, and type of configured tunnels.

*Add*

Click to configure a new IPSec tunnel.

*Edit*

Click to access the Configure Tunnels dialog box where you can edit the selected tunnel.

*Remove*

Click to delete the selected tunnel.

*OK*

## **Configure Tunnel dialog box**

### **Identity tab**

*Name*

Enter the name of a tunnel. This name is used to identify the tunnel in monitoring and administration tools.

### **Phase 2 Settings tab**

*Type*

Select the security association protocol type from the drop list: ESP (Encapsulated Security Payload) or AH (Authentication Header).

*Authentication*

From the drop list select an authentication method.

None - No authentication

MD5-HMAC - 128-bit algorithm

SHA1-HMAC - 160-bit algorithm

***Encryption***

Select the degree of encryption from the drop list.

***Force key expiration***

Select the checkbox to force key expiration.

**Connect to Firebox dialog box*****Firebox***

Type or use the drop list to select the IP address or the name of the Firebox to which you want to establish a connection.

***Passphrase***

Enter the status (read-only) passphrase of the Firebox. The passphrase will not appear in clear text.

***Timeout***

The duration in seconds the Management Station waits for a response from the Firebox for returning a message indicating that the device is unreachable. Use the arrows to select your preferred value.

***Arrows***

Use the arrows to select your preferred value.

***OK***

Click to initiate the connection attempt.

**Default Gateway dialog box*****IP Address***

Enter the default gateway IP address. This is frequently the address of the router connected to the Internet pipeline.

***OK***

Closes this dialog box and saves any changes.

**Default Packet Handling dialog box*****Dangerous Activities***

The Firebox can automatically identify and block sites from which certain types of attacks originate. These include: spoofing attacks,

port space probes, IP options, address space probes, and SYN flood attacks.

***Block Spoofing Attacks***

"Spoofing" occurs when someone alters packets to falsely identify the originating computer to confuse or attack another computer. The originating computer is usually misidentified as a trusted computer within an organization. Sometimes improperly configured computers elsewhere on the Internet send packets that falsely identify themselves and thus appear to be spoofed.

***Block IP Options***

Enable this checkbox to block sites from which an IP Options attack originates. IP options are extensions to the Internet Protocol used primarily for testing network configurations. IP options can also be used to pose as another computer on the Internet.

***Block SYN Flood Attacks***

Enable this checkbox to block SYN Flood attacks. SYN Flood attacks are a type of Denial of Service (DoS) attack that seek to prevent your public services, like email, from being accessible to users on the Internet.

***Block Port Space Probes***

Enable this checkbox to block port space probes. Port space probes make requests on sequential port numbers and are usually attempts to map network port space to compromise security.

***Block Address Space Probes***

Enable this checkbox to block address space probes. Address space probes make requests on sequential IP addresses and are usually attempts to map IP address space to look for security holes that an attacker can exploit to compromise security.

***SYN Validation Timeout***

Select how long (in seconds) until SYN Validation timesout.

***Arrows***

Use the arrows to select your preferred value.

***Maximum Incomplete Connections***

Select the maximum number of incomplete connections.

**Arrows**

Use the arrows to select your preferred value.

**Auto-Block source of packets not handled**

Enable this checkbox to auto-block the source of packets blocked due to another packet handling option. When enabled, the Firebox automatically temporarily rejects all communication attempts from a site that has been sending IP options or probes. Adjust the auto-block duration using the Blocked Sites dialog box. Auto-blocking is a separate function from blocking sites manually.

**Send an error message to clients whose connections are blocked**

Enable this checkbox to cause the Firebox to send an ICMP (port unreachable) message to an auto-blocked site. Some operating systems do not handle error messages correctly and may inadvertently terminate other connections when they receive them.

**Log incoming packets sent to broadcast addresses**

Enable this checkbox to make the Firebox log incoming packets sent to broadcast addresses. Communicating with a broadcast address can indicate an information-gathering activity. Default is to log incoming packets.

**Log outgoing packets sent to broadcast addresses**

Enable this checkbox to have the Firebox log packets originating from behind the firewall and set to your network's broadcast address. Default is to log outgoing packets.

**OK**

Closes this dialog box and saves any changes.

**Cancel**

Closes this dialog box without saving any changes.

**Logging**

Click to access the Logging and Notification dialog box.

**DHCP Server dialog box****Enable DHCP Server**

Enable this checkbox to activate the DHCP server.

***Default Lease Time***

Enter the number of hours before the DHCP relay times out.

***Arrows***

Use the arrows to select your preferred value.

***Max Lease Time***

Enter the maximum number of hours in any lease time.

***Arrows***

Use the arrows to select your preferred value.

***DHCP Server list***

A list of address ranges distributed by the DHCP server including the subnet network address and the starting and ending IP addresses.

***Add***

Click to access the DHCP Subnet Properties dialog box and add a new address range.

***Edit***

Select an address range in the list and click to open the DHCP Subnet Properties dialog box.

***Remove***

Select an address range from the list above and click to remove from the list of address ranges available to the DHCP server.

## **DHCP Subnet Properties dialog box**

***Subnet***

Enter the DHCP subnet network address in slash notation.

***Start***

Enter the first address in the IP address range for distribution by the DHCP server.

***End***

Enter the last address in the IP address range for distribution by the DHCP server.

---

## DVCP Client Setup dialog box

### *Enable this Firebox as a DVCP Client*

The Firebox can be treated as a client in an Enhanced DVCP network even if the Management Station and Firebox itself are not upgraded with Enhanced DVCP (VPN Manager 2.0 or later). Enable this checkbox to enable this Firebox to be a DVCP client and then add the servers to which it can be connected.

### *Firebox Name*

Enter the Firebox name as it should appear in all monitoring and configuration tools. Use this name to identify the Firebox among other DVCP devices.

### *Enable debug log messages for the DVCP Client*

Enable this checkbox to enable detailed log messages from the Firebox client to facilitate with troubleshooting and debugging the IPsec tunnel between the Firebox and the DVCP server.

Debugging options can considerably increase the number of log messages and are recommended only during troubleshooting.

### *DVCP Servers*

A list of DVCP servers configured on your network. Any Firebox can act as a DVCP server.

### *Add*

Click to open the DVCP Server Properties dialog box and add a new DVCP server.

### *Edit*

Select a server from the list and click to edit the server properties. The DVCP Server Properties dialog box opens.

### *Remove*

Click to remove the selected server from the list above.

### *OK*

Closes this dialog box and saves any changes.

## DVCP Client Wizard

### Name and Key screen

#### *Enter Client Name*

Enter the name to be assigned to the network client. This name is used to identify the client in administration and monitoring tools such as System Manager and VPN Manager.

#### *Enter Shared Key*

Enter a shared key for this client's DVCP account.

### Access and Connections screen

#### *Allow Client Access To*

Using slash notation, enter the address of the primary network to which the client has access behind the Firebox.

#### *Telecommuter IP Address*

Select only for WatchGuard SOHO Telecommuter devices. Enter the virtual IP address of the Telecommuter on the internal network of the Firebox.

#### *Private Network*

Select for private network devices. Enter the IP address of the private network.

### Encryption and Authentication screen

#### *Type*

Select the type of encryption:

Encapsulated Security Payload

Authentication Only

#### *Authentication*

Select the type of authentication from the drop list.

None - No authentication

MD5-HMAC - 128-bit algorithm

SHA1-HMAC - 160-bit algorithm

***Encryption***

Select the level of encryption from the drop list:

None - No encryption

DES-CBC - 56-bit encryption

3DES-CBC - 168-bit encryption

***Key expires***

Select the key expiration date based on kilobytes and/or hours.

***Arrows***

Use the arrows to select your preferred value.

**Additional Access screen*****Configured policies***

Lists the networks to which you want to provide access.

***Add***

Click to add a network.

***Remove***

Click to remove a network.

***Telecommuter IP Address***

Select to specify an IP address as a Telecommuter. Enter the IP address in the box.

***Private Network***

Select for private network devices. Enter the IP address of the private network.

**DVCP Server Properties dialog box*****IP Address***

Enter the DVCP server IP address.

***Shared Secret***

Enter the shared secret used by DVCP to encrypt traffic over the VPN tunnel between the Firebox and another DVCP-compliant device. The shared secret must be identical on both devices.

***OK***

Closes this dialog box and saves any changes.

## DVCP Server Properties dialog box

### *Enable this Firebox as a DVCP Server*

The Firebox can dynamically assign VPN policies to requesting devices using DVCP (Dynamic VPN Configuration Protocol).

### *Enable debug log messages for the DVCP Server*

When the Firebox is acting as a DVCP server, it can process log messages reporting its status. This feature is particularly useful when troubleshooting VPN tunnels and the DVCP server itself.

### *Domain Name*

Enter a company or organization name to be used to uniquely identify this certificate.

### *External Interface IP Address*

Enable this checkbox to use the External Interface IP address for the CRL distribution point.

### *Custom IP Address*

Enable this checkbox to use a custom IP address for the CRL distribution point. Enter the custom IP address in the text box.

### *CRL Publication Period*

Select the CRL publication period in hours using the arrows.

### *Arrows*

Use to specify the amount of time.

### *Client Certificate Lifetime*

Select the client certification lifetime in days using the arrows.

### *Arrows*

Use to specify the amount of time.

### *Root Certificate Lifetime*

Select the root certificate lifetime in days using the arrows.

### *Arrows*

Use to specify the amount of time.

### *Enable debug log messages for CA*

Enable this checkbox to run and save the debug log messages.

## Dynamic NAT dialog box

### *Enable Dynamic NAT*

Select to enable dynamic NAT.

### *TCP Idle Timeouts*

Enter the time in seconds for TCP idle timeouts. For more information on TCP, see chapter 1 of the Reference Guide.

### *Arrows*

Use the arrows to select your preferred value.

### *TCP Finish Timeout*

Enter the TCP finish timeout in seconds. For more information on TCP, see Chapter 1 of the Reference Guide.

### *Arrows*

Use the arrows to select your preferred value.

### *UDP Finish Timeout*

Enter the UDP finish timeout in seconds. For more information on UDP, see chapter 1 of the Reference Guide.

### *Arrows*

Use the arrows to select your preferred value.

### *Use Dynamic NAT on these networks*

Enter the UDP finish timeout in seconds. For more information on UDP, see chapter 1 of the Reference Guide.

### *Add*

Enter, in the box, the IP address of the network to which you want to add dynamic NAT and click Add.

### *Remove*

Click to remove a network from the list above.

### *OK*

Closes this dialog box and saves any changes.

### *Cancel*

Closes this dialog box without saving any changes.

### *Help*

Click to access the online Help system.

*Advanced*

Click to access the Advanced Dynamic NAT dialog box.

## **Edit Routing Policy dialog box**

*Local*

Select whether the local end of the policy represents either a single host or an entire network. Then enter the host or network IP address.

*Remote*

Select whether the remote end of the policy represents either a single host or an entire network. Then enter the host or network IP address.

*Disposition*

Select the disposition from the drop list.

**Block:** IPSec will not allow traffic that matches the rule in associated tunnel policies. You cannot bypass a policy that has a network at the other end point.

**Bypass:** IPSec will not allow traffic that matches the rule in associated tunnel policies. You cannot bypass a policy that has a network at the other end point.

**Secure:** IPSec will encrypt all traffic that matches the rule in associated tunnel policies.

*Tunnel*

Select the tunnel from the drop down list.

*OK*

Closes this dialog box and saves any changes.

*Cancel*

Closes this dialog box without saving any changes.

*More or Less*

Click to enable or disable the advanced routing policy configuration options-Dst Port, Protocol, and Src Port

***Dst Port***

Enter a port number to restrict the policy to a single destination port. To enable communication to all ports, enter 0.

***Protocol***

Select a protocol type to restrict the routing policy to a particular protocol. Options include TCP and UDP.

***Src Port***

Enter a port number to restrict the policy to a single source port. To enable communication to all ports, enter 0.

**Enter Firebox Access Passphrases dialog box*****Status Passphrase***

Enter the Status passphrase, which is used for establishing read-only connections to your Firebox. Read-only access allows you to view logs and status of the Firebox but not change configurations.

***Confirm***

Re-enter the Status passphrase to verify.

***Configuration Passphrase***

Enter the Configuration passphrase, which is used for establishing read/write connections to your Firebox. Read/Write access allows you full configuration access to the Firebox.

***Confirm***

Re-enter the Configuration passphrase to verify.

***OK***

Closes this dialog box and saves any changes.

**Enter Tunnel Name dialog box*****Tunnel Name***

Enter the tunnel name. The name is used as an identifier in Policy Manager.

***OK***

Closes this dialog box and saves any changes.

*Cancel*

Closes this dialog box without saving any changes.

**Filter Authentication dialog box**

*Authentication Enabled Via*

Select an authentication methodology and configure global settings. The Firebox supports five types of authentication: Firebox, Windows NT Server, Radius Server, CRYPTOCARD Server, and Secured Server. The Firebox uses only one type of authentication at a time.

*Firebox*

Enable this checkbox to allow authentication via a Firebox.

*NT Server*

Enable this checkbox to allow authentication via Windows NT Server.

*Radius Server*

Enable this checkbox to allow authentication via a Radius server.

*CRYPTOCARD Server*

Enable this checkbox to allow authentication via a CRYPTOCARD server.

*SecurID Server*

Enable this checkbox to allow authentication via a SecurID Server.

*Logon Timeout*

Enter the number of seconds before an attempt to connect, log on, and authenticate times out.

*Arrows*

Use the arrows to select your preferred value.

*Session Timeout*

Enter the number of hours before an inactive session times out.

*Arrows*

Use the arrows to select your preferred value.

**OK**

Closes this dialog box and saves any changes.

---

## Firebox Flash Disk dialog box

### *Save to firebox*

Check to save the Flash Image and/or configuration file to the firebox, which you specify by checking the circles below.

### *Save Configuration File ONLY*

Check to save the Configuration File to the Firebox.

### *Save Configuration File and New Flash Image*

Check to save the Configuration File and Flash Image to the Firebox.

### *Make backup of current flash image before saving*

Check to make a backup copy of the current flash image before saving to the Firebox. Specify where to save the backup copy in the Backup Image section below.

### *Encryption Key*

Enter the encryption key for the Firebox.

### *Confirm*

Re-enter the Encryption Key to verify.

### *Backup Image*

Enter the file path of where you want to save the backup of the current flash image.

### *Browse*

Select to browse the file structure to find the place to save the backup of the current flash image.

### *Recommended action*

Displays the recommended action.

### *Continue*

Select to continue with Flash Disk process.

### *Details*

Select to show the details for the Flash Image and Configuration File.

## Firebox Name dialog box

### *Name*

Enter a unique Firebox name. This name is used to identify the Firebox in monitoring, reporting, logging, and status tools.

### *OK*

Closes this dialog box and saves any changes.

## FTP Proxy dialog box

### *Make incoming FTP connection read only*

Enable this checkbox to make the FTP service read only for incoming FTP requests.

### *Make outgoing FTP connections read only*

Enable this checkbox to prevent internal personnel from transferring files to an FTP.

### *Deny incoming SITE command*

Enable this checkbox to prevent users from using the SITE command, which would (if not denied) allow them to execute arbitrary programs on the FTP server. This is set to Deny by default since allowing its use can be very dangerous.

### *Force FTP session timeout*

Enable this checkbox to disconnect FTP sessions after a designated time for idle or hung connections.

### *Idle timeout*

Enter or select the duration in seconds that an idle or hung FTP connection remains before terminated by the firewall.

### *Arrows*

Use the arrows to select your preferred value.

### *Log incoming accounting/auditing information*

Enable this checkbox to record the number of bytes transferred per incoming FTP session. You can then retrieve this "byte count" information by running Historical Reports and specifying the statistical parameters you want.

***Log outgoing accounting/auditing information***

Enable this checkbox to record the number of bytes transferred per outgoing FTP session. You can then retrieve "byte count" information by running Historical Reports and specifying the statistical parameters you want.

***OK***

Closes this dialog box and saves any changes.

**Generate Key dialog box*****Generate Key***

Enter a phrase and press OK to generate a key.

***OK***

Closes this dialog box and saves any changes.

**High Availability dialog box*****Enable High Availability***

Enable this checkbox to enable High Availability if you have purchased this optional product.

***IP Address (External interface)***

Enter the External interface IP address for the standby Firebox.

***Default Heartbeat (External interface)***

Enable this checkbox if you want to use the External interface as the default heartbeat for the Standby Firebox. A heartbeat is a signal emitted at regular intervals by software to show it is still functioning.

***IP Address (Trusted interface)***

Enter the Trusted interface IP address for the standby Firebox.

***Default Heartbeat (Trusted interface)***

Enable this checkbox if you want to use the Trusted interface as the default heartbeat for the Standby Firebox. A heartbeat is a signal emitted at regular intervals by software to show it is still functioning.

***IP Address (Optional interface)***

Enter the Optional interface IP address for the standby Firebox.

***Default Heartbeat (Optional interface)***

Enable this checkbox if you want to use the Optional interface as the default heartbeat for the Standby Firebox. A heartbeat is a signal emitted at regular intervals by software to show it is still functioning.

**Host Alias dialog box*****Host Alias Name***

The name used to identify a host alias. Select a name that is easily remembered.

***Alias Members***

A list of individuals, hosts, networks, or groups that are members of this host alias.

***Add***

Click to open the Add Address dialog box to add a new member to the Alias Members list.

***Remove***

Click to remove the selected item from the list above.

***OK***

Closes this dialog box and saves any changes.

**HTTP Proxy dialog box****Settings tab*****Remove client connection info***

Enable this checkbox to remove all outgoing information about local clients. During the course of an HTTP connection, clients (browsers) often send headers describing which browser and version they are, what operating system they are running on, and other information about your internal network -- paths can be sent describing file systems, as well as the location of the page that was accessed prior to the current request.

***Remove cookies***

Enable this checkbox to strip cookies from client submissions as well as server requests. Cookies are a few dozen bytes of

information stored on client machines and retransmitted the next time a client visits the server from which the cookie originated.

***Deny submissions***

Enable this checkbox to deny the GET (if there is a question mark in the URL), POST, and PUT commands, disabling form submission.

***Deny Java applets***

Enable this checkbox to prohibit content that has embedded Java commands. Note that enabling this feature can result in some .zip files being denied by the proxy.

***Deny ActiveX applets***

Enable this checkbox to prohibit content that has embedded ActiveX commands.

***Remove unknown headers***

Enable this checkbox to remove unknown headers, including any current or future unofficial header additions.

***Log accounting/auditing information***

Enable this checkbox to log accounting/auditing information.

***Require Content Types***

Enable this checkbox to require all HTTP traffic to have content types in the header.

***Idle Timeout***

Enter or select the duration in seconds before the proxy terminates idle or hung HTTP requests.

***Arrows***

Use the arrows to select your preferred value.

***Use Caching Proxy Server***

You can specify an HTTP caching proxy, such as Squid, and others. To do so, enable the checkbox and enter the IP address and the port of the caching proxy server in the fields below.

---

**NOTE**

This is not the WatchGuard HTTP Proxy. The HTTP caching proxy is a separate machine that must be located off the External interface of the

Firebox and performs caching of Web data. It is not supplied by WatchGuard.

---

***IP***

Enter the IP address of the HTTP caching proxy.

***Port***

Enter the port number of the HTTP caching proxy.

**Safe Content tab**

***Allow only safe content types***

Enable this checkbox to permit only the content types listed in the box below. This arrangement allows you to easily block everything and allow in only those MIME types you deem acceptable security risks. For a list of content types, see Chapter 2 in the *Reference Guide*.

***Allowed Content Types list***

With the Allow only safe content types checkbox enabled, only those content types listed here will pass through the HTTP proxy.

***Add***

Click to add a new entry to the list above.

***Remove***

Click an entry from the list above and click to remove it.

***Deny unsafe path patterns***

Select to deny unsafe path patterns.

***Unsafe Path Patterns list***

With the Deny unsafe path patterns checkbox enabled, the path patterns listed here will be denied.

***Add***

Click to add a new entry to the unsafe path patterns list.

***Remove***

Click to remove the selected item from the list above.

---

## WebBlocker Controls tab

### *Activate WebBlocker*

Enable this checkbox to filter Web sites based on the rule set defined by the WB tabs.

### *WebBlocker Servers*

The WebBlocker Controls tab in the HTTP Proxy dialog box allows you to configure one or more WebBlocker servers in a failover configuration. If the primary WebBlocker server fails, the Firefox automatically fails over to the first server listed in the WebBlocker Servers box.

When operating two or more WebBlocker servers in "failover" mode, the time between failovers could take up to two minutes. To add additional WebBlocker servers:

1. On the WebBlocker Controls tab in the HTTP Proxy dialog box, click Add.
2. In the dialog box that appears, type the IP address of the server in the Value field. Click OK.

You can use the UP and Down buttons to change the position of the servers in the list.

### *Allow WebBlocker Server Bypass*

By default, if the WebBlocker server does not respond, HTTP traffic (Outbound) is denied. To change this so that all outbound HTTP traffic is allowed if a WebBlocker server is not recognized, on the WebBlocker Controls tab, select Allow WebBlocker Server Bypass.

The Allow WebBlocker Server Bypass option is global. If you set it in one HTTP service, it applies to all other HTTP proxy services you might have.

### *Message for blocked user*

Enter a custom message to be sent to users' browsers when they are denied a page because of WebBlocker rules. It must be plain

text and cannot contain HTML or the greater than (>) or less than (<) characters. Several metacharacters are permitted:

`%u` -- Full URL of the denied request

`%s` -- Blocked status: The reason the request was blocked.

`%r` -- WebBlocker category causing the denial

## **WB: Schedule tab**

### *Schedule*

Click hour blocks to toggle from Operational (bright green) to Non-Operational (dark green) hours.

## **WB: Privileges tab**

### *Block all outgoing Web access*

Enable this checkbox to completely disable all access to the Web during the hours selected on the WB: Schedule tab.

### *Block specific Web access*

WebBlocker differentiates URLs based on their content. Select the types of content accessible during operational and non-operational hours.

### *Alcohol/Tobacco*

Pictures or text advocating the sale, consumption, or production of alcoholic beverages and tobacco products.

### *Illegal Gambling*

Pictures or text advocating materials or activities of a dubious nature that may be illegal in any or all jurisdictions, such as illegal business schemes, chain letters, copyright infringement, computer hacking, phreaking (using someone's phone lines without permission), and software piracy. Also includes text advocating gambling relating to lotteries, casinos, betting, numbers games, online sports, or financial betting, including non-monetary dares.

### *Militant/Extremist*

Pictures or text advocating extremely aggressive or combative behavior or advocacy of unlawful political measures. Topic includes groups that advocate violence as a means to achieve their goals. It also includes pages devoted to "how to" information on

the making of weapons (for both lawful and unlawful reasons), ammunition, and pyrotechnics.

***Drug Culture***

Pictures or text advocating the illegal use of drugs for entertainment. Includes substances used for other than their primary purpose to alter the individual's state of mind, such as glue sniffing. This does not include (that is, if selected these sites would not be WebBlocked under this category) currently illegal drugs legally prescribed for medicinal purposes (such as, drugs used to treat glaucoma or cancer).

***Satanic/Cult***

Pictures or text advocating devil worship, an affinity for evil, wickedness, or the advocacy to join a cult. A cult is defined as: A closed society that is headed by a single individual where loyalty is demanded and leaving is punishable.

***Intolerance***

Pictures or text advocating prejudice or discrimination against any race, color, national origin, religion, disability or handicap, gender, or sexual orientation. Any picture or text that elevates one group over another. Also includes intolerant jokes or slurs.

***Gross Depictions***

Pictures or text describing anyone or anything that is either crudely vulgar, grossly deficient in civility or behavior. Topic includes depictions of maiming, bloody figures, and indecent depiction of bodily functions.

***Violence/Profanity***

Pictures or text exposing extreme cruelty or profanity. Cruelty is defined as: Physical or emotional acts against any animal or person that are primarily intended to hurt or inflict pain. Topic includes obscene words, phrases, and profanity in either audio, text, or pictures.

***Search Engines***

Search engine sites such as AltaVista, InfoSeek, Yahoo!, and Google.

***Sports and Leisure***

Pictures or text describing sporting events, sports figures, or other entertainment activities.

***Sex Education***

Pictures or text advocating the proper use of contraceptives. Topic includes sites devoted to the explanation and description of condoms, oral contraceptives, intrauterine devices, and other types of contraceptives. It also includes discussion sites devoted to conversations with partners about sexually transmitted diseases, pregnancy, and sexual boundaries. Not included in this category are commercial sites selling sexual paraphernalia (topics included under Sexual Acts).

***Sexual Acts***

Pictures or text exposing anyone or anything involved in explicit sexual acts and/or lewd and lascivious behavior. Topic includes masturbation, copulation, pedophilia, as well as intimacy involving nude or partially nude people in heterosexual, bisexual, lesbian, or homosexual encounters. It also includes phone sex advertisements, dating services, adult personals, and sites devoted to selling pornographic CD-ROMs and videos.

***Full Nudity***

Pictures exposing any or all portions of human genitalia. Topic does not include sites categorized as Partial/Artistic Nudity containing partial nudity of a wholesome nature. For example, it does not include Web sites for publications such as National Geographic or Smithsonian magazine nor sites hosted by museums such as the Guggenheim, the Louvre, or the Museum of Modern Art.

***Partial/Artistic Nudity***

Pictures exposing the female breast or full exposure of either male or female buttocks except when exposing genitalia which is handled under the Full Nudity category. Topic does not include swimsuits, including thongs.

## WB: Exceptions tab

### *Allowed Exceptions*

Use exceptions to override any WebBlocker setting. Exceptions take precedence over all other rules. These blocked URLs apply only to HTTP traffic and are not related to the Blocked Sites list. Add network or host IP addresses to be allowed through the HTTP proxy at all times.

### *Add*

Click to add an entry to the list above.

### *Remove*

Click to remove a selection from the list above.

### *Denied Exceptions*

Add network or host IP addresses to be denied by the HTTP proxy at all times.

### *Add*

Click to add an entry to the list above.

### *Remove*

Click to remove a selection from the list above.

## Define Exceptions dialog box

### *Select type of exception*

You can choose from the following three exceptions.

**Lookup Domain Name:** If you know the URL of the Web site exception, enter the URL in the text box and click Lookup to add to the Results list.

**Host Address:** If you know the host IP address of the Web site exception, enter the IP address and enable the checkbox to block a specific port or specific directory pattern.

**Network Address:** If you know the network IP address of the Web site exception, enter the IP address and enable the checkbox to block a specific port or specific directory pattern.

### *OK*

Closes this dialog box and saves any changes.

## **Incoming dialog box**

### *Use ESP*

Select to use Encapsulated Security Payload.

### *SP1*

Select the SP1 from the drop list.

### *Arrows*

Use the arrows to select your preferred value.

### *Encryption*

Select the encryption strength from the drop list.

### *Encryption Key*

Enter the encryption key.

### *Key*

Click to create an encryption key.

### *Authentication*

Select the authentication from the drop list.

### *Authenciation Key*

Enter an authentication key.

### *Key*

Click to create an encryption key.

### *Use AH*

Select to use an Authentication Header.

### *SP1*

Select the SP1 from the drop list.

### *Arrows*

Use the arrows to select your preferred value.

### *Authentication*

Select the authentication from the drop list.

### *Authentication Key*

Enter an authentication key.

### *Key*

Click to create an encryption key.

### *Use Incoming settings for Outgoing*

Enable the checkbox to use incoming settings for outgoing.

## **Incoming SMTP Proxy dialog box**

### **General tab**

#### *Idle Timeout*

The duration in seconds that an idle or hung SMTP connection remains before terminated by the firewall.

#### *Arrows*

Use the arrows to select your preferred value.

#### *Maximum Recipients*

The maximum number of users one message can be addressed to. This restriction can help reduce spam.

#### *Arrows*

Use the arrows to select your preferred value.

#### *Maximum Size*

The maximum size of a single email message. This restriction can help prevent the mail spool from filling up.

#### *Arrows*

Use the arrows to select your preferred value.

#### *Line Length*

The maximum line length of a single email.

#### *Arrows*

Use the arrows to select your preferred value.

#### *Allow Characters*

Enter the allowable characters for address validation.

#### *Allow 8-bit Characters*

If enabled, the firewall allows messages that have 8-bit characters in usernames of sender and recipient addresses. This is intended to accommodate international messages that rely more heavily on accented versions of alphabetic characters.

***Allow Source-Routed Addresses***

If enabled, sender and recipient addresses are allowed to contain source routes. Source routes specify what path a message is to take from host to host, perhaps specifying certain mail routers or "backbone" sites. For example, @backbone.com:freddyb@something.com means that the host named Backbone.com must be used as a relay host to deliver mail to freddyb@something.com.

**ESMTP tab**

***Allow DBAT/CHUNKING***

Enable this checkbox to allow DBAT/CHUNKING.

***Allow Remote Message Queue Starting***

Enable this checkbox to allow remote message queue starting.

***Allow AUTH***

Enable this checkbox to allow authentication.

***AUTH list***

A list of AUTH types.

***Add***

Type an AUTH type in the text box to the left and click to enter it.

***Remove***

Click to remove the selected AUTH type.

**Content Types tab**

***Allow only safe content types and block file patterns***

Check to enable the safe content types and block file pattern rules that you specify below.

***Safe Content Types and Blocked File Patterns list***

A list of safe content types and blocked file patterns.

***Add***

Click to access the Select MIME Type dialog box from which you can select known MIME content types as well as add new MIME types. A list of content types can be found in the Online Help system and in Chapter 2.

***Remove***

Click to remove the selected item from the list above.

***Deny attachments based on these file name patterns***

A list of file name patterns denied by the Firebox if they appear in email attachments.

***Add***

Enter the file name pattern you want to add to the list and click add.

***Remove***

Click to remove the selected item from the list above.

***Deny Message***

Enter a message to be shown when a content type is denied. A default message is provided. Use the variable %t to add the content type to the message. Use the variable %f to add the file name pattern to the message.

**Address Patterns tab*****Category***

Use the drop list to select a pattern type (allowed or denied) and direction (incoming or outgoing).

***Address Patterns***

The Firebox checks host names of the SMTP client and mail sender against this list of allowed and denied address patterns. This feature can reduce such things as: unsolicited commercial email, forgeries, and unauthorized mail relaying.

***Add***

Enter the new address pattern and click Add.

***Remove***

Click to remove an address pattern from the Address Pattern list.

**Headers tab*****Allow these Headers***

A list of all allowed, incoming email header types. A default list is provided.

***Add***

Enter the email header you want to add to the list and click Add.

***Remove***

Click to remove the selected email header from the list.

**Logging tab**

***Log removal of unknown headers***

Click to log unknown headers that are filtered by the proxy.

***Log removal of unknown ESMTP extensions***

Click to log unknown ESMTP extensions that are filtered by the proxy.

***Log accounting/auditing information***

Click to log accounting and auditing information.

**IPSec Configuration dialog box**

***IPSec Routing Policies***

A list of current IPSec virtual private networking routing policies. The list displays:

**Local Address** - The IP address of the local Firebox

**Remote Address** - The IP address of the remote IPSec-compliant device

**Disposition** - Security disposition of the policy

**Tunnel** - Identifying name of the tunnel used by the policy

**Destination Port** - (optional) The port to which the Firebox sends communications for the policy

**Protocol** - (optional) The protocol used by the policy

**Source Port** - (optional) The port from which the Firebox receives all communication for the policy

**DVCP** - Identify if use DVCP

***Move Up***

The Firebox handles policies in the order listed top to bottom in the IPSec Routing Policies list. Initially, the policies are listed in

the order created. Use the Move Up and Move Down buttons to reorder the policies from the most specific to the least specific to ensure that sensitive connections are routed along the higher security tunnels.

***Move Down***

The Firebox handles policies in the order listed top to bottom in the IPSec Routing Policies list. Initially, the policies are listed in the order created. Use the Move Up and Move Down buttons to reorder the policies from the most specific to the least specific to ensure that sensitive connections are routed along the higher security tunnels.

***Add***

Click this button to open the Add Routing Policy dialog box and add a new IPSec routing policy.

***Edit***

Select a policy from the list above and click this button to modify it. The Edit Routing Policy dialog box opens.

***Remove***

Select an item from the list above and click this button to remove it.

***OK***

Closes this dialog box and saves any changes.

***Cancel***

Closes this dialog box without saving any changes.

***Gateways***

Click to open the Configure Gateways dialog box from which you can create a new gateway.

***Tunnels***

Click to open the Configure Tunnels dialog box from which you can create a new tunnel.

***Logging***

Click to open the IPSec Logging dialog box.

***Help***

Click to access the online Help system.

## IPSec Logging dialog box

### *Enable configuration dump after IKE interpretation*

A configuration dump can assist in troubleshooting IPSec tunnels at the time problems occur.

### *Enable extra IKE debugging*

In addition to the standard status messages logged by the Firebox regarding IKE, you can enable richer, more thorough debugging messages. This option can generate a high volume of log entries, slowing the passage of VPN traffic, and is recommended only for debugging purposes.

### *Enable IKE packet tracing*

The Firebox can trace IKE packets and log their movements. This option often generates a high volume of log entries, slowing passage of VPN traffic. It is generally only used by WatchGuard Technical Support to assist with debugging an IPSec VPN tunnel problem.

## Logging and Notification dialog box

### *Category*

A list of logging and notification categories. This list changes depending on the service or option. Click the event name to display and set its properties.

### *Enter it in the log*

Enable this checkbox to enter an event in the log. All denied packets are logged by default.

### *Send notification*

Enable this checkbox to send notification when the event occurs. Clear this checkbox to disable notification for the event.

### *E-mail*

Enable this checkbox to send an event notification via email. You set the email recipient in the Notification tab of the WSEP user interface.

***Pager***

Enable this checkbox to send an event notification via pager. You set the pager number in the Notification tab of the WSEP user interface.

***Popup Window***

Enable this checkbox to send an event notification via a popup window.

***Custom programs***

Click to send an event notification via a custom program. Enter or use Browse to find the path of the custom program.

***Browse***

Click to browse for the program path.

***Launch Interval***

Enter the number of minutes between events.

***Arrows***

Use the arrows to select your preferred value.

***Repeat Count***

Enter the number of events to be counted before a new notification is launched.

***Arrows***

Use the arrows to select your preferred value.

***OK***

Closes this dialog box and saves any changes.

## **Logging Setup dialog box**

### **WSEP Log Hosts tab**

***WatchGuard Security Event Processors***

A list of log hosts to run the WatchGuard Firebox system.

***Add***

Click to add a new log host to the list. The Add IP Address dialog box opens.

***Edit***

Select a log host from the list and click to edit its properties. The Edit IP Address dialog box opens.

***Remove***

Select a log host from the list and click to remove it.

***Up***

Select a log host and click to move it up in the list.

***Down***

Select a log host and click to move it down in the list.

**Syslog tab**

***Enable Syslog Logging***

Enable this checkbox to enable the syslog logging function. Note that syslog logging is not encrypted. The Firebox sends the syslogs to the defined syslog server. This can be the same machine as the WatchGuard Security Event Processor.

***Syslog Server***

Enter the interface to set as the Syslog Server.

***Syslog Facility***

Enter or use the drop list to set the Syslog facility.

**Manual Security dialog box**

***Manual Security***

View the manual security incoming and outgoing properties. You can change these settings by clicking the Settings button.

**Mobile User Client - Select New Passphrase dialog box**

***User Name***

Displays the Mobile User name.

***Passphrase***

Enter a new passphrase for the Mobile User client. For greater security, use 8 characters or more.

***Accept***

Select to accept the passphrase entered.

***Skip This User***

Select to not change the passphrase of this user.

***Skip All***

Select to not change the passphrase for all users.

## **Mobile User VPN Wizard**

### **Select User screen**

***Select User Name***

Select a user from the drop list to create a new Mobile User VPN account.

***Add New***

Click to add a new Firebox user to the Mobile User VPN group.

***Enter Shared Key***

Enter a shared key for this user's mobile VPN account.

### **Define Access screen**

***Allow user access to***

Enter the network resource you want to allow for this mobile user.

***Virtual IP Address to mobile user***

Enter the virtual IP address to use for IPSec connections.

### **Encryption and Authentication screen**

***Type***

Select the type of encryption from the drop list for this mobile user's connection.

***Authentication***

Select the authentication from the drop list for this mobile user's connection.

***Encryption***

Select the encryption from the drop list for this mobile user's connection.

*Key Expires*

Set the method by which the key will expire. The choices are Kilobytes or hours.

**Additional Access screen**

*Configured policies*

Lists networks that the mobile user has access to.

*Add*

Click to add a network that the mobile user can access.

*Remove*

Click to remove a network that the mobile user can access.

*Virtual IP Address for mobile users*

Enter the virtual IP address for mobile users.

**External Authentication Groups screen**

*Group Name*

Enter the group name for the Externally Authenticated Group.

*Passphrase*

Enter the passphrase that will be used to encrypt the MUVPN Client Export file for this group.

**IPSec Tunnel Authentication screen**

*Use Passphrase*

Enable this checkbox to use a passphrase to negotiate the encryption and/or authentication.

*Use Certificate*

Enable this checkbox to use a certificate to negotiate the encryption and/or authentication.

**Export File Preferences screen**

*Security Policy is readonly in the client*

Enable this checkbox to allow the Mobile User read-only access to their security policy.

### *Virtual Adapter*

Select the Virtual Adapter configuration setting you want applied to the mobile user. Choose from the following in the drop list:

**Disabled:** The mobile user cannot use a Virtual Adapter to connect to the Secure VPN Client.

**Preferred:** It is preferred but not required for the mobile user to use a Virtual Adapter to connect to the Secure VPN Client.

**Required:** The mobile user must use a Virtual Adapter to connect to the Secure VPN Client.

## **Network Resources screen**

### *Network Resources list*

Lists the network resources allow for this mobile user.

### *Add*

Click to add network resources for the mobile user.

### *Remove*

Click to remove network resources for the mobile user.

## **IPSec Connections screen**

### *IPSec Connections list*

Lists the virtual IP address to user for IPSec connections.

### *Add*

Click to add virtual IP addresses used for IPSec connections.

### *Remove*

Click to remove virtual IP addresses used for IPSec connections.

## **External Authentication screen**

### *Authentication Server*

Type or select an external authentication server used to verify the mobile user's credentials.

## **Certificate Authority screen**

### *IP Address*

Enter the IP address of your Certificate Authority (CA) to get the certificate for the mobile user.

### *Passphrase*

Enter the passphrase of your Certificate Authority (CA) to get the certificate for the mobile user.

### *Timeout*

The duration in seconds the Management Station waits for a response from the Certificate Authority. Use the arrows to select your preferred value.

## **Mobile User VPN dialog box**

### *Type*

Choose type from the drop list.

### *Value*

Enter the value of the type.

### *OK*

Closes this dialog box and saves any changes.

## **NAT Setup dialog box**

### *Enable Dynamic NAT*

Enable this checkbox to enable Dynamic NAT. The default configuration of dynamic NAT enables it from the Trusted network to the External network.

### *Dynamic NAT Entries*

A list of all Dynamic NAT entries.

### *Up*

Select an entry and click to move it up in the list.

### *Down*

Select an entry and click to move it down in the list.

### *Add*

Click to add a new Dynamic NAT entry to the list above. This Add Dynamic NAT dialog box opens.

***Remove***

Select an entry and click to remove it.

***OK***

Closes this dialog box and saves any changes.

***Cancel***

Closes this dialog box without saving any changes.

***Help***

Click to access the online Help system.

***Advanced***

Click to access the Advanced NAT Settings dialog box. You use this dialog box to enable service-based dynamic NAT, setup 1-to-1 NAT, and define dynamic NAT exceptions.

## Network Configuration dialog box

### Interfaces tab

#### *External Interface*

The Firebox allows dynamic IP support on the External Interface. Due to this fact, you have four configuration choices for the External interface of the Firebox.

**Routed Mode:** You can choose static, DHCP, or PPPoE.

If you choose static, enter the IP address and Default Gateway for the External interface.

If you choose DHCP, enter nothing. The External IP address is obtained automatically.

If you choose PPPoE, enable the Obtain an IP address automatically and enter the PPP User Name and Password.

Re-enter the password for verification. This creates a dynamic PPPoE configuration. If you want a static PPPoE

configuration, enable the Use the following IP address and enter the IP address.

**Drop-in Mode:** You can only choose static.

If you choose static, enter the IP address and Default Gateway used for all interfaces.

#### *Properties*

Drop-in static, DHCP, and PPPoE configurations require advanced setup. Click Properties to access the Advanced dialog box.

#### *Aliases*

Drop-in static, Routed static, and DHCP configurations allow static NAT. To setup static Nat, click Aliases to access the Adding External IP dialog box.

#### *Trusted Interface*

Enter the IP address for the Trusted Interface.

#### *Optional Interface*

Enter the IP address for the Optional Interface.

### *Configure interfaces in Drop-in mode*

Enable this checkbox to configure the Firebox in Drop-in mode. The Interface dialog box changes to allow only one IP address and Default Gateway. This is because in a Drop-in configuration the Firebox is put in place with the same network address on all Firebox interfaces.

## **Advanced Drop-In tab**

### *Automatic*

Enable this checkbox to make proxy ARP automatic for the related hosts listed below.

### *Proxy ARP for hosts on the following network*

Select the network, Trusted, Optional, or External, you want to use proxy ARP.

### *Related Hosts*

A list of related hosts that use proxy ARP.

### *Add*

Enter the host IP address, select the interface, and click Add to add a related host to the Related Host list.

### *Remove*

Select a host IP address from the Related Host list and click Remove to delete a related host.

## **Advanced DHCP tab**

### *DHCP Initialization Timeout*

Enter the duration in seconds the Management Station waits for a response from the DHCP server. The Firebox receives the IP address, gateway, and netmasks from the DHCP server managed by your Internet Service Provider (ISP).

### *DHCP Device Name*

Enter the host name that is used during the DHCP exchange.

### *DHCP Lease Time*

Enter the amount of time in Days, h (hours), and m (minutes) before the Firebox will renegotiate the DHCP lease.

***Enable DHCP dedbugging***

Enable this check to allow DHCP debugging. DHCP debugging generates large amounts of data. Do not enable DHCP debugging unless you are having connection problems and need help from Technical Support.

**Advanced PPPoE tab*****PPPoE Initialization Timeout***

Enter the duration in seconds the Management Station waits for a response from the PPPoE server. The Firebox receives the IP address, gateway, and netmaks from the PPPoE server managed by your Internet Service Provider (ISP).

***LCP Echo Timeout***

Enter the LCP Echo timeout in mileseconds.

***LCP Echo Failure***

Enter the LCP Echo failure rate in number of tries.

***Service Name***

Enter the Service name of the PPPoe server.

***Access Concentrator Name***

Enter the Access Concentrator name for the PPPoE server.

***Enable PPPoE debugging***

PPPoE debugging generates large amounts of data. Do not enable PPPoE debugging unless you are having connection problems and need help from Technical Support.

**Secondary Networks tab*****Secondary Networks***

A list of secondary networks on the interface you specify in the drop down menu

***IP Address***

Enter the IP address of the secondary network you want to add to the interface you specify in the drop down menu.

***Trusted (drop down menu selection)***

Select to view or add the secondary networks on the Trusted interface.

***Optional (drop down menu selection)***

Select to view or add the secondary networks on the Optional interface.

***External (drop down menu selection)***

Select to view or add the secondary network on the External interface.

***Add***

Click to add the secondary network to the interface you specify in the drop list.

***Remove***

Click to remove the secondary network to the interface you specify in the drop list.

**WINS/DNS tab*****DNS Servers (Primary and Secondary)***

Enter the primary and secondary name of the domain name server (DNS). The server values entered in this dialog box are used by the DHCP server, RUVPN, and other features of the firewall.

***Domain Name***

Enter the DNS domain name. The server values entered in this dialog box are used by the DHCP server, RUVPN, and other features of the firewall.

***WINS Servers (Primary and Secondary)***

Enter the name of the primary and secondary WINS server. The server values entered in this dialog box are used by the DHCP server, RUVPN, and other features of the firewall.

**OOB tab*****Baud Rate***

Select the baud rate for the console from the drop list.

***Flow Control***

From the drop list, select the desired flow control.

***Local Host IP***

Enter the IP address of the local host.

***Firebox IP***

Enter the IP address for the Firebox.

***PPP Initialization***

Enter the PPP initialization string. This is a list of commands that can be found in Chapter 9 of the Reference Guide.

***Modem Initialization***

These specify a chat session that occurs between the Firebox and the modem to properly initialize the modem. In most cases the default initialization is sufficient. A list of strings appear in the Reference Guide.

***Baud Rate***

From the drop list select the PCMCIA expansion configuration baud rate.

***Flow Control***

From the drop list select the flow control for the PCMCIA expansion configuration.

***Local Host IP***

Enter the IP address for the local host.

***Firebox IP***

Enter the IP address for the Firebox.

***PPP Initialization***

Enter the PPP initialization string. This is a list of commands that can be found in Chapter9 of the Reference Guide.

***Modem Initialization***

These specify a chat session that occurs between the firebox and the modem to properly initialize the modem. In most cases the default initialization is sufficient. A list of strings appears in the Reference Guide.

**BUG** Need to find out if in GUI and if so, where should it be in chapter.

***WINS Servers (Primary and Secondary)***

Enter the name of the primary and secondary WINS server. The server values entered in this dialog box are used by the DHCP server, RUVPN, and other features of the firewall.

***DNS Servers (Primary and Secondary)***

Enter the primary and secondary name of the domain name server (DNS). The server values entered in this dialog box are used by the DHCP server, RUVPN, and other features of the firewall.

***Domain Name***

Enter the DNS domain name. The server values entered in this dialog box are used by the DHCP server, RUVPN, and other features of the firewall.

**New MIME Type dialog box*****MIME Type***

Enter a new MIME type. MIME stands for Multipurpose Internet Mail Extensions, a specification about how to pass audio, video, and graphic content via email or HTML.

***Description***

Enter a description of the new MIME type.

***OK***

Closes this dialog box and saves any changes.

**New Service dialog box*****Name***

Enter the name for a new service as it will appear in monitoring and administration tools as well as the Service Arena.

***Description***

Enter a brief description of the new service. The description appears in the Services dialog box when the user clicks the name of the service on the Services dialog box.

***Settings***

The specific connection settings that define the service. A service is characterized by a combination of port (or port range), protocol, and client port.

***Add***

Click to access the Add Port dialog box and to configure the new service. You can configure more than one port for the service.

***Remove***

Click to remove the selected item from the list above.

***OK***

Closes this dialog box and saves any changes you have made.

## **Outgoing SMTP Proxy dialog box**

### **General tab**

***Allow these Header Patterns***

A list of currently allowed header types. To add another header type, enter it in the field below the list box and click the Add button.

***Add***

Click to add a new header pattern enter in the text box.

***Remove***

Click to remove the selected item from the list above.

***Idle***

Enter the interval in seconds before timing out.

### **Masquerading tab**

***Domain Name***

Enter the official domain name -- the one that is visible outside the firewall.

***Substitute the above for these address patterns***

Enter the address patterns behind the firewall that are to be replaced by the official domain name entered in the field above. All patterns entered here appear as the official domain names outside the firewall. Click Add and the address pattern appears in the list of masqueraded addresses.

***Add***

Click to add the new address pattern entered in the text box to the list.

***Remove***

Click to remove the selected item from the list above.

***Don't substitute for these address patterns***

Enter the addresses to appear "as is" outside the firewall.

***Add***

Click to add the new address pattern to the list.

***Remove***

Click to remove the selected item from the list above.

***Masquerade Message IDs***

When this feature is enabled, message IDs in the Message-ID and Resent-Message-ID header fields are converted to a new ID composed of an encoded version of the original ID, plus a time stamp, plus the official host name entered in the Domain Name field above.

***Masquerade MIME boundary strings***

When this feature is enabled, the firewall converts MIME boundary strings in messages and attachments to a string that does not reveal internal host names and other identifying strings.

**Logging tab*****Log removal of unknown headers***

Click to log unknown headers that are filtered by the proxy.

***Log Message-ID masquerading***

Click to log the original and replacement Message-ID headers.

***Log MIME masquerading***

Logs the original and replacement MIME boundary strings, and the replacement of the Content-Type header

***Log domain masquerading***

Click to log the original and replacement domains in HELO and MAIL FROM commands.

***Log accounting/auditing information***

Click to log accounting and auditing information.

## **PPTP Logging dialog box**

### *Enable Control Channel Protocol Logging (TCP 1732)*

Check to enable control channel protocol logging.

### *Enable Data Channel Protocol Logging (IP 47)*

Check to enable data channel protocol logging.

### *Enable Data Channel Packet Logging (IP 47)*

Check to enable data channel packet logging.

## **Remote Gateway dialog box**

### *Name*

This name identifies a gateway within the administration and monitoring tools but is not passed to other devices.

### *Key Negotiation Type*

An IPSec tunnel can use either isakmp (dynamic) or manual key negotiation type. Dynamic is the most frequently used type.

### *Remote ID Type*

Enter the Remote ID type of the remote gateway.

### *Shared Key*

Enable this checkbox and enter the shared key. The shared key field is only available for isakmp-negotiated gateways. The identical key must be entered on the IPSec-compliant device at the other end of the gateway.

### *Firebox Certificate*

Enable this checkbox to use a Firebox certificate.

### *More*

Click to show and set the Phase 1 settings. Phase 1 refers to the initial phase of the IKE negotiation. It involves authentication, session negotiation, and key exchange.

### *Local ID Type*

In the drop list, specify IP Address, Domain Name, or User Name. To determine local ID type, in Policy Manager, select Setup => Name.

### *Authentication*

In the drop list, specify the type of authentication: SHA1 or MD5.

***Encryption***

In the drop list, specify the type of encryption: DES or 3DES.

***Diffie-Hellman Group***

In the drop list, specify the Diffie-Hellman group. Diffie-Hellman refers to a mathematical technique for securely negotiating secret keys over a public medium. Diffie-Hellman groups are collections of parameters used to achieve this. WatchGuard supports groups 1 & 2.

***Enable Perfect Forward Secrecy***

Enable this checkbox to enable Perfect Forward Secrecy. Perfect Forward Secrecy (PFS) is a guarantee that only one key has been generated from a single Diffie-Hellman exchange and that this key is not used to derive additional keys.

***Enable Aggressive Mode***

Enable this checkbox to enable Aggressive Mode. Mode refers to an exchange of messages in Phase 1. Main Mode is the default.

***Negotiation Timeouts***

Specify the negotiation timeouts in either kilobytes or hours.

***OK***

Closes this dialog box and saves any changes.

## **Remote User Setup dialog box**

### **Mobile User VPN tab**

***Mobile User VPN***

A list of License IDs for Mobile User VPN.

***Logging***

Click to access the Logging and Notification dialog box.

***Regenerate***

Click to regenerate the configuration files for Mobile User VPN host machines.

***Advanced***

Click to access the Advanced Export File Preferences dialog box where you set rules that apply to the mobile user connection.

***Add***

Click to add another Mobile User VPN to the list.

***Edit***

Select an item from the list and click to edit its properties.

***Remove***

Click an item in the list and click to delete it.

**Mobile User Licenses tab**

***Mobile User Licenses***

A list of Mobile User License keys.

***Add***

Enter the license key you want to add to the list and click Add.

***Remove***

Select a key from the list and click to remove it.

**PPTP tab**

***Activate Remote User***

Enable this checkbox to allow an active remote user.

***Enable Drop from 128-bit to 40-bit***

Enable this checkbox to enable a drop from 128-bit to 40-bit encryption.

***PPTP***

A list of the pool of IP and network addresses for remote clients using PPTP.

***Logging***

Click to access the Logging and Notification dialog box.

***Add***

Click to add another IP or network address for remote clients.

***Remove***

Select an item from the list and click to delete it.

## Select Firebox Time Zone dialog box

### *Select Firebox Time Zone*

Select a Firebox time zone from the list.

### *OK*

Closes this dialog box and saves any changes.

### *Cancel*

Closes this dialog box without saving any changes.

## Select Gateway dialog box

### *Select Gateway*

Select a gateway from the list and click OK to open the Configure Tunnel dialog box.

### *OK*

Closes this dialog box and opens the Configure Tunnel dialog box.

## Select MIME Type dialog box

### *Select MIME Type*

Select a MIME type from the list. MIME types are listed in Chapter 2 of the Reference Guide.

### *New Type*

Click to enter a new MIME Type.

### *MIME Type*

View the MIME type details.

### *Description*

View the MIME type descriptions.

## Services dialog box

### *Services*

A list of available services divided into three categories: proxies,

### *New*

Click to open the New Service dialog to add a service.

***Edit***

Click to edit the selected service properties. Only custom, user-filter services can be edited.

***Remove***

Click to remove the selected service properties. Only custom, user-filter services can be removed.

***Details***

The port and protocol information that defines a service.

***Comments***

Displays any comments associated with the selected service.

***Help***

Click to access the online Help system.

***Add***

Click to add an existing service to the Services list.

## **Service Properties dialog box**

### **Incoming tab**

***Incoming Connections Are***

Incoming connections are those that originate from beyond the firewall and whose destination is somewhere behind the firewall.

Select a disposition for incoming connections from the drop list:

- Disabled - Traffic via this service is forbidden. When a service is disabled, no logging events are recorded.
- Enabled and Denied - Traffic via this service is forbidden, however you can configure logging and notification settings to alert when attempts are made to use this service.
- Enabled and Allowed - Traffic via this service is allowed incoming. Configure From and To to restrict source and destination.

***From***

Restricts the source of incoming connections by host, network, user name, or alias. The Any global icon indicates that the service is allowed inbound from any source.

***Add***

Click to open the Add Member dialog box.

***Remove***

Click to remove the selected item from the list above.

***To***

A list of outbound connections that meet the connection criterion.

***Add***

Click to open the Add Member dialog box.

***Remove***

Click to remove the selected item from the list above.

***Logging***

Click to access the Logging and Notification dialog box.

***Auto-block sites that attempt to connect via***

Check to automatically block sites that attempt to connect via the defined service.

**Outgoing tab*****Outgoing connections are***

Select a disposition for outgoing connections from the drop list. This is usually Disabled, Enabled and Denied, and Enabled and Allowed.

***From***

A list of outbound connections that meet the connection criterion.

***Add***

Click to add a new item to the list.

***Remove***

Select an item in the list and click to remove it.

***To***

A list of outbound connections that meet the connection criterion.

***Add***

Click to add a new item to the list.

***Remove***

Select an item in the list and click to remove it.

***Logging***

Click to access the Logging and Notification dialog box.

***Choose Dynamic NAT Setup***

Select from the drop list the Dynamic NAT setup.

**Properties tab**

***Name***

Specifies the name of the service.

***Properties***

Lists the service's properties.

***Comments***

Lists any comments for the service's properties.

**Set Policy Ordering dialog box**

***Set Policy Ordering***

List the policies in order.

***Up***

Moves a selected policy up in the Set Policy Ordering list.

***Down***

Moves a selected policy down in the Set Policy Ordering list.

***OK***

Closes this dialog box and saves your selection.

**Setup Firebox User dialog box**

***Username***

Enter the name of the user to add to the Firebox.

***Password***

Enter the user password.

***Member Of***

A list of all groups to which the user named above is a member.

***Arrows***

Use the arrow to move a user in or out of a group.

***Not Member Of***

A list of groups to which the above named user is not a member.

***Add***

Click to add the user to a group.

**Setup New User dialog box*****User Name***

Enter the new user's name to create a new account.

***Passphrase***

Enter the pass phrase for the new user's account.

**Setup Routes dialog box*****Routes***

A list of all current routes. A route is a sequence of hosts through which information travels to reach its destination host.

***Add***

Click to add a new route. The Add Route dialog box opens.

***Edit***

Select a route from the list then click to edit its properties. The Add Route dialog box opens.

***Remove***

Select a route from the list then click to remove it.

***OK***

Closes this dialog box and saves any changes.

## Slash Notation dialog box

### *Close*

Click to close the slash notation box.

## SpamScreen dialog box

### *RBL Server*

Enter the RBL server. A RBL (Real Time Black Hole List) is a name server that has DNS record for sites considered to be spammers.

### *Allow*

Select to allow spam mail handling.

### *Tag*

Select to tag certain spam mail handling. Enter the tag information in the text box.

### *Deny*

Select to deny the spam mail handling.

### *Advanced Spam Mail Filtering*

Enable this checkbox to use advanced spam mail filtering.

### *RBL list*

List the RBLs SpamScreen is configured to use.

### *Add*

Click to add RBLs entered in the text box to the left of the RBL list.

### *Remove*

Click to remove RBLs from the RBL list.

### *Exceptions to Spam List (Email Address Patterns)*

Lists the exceptions to spam list.

### *Add*

Click to add exceptions entered in the text box to the exceptions list.

### *Remove*

Click to remove exceptions from the exceptions list.

## WatchGuard Find dialog box

### *Find what*

Enter the information you are looking for.

### *Address*

Select to look for an IP, Network, User, Alias, or other address.

### *Port Number*

Select to look for a port number.

### *Protocol*

Select to look for TCP, UDP, HTTP or other protocol.

### *Found these services*

Lists what was found based on search criteria you entered.

### *Find*

Click to find the information to specified.

## WatchGuard VPN dialog box

### WatchGuard VPN tab

#### *Remote Fireboxes*

A list of remote Fireboxes configured for VPN tunnels using the WatchGuard VPN protocol.

#### *Add*

Click to open the WatchGuard VPN Setup dialog box and add another remote Firebox.

#### *Edit*

Select a remote device from the list above and click Edit to open the WatchGuard VPN Setup dialog box and modify tunnel configuration properties.

#### *Remove*

Select a remote device from the list above and click this button to remove.

#### *OK*

Closes this dialog box and saves any changes.

## Encryption tab

### *RC4 (40-bit)*

Click to enable 40-bit encryption between two WatchGuard Fireboxes using the WatchGuard VPN protocol.

### *RC4 (128-bit)*

Click to enable stronger, 128-bit encryption between two WatchGuard Fireboxes using the WatchGuard VPN protocol.

### *Encryption Key*

Enter a pass phrase or secret. Click Make a Key to hash the pass phrase which will appear below. The hashed encryption key must be identical on both Fireboxes.

If you are running different versions of WatchGuard Firebox System software, verify that the hashes match exactly on the two Fireboxes.

### *Make a Key*

Click to hash the key.

### *Key*

Displays the hashed encryption key.

## Options tab

### *Activate WatchGuard VPN*

Enable this checkbox to enable WatchGuard VPN protocol. Without this checkbox enabled, any configuration of tunnels and remote networks will be ignored by the Firebox.

### *Add Source to Blocked List When Denied*

Enable this checkbox to automatically block sites when the source fails to properly connect to the Firebox. Failure can be a result of improper configuration, encryption keys that do not match, or an attempt to hack the VPN tunnel policy.

### *Activate Incoming Log*

You have the option of logging incoming traffic using WatchGuard VPN protocol. Activating logging often generates a high volume of log entries, however, which can significantly slow the passage of VPN traffic. It is recommended only for debugging purposes.

### *Activate Outgoing Log*

You have the option of logging outgoing traffic using WatchGuard VPN protocol. Activating logging often generates a high volume of log entries, however, which can significantly slow the passage of VPN traffic. It is recommended only for debugging purposes.

## **Firebox Monitors**

---

### **Add Displayed Service dialog box**

#### *Name*

Enter a name for the new service to display in ServiceWatch.

#### *Port Number*

Enter the port number used by this service. Note that you can assign only a single port number.

#### *Line Color*

Select a unique line color to identify this service.

### **Remove Site dialog box**

#### *Remove Site*

This action requires changing the Firebox configuration file. Enter the configuration passphrase (read/write) of the Firebox.

### **View Properties dialog box**

#### **Samples tab**

##### *Number of Samples*

Determine how many samples are displayed within the sample interval.

Drag the slider to select your preferred value

##### *Sample Interval*

Configure the interval between display updates. Use the slider control from slowest (represented by the tortoise on the left) to fastest (represented by the hare on the right).

*Number of Samples*

Determine how many samples are displayed within the sample interval.

**BandwidthMeter tab**

*Net Interface Displayed*

Select the Firebox interface displayed by the Bandwidth Meter.

*Amplitude Scale*

Select the scale that suits the speed and type of connection.

*Custom Scale (Kb/s)*

Enter a custom scale in Kb/s.

**ServiceWatch tab**

*Maximum Amplitude*

Control the amplitude of the ServiceWatch display. Use smaller numbers for lighter volumes of traffic and larger numbers for higher volumes of traffic.

*Add*

Click Add to configure a new service and associated line color.

*Remove*

Click to remove the selected item from the list above.

*Services*

A list of services that appear in the ServiceWatch display. Each service is identified by name, port number, and a line color.

## Historical Reports

---

### Add Report Filter dialog box

**Filter tab**

*Filter Name*

The name of the filter as it will appear in the Filter drop list in the Report Properties Setup tab.

***Type***

Include - Select this option to include in the report all log records that match any of the filter's criteria.

Exclude - Select this option to exclude from the report all log records that match any of the filter's criteria.

**Host Filter tab*****Hosts***

Restrict report output to only those records that specifically reference a host or list of hosts. Enter the host IP address below and click Add.

***Host IP***

Enter the name of a new host IP to be added to the hosts list.

***Add***

Click to add an item to the list on the left.

***Remove***

Click to remove the selected item from the list to the left.

**Port Filter tab*****Ports***

Restrict report output to only those records that specifically reference a port or list of ports. Enter the port number below and click Add.

***Port***

Enter the port number.

***Add***

Click to add an item to the list on the left.

***Remove***

Click to remove the selected item from the list on the left.

**User Filter tab*****Users***

Restrict report output to only those records that specifically reference an authenticated user or list of users. Enter the user name below and click Add.

***User***

Enter the user.

***Add***

Click to add the entered item to the list on the left.

***Remove***

Click to remove the selected item from the list on the left.

## **Historical Reports dialog box**

***Add***

Click to create a new report.

***Edit***

Click to modify the settings for the selected report.

***Remove***

Click to remove the selected item from the list above.

***Run***

Enable the checkboxes next to the reports you would like to generate. Click Run to generate the selected reports.

***Filters***

Click to open the Filters dialog box. Filters restrict report output by criteria you establish such as date range, users, or services.

***Exit***

Close this dialog box and exit Historical Reports.

***Help***

Click to access the online Help system.

***Reports***

A list of reports created and ready to be scheduled using the WatchGuard Security Event Processor. For each report, there is a ReportName.rep created in [WatchGuard installation directory]\report-def.

---

## Report Properties dialog box

### Setup tab

#### *Report Name*

The name of the report as it appears in Historical Reports, the WatchGuard Security Event Processor and the title of the output.

#### *Log Directory*

Browse to designate the location of the log files (.wgl and .idx) used for this report. The default location for log files is the \logs subdirectory of the WatchGuard installation directory.

#### *HTML Report*

Select to generate report in standard HTML 3.0. HTML reports use frames.

#### *WebTrends Export*

Select to generate report in format acceptable for WebTrends for Firewalls and VPNs. Additional information on the format can be found at [http://www.webtrends.com/developers/dev\\_logfile.htm](http://www.webtrends.com/developers/dev_logfile.htm).

#### *Text Export*

Select to generate report in a comma-delimited text file (.cdf). The text file fields are the following:

Record type

Time

Client IP address

Client DNS name (if DNS is on and resolved)

Client port (or proxy for HTTP, FTP, SMTP, and RealAudio)

Server port

Authenticated user name

Argument (either a URL or a variety of denied packet/service information)

#### *Filter*

A drop list of filters created using the Filters dialog box. You can only apply one pre-configured filter to a report.

***Output Directory***

The location of report output files. The default location is the \reports subdirectory of the WatchGuard installation directory.

***Overwrite Previous Text Export***

If exporting a report as a .txt file, selecting this option will result in the previous text-based report being overwritten with the new file.

**Firebox tab**

***Firebox List***

A list of devices for which you are generating a report.

***Firebox IP or Unique Name***

Historical Reports can generate reports for any Firebox in the distributed enterprise. You must identify Fireboxes by their IP address and SOHO devices by their unique name. The unique SOHO name is configured using DVCP Client Wizard.

***Add***

Click to add a new Firebox IP or unique name to the Firebox List.

***Remove***

Click to remove the selected item from the list on the left.

**Time Filters tab**

***Time Stamps***

Local Time -- Report uses date and time of the Management Station local time zone to display records.

Stamp sGMT -- Report uses Greenwich Mean Time to display records.

***Time Span***

The span of time reported upon. The default is the entire log file. Options include specific time intervals or a custom, specific time filter.

***Start***

If Specific Time Filter selected in Time Span, this field defines the beginning of the report interval.

***End***

If Specify Time Filter selected in Time Span, this field defines the ending of the report interval.

**Sections tab*****Sections***

A list of report methods. A single report can include multiple sections, each describing a different feature of the log files. Enable the checkbox next to the sections you would like included in this report.

***Check All***

Click to select all report section types.

***Reset All***

Click to disable all section types.

***Authentication Resolution on IP addresses***

Select to run authentication resolution on IP addresses.

***DNS Resolution on IP addresses***

Select to run DNS resolution on IP addresses.

**Consolidated Sections tab*****Consolidated Sections***

A list of reports available to run against multiple devices. Enable the checkbox next to the consolidated section you want to generate.

***Check All***

Click to select all consolidated section types.

***Reset All***

Click to disable all consolidated section types.

**Preferences tab*****Elements to Graph***

The top number of elements in a particular section to graph.

***Elements to Rank***

The top number of elements in a particular section to rank.

***Graph***

The type of graph to use to display the top rankings of each section.

***Proxied Summaries Sorted By***

Select whether the report sorts entries by bandwidth in byte count or number of connections. Only proxied services can be summarized and sorted in this fashion.

***Detail Sections***

The number of records that appear on each HTML page. The default is 1,000.

## HostWatch

---

### Filter Properties dialog box

#### Inside Hosts tab

***Display all hosts***

Enable this checkbox to display all hosts.

***Displayed hosts***

A list of all displayed hosts.

***New Host***

Enter a new host to add to the list.

***Add***

Click to add the new host to the list.

***Remove***

Select an item from the list and click to delete it.

#### Outside Hosts tab

***Display all hosts***

Enable this checkbox to display all hosts.

***Displayed hosts***

A list of all displayed hosts.

***New Host***

Enter a new host to add to the list.

***Add***

Click to add the new host to the list.

***Remove***

Select an item from the list and click to delete it.

**Authenticated Users tab*****Display all authenticated users***

Check to display all authenticated users.

***New User***

Enter a new user to add to the list.

***Add***

Click to add a new user to the list.

***Remove***

Select an item in the list and click to delete it.

***Displayed authentication users***

A list of all authenticated users.

**Ports tab*****Display all ports***

Check to display all ports.

***Displayed ports***

A list of all displayed ports.

***New Port***

Enter a new port number to add to the list.

***Add***

Click to add the new port number to the list.

***Remove***

Select an item from the list and click to delete it.

## Properties dialog box

### Host Display tab

*Display DNS*

Enable this checkbox to display DNS.

*Display User (User Authentication)*

Enable this checkbox to display users.

*Display Details*

Enable this checkbox to display details.

*Aligned*

Enable this checkbox to align the text.

### Line Color tab

*Denied*

Displays the line color used for denied entires in the log.

*Dynamic NAT*

Displays the line color used for dynamic entires in the log.

*Proxy*

Displays the line color used for proxy entires in the log.

*Normal*

Displays the line color used for normal entires in the log.

### Misc. tab

*Icon legend*

Displays the icons used in Policy Manager for Telnet, HTTP, Mail, FTP, and Other services.

*Sample interval*

Displays the sample interval and allows you to change it.

*Limit monitored connections at*

Enter the limit of monitored connections.

---

# WatchGuard Security Event Processor

---

## **WSEP: Firebox List**

### *Firebox list*

A list of Fireboxes logging to the log host and their current status.

### *Close*

Closes this dialog box and saves any changes.

### *Save Changes*

Click to save changes.

### *Discard Changes*

Click to discard changes.

### *Help*

Click to access the online Help system.

## **WSEP: Log Files tab**

### *Roll Log Files by Time Interval*

Enable this checkbox to specific the log rollover time interval. When this interval is reached, the WSEP saves the log file with a time stamp. It continues to write new log records to the base Firebox log file identified either by Firebox name or by IP address.

### *Daily*

Select this option to force log rollovers once per day.

### *Weekly*

Select this option to force log rollovers once per week.

### *First of the Month*

Select this option to force log rollovers on the first day of every month.

### *Custom*

Select this option to create your own custom rollover interval in hours. Enter the number of hours between rollovers.

***Next Log Roll is Scheduled For***

Set the time of the first log roll over to a specific date and time of day. Subsequent log rollovers take place on the interval selected above.

***Next Log Roll is Scheduled For***

Set the time of the first log rollover to a specific date and time of day. Subsequent log rollovers take place on the interval selected above.

***Next Log Roll is Scheduled For***

Set the time of the first log rollover to a specific date and time of day. Subsequent log rollovers take place on the interval selected above.

***Roll Log Files By Number of Entries***

Specify the maximum number of log entries in thousands. When this number is exceeded, the WSEP saves the log file with a time stamp. It continues to write new log records to the base log file identified either by Firebox name or IP address.

***Approximate Size***

Displays the approximate size of a log file when it contains the number of log record entries selected in By Number of Entries.

**WSEP: Reports tab*****Reports***

Enable the checkbox next to the reports to be generated on a regular schedule. The reports listed here are created using the Historical Reports tool.

***Daily***

Select to run the highlighted report on a daily basis.

***Weekly***

Select to run the highlighted report on a weekly basis.

***First of the Month***

Select to run the highlighted report on the first day of every month.

***Custom***

Select to run the highlighted report on a custom time interval. Enter the interval in hours.

***Next Scheduled Report Is***

Set the time of the first scheduled report generation to a specific date and time of day. Subsequent reports will take place on the interval selected.

**WSEP: Notification tab*****Email Address***

Set the address to which the WSEP sends email notifications. It sets the value of the MZ\_MAILTO environment variable, which is read by notification programs. For email notification to work under Windows, networking must be installed and configured. Email notification is performed via SMTP.

---

**NOTE**

---

The email address entered in this field is not verified. Validate the address before entering it into the email address text box

---

***Pager Number***

The telephone number of the pager contacted by the WSEP. To use the pager option, a modem must be connected to the log host. Entering a value in this field assigns a value to the environment variable MZ\_PAGER in notification programs.

***Pager Code***

The pager code number passed to the pager program. The code appears on the pager display. The pager program looks for a suitable dial-out modem for paging on COM2 of the event processor.

***Mail Host***

The SMTP host that performs email notifications. Enter either the IP address or host name.

## **Set Log Encryption Key dialog box**

### *Log Encryption Key*

Enter the key used to encrypt communication between the Firebox and the WSEP. The key must be identical on both the Firebox and the WSEP. Use a key that you can easily remember but would be difficult for a potential intruder to guess.

### *Confirm Log Encryption Key*

Reenter the log encryption key to verify.

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