

# Firewall Software

Seamlessly manage and secure modern industrial networks

Technical Bulletin



Belden's cybersecurity software offers efficient network mapping and supervision to support the requirements of industrial networks. Our embedded software offers intuitive and familiar interfaces which appeal to both automation engineers and IT specialists. Effortless configuration ensures rapid network deployment at minimum cost.



## Belden OS firewall software

Belden OS is a unified operating system delivering next-generation firewall, wireless, protocol conversion and edge computing workloads to its users. The next-generation firewall capabilities are geared towards applications in critical infrastructure and enterprise environments. Belden OS combines deep security features—such as IDS/IPS, application-level filtering, DDoS protection and multi-factor authentication—with high-performance networking, including advanced routing, QoS and VPN support. Its modular architecture supports both physical and virtual deployments, and centralized management is made simple with an intuitive web GUI, REST API and orchestration tools. Belden OS ensures high availability, strong performance and flexibility across a wide range of deployment scenarios.

Developed for the latest Belden IAF-240 Industrial Firewall.



## HiSecOS firewall software

HiSecOS firewall software is an operating system for industrial security routers, combining performance with security. It provides the user with comprehensive security mechanisms to protect networks against attacks and operating errors. Designed to fulfill IEEE 1686 standard requirements, functions such as audit trails and user management/password policies are implemented from the beginning.

NOTE: Belden will discontinue the [Hirschmann EAGLE20/30 firewall products](#). The last order date is September 30, 2025.

Developed for the latest Hirschmann EAGLE40/EAGLE30/EAGLE20 hardware.



Developed for the Hirschmann EAGLE One firewall.

## Classic OS firewall software

Classic OS firewall software offers a large range of protection functionalities for virtually every network design. The Firewall Learning Mode provides an expedited deployment of firewall rules for bridged or routed communications. For high-availability networks, the software offers redundancy at Layer 2 and Layer 3; firewall state entries are automatically synchronized.

NOTE: Belden will discontinue the [Hirschmann EAGLE One firewall products](#).  
The last order date is December 31, 2025.



Developed for the Tofino Xenon platform.

## Tofino Security firewall software

The Tofino Configurator Software enables configuration of all Tofino devices from one workstation, quickly enabling you to create a model of your entire control system. Visual editing tools help you manage your configuration. For quick and consistent setup, use the pre-built asset templates for common control products to have the firewall suggest optimum rules that protect your control system. This relates specifically to Deep Packet Inspection (DPI) options for common industrial communication protocols. Alternatively, create your own templates to enforce corporate consistency in firewall rules.

NOTE: Belden will discontinue the [Tofino Xenon products](#).  
The last order date is December 31, 2025.

## Software Functionality

Management & configuration	HiSecOS v07.0.00	Belden OS v1.1.0	Classic OS v5.3.0	Tofino Security v03.2.00
Auto disable				
AutoConfiguration Adapter ACA11 full support				
AutoConfiguration Adapter ACA11 limited support (RS20/30/40, MS20/30)				
AutoConfiguration Adapter ACA21/22 (USB)	Yes		Yes	Yes
AutoConfiguration Adapter ACA31 (SD card)	Yes (partial/limited by platform)		Yes	
Automatic configuration undo (roll-back)			Yes	
Avahi		Yes		
Backup config on a remote server when saving	Yes (can be scripted)	Yes (can be scripted)		Yes (with Tofino Configurator)
BOOTP/DHCP Client with auto-configuration				Yes (with Tofino Configurator)
Clear config but keep IP settings	Yes			
CLI script handling over ENVm at boot				
CLI scripting	Yes	Yes		
Command Line Interface (CLI)	Yes	Yes	Yes	
Configuration fingerprint	Yes			Yes
Configuration via templates (application, asset, protocol, etc.)	Yes			

Management & configuration	HiSecOS v07.0.00	Belden OS v1.1.0	Classic OS v5.3.0	Tofino Security v03.2.00
Context-sensitive help	Yes			Yes (with Tofino Configurator)
Cron	Yes	Yes		
DHCP Relay with Option 82	Yes (Option 82)	Yes (no GUI support for Option 82)	Yes	
DHCP Server IPv4/IPv6	Yes (IPv4)	Yes		
DHCP Server: Option 43		Yes		
DHCP Server: per port	Yes (partial/limited by platform)	Yes	Yes	
DHCP Server: Pools per VLAN		Yes		
DNS Caching Server	Yes (partial/limited by platform)	Yes		
DNS Client	Yes	Yes	Yes	
DNS Server		Yes		
Dual software image support	Yes	Yes		
DynDNS		Yes	Yes	
Full-featured MIB support	Yes			
HiDiscovery	Yes		Yes	
HTML5-based management	Yes	Yes		
HTTP	Yes	Yes		
HTTPS	Yes	Yes	Yes	
Interface shutdown via tracking	Yes			
IPv6 management		Yes		
ITxPT module inventory				
LLDP (802.1AB)	Yes	Yes	Yes	
LLDP-MED		Yes		
SCP	Yes	Yes	Yes	
SCP Server	Yes	Yes	Yes	
Service Discovery (bonjour)		Yes		
SFTP	Yes	Yes	Yes	
SFTP Server	Yes	Yes	Yes	
SNMP v1/v2/v3	Yes	Yes	Yes	
SNMPv1/v2 read-only	Yes	Yes		
SNMPv3 traps		Yes	Yes	
SSHv1			Yes	Yes
SSHv2	Yes	Yes	Yes	
Sysstat	Yes (via Service Shell)	Yes		
Telnet			Yes	Yes
TFTP			Yes	
Tofino Configurator				Yes
Tracking framework	Yes			
Traps	Yes	Yes	Yes	
USB-C management support				
User management LDAP	Yes	Yes		
User management RADIUS	Yes	Yes		
V.24	Yes	Yes	Yes	Yes
Web-based management	Yes	Yes	Yes	Yes
Webconsole	Yes	Yes		
XML-based configuration file	Yes	Yes (NETCONF)	Yes	

Diagnostics & monitoring	HiSecOS v07.0.00	Belden OS v1.1.0	Classic OS v5.3.0	Tofino Security v03.2.00
802.1AS				
Address conflict detection for routing interfaces				
Address relearn detection				
BC with up to 8 Sync / s				
Buffered real-time clock	Yes (partial/limited by platform)	Yes		
Configuration check dialog	Yes			Yes
Copper cable test				
DDMI		Yes		
Device status indication	Yes		Yes	Yes
Duplex mismatch detection				
Email notification		Yes		
Export log files to USB storage device	Yes			Yes
iftop	Yes (via Service Shell)	Yes		
IRIG-B				
LEDs	Yes	Yes	Yes	Yes
Link flap detection	Yes			
Link speed and duplex monitoring				
Loop protection		Yes (RSTP)		
MAC notification				
Management address conflict detection				
NToPNG		Yes		
NTP Client	Yes	Yes	Yes	Yes
NTP Server	Yes	Yes	Yes	Yes
OPC UA Server				
Overload detection	Yes (temperature)			
PCAP				Yes
Persistent logging on ACA	Yes			
ping	Yes	Yes		
Port mirroring 1:1		Yes		
Port mirroring 8:1		Yes		
Port mirroring N:1		Yes		
Port mirroring N:2		Yes (Nftables dup)		
Port monitoring with auto-disable	Yes		Yes (port monitoring)	
PTPv2 boundary clock				
PTPv2 transparent clock two-step				
RMON (1,2,3,9)	Yes			
RSPAN				
Self-tests on cold start				
SFLOW		Yes (Netflow)		
Signal contact	Yes (partial/limited by platform)			
Snapshot configuration feature	Yes			
SNTP Client			Yes	
SNTP Server			Yes	
Switch dump	Yes			
Syslog	Yes	Yes	Yes	Yes

Diagnostics & monitoring	HiSecOS v07.0.00	Belden OS v1.1.0	Classic OS v5.3.0	Tofino Security v03.2.00
System information	Yes	Yes		
TCPDump	Yes	Yes		
traceroute	Yes (via Service Shell)	Yes		
VLAN mirroring		Yes (Nftables dup)		

Security & access control	HiSecOS v07.0.00	Belden OS v1.1.0	Classic OS v5.3.0	Tofino Security v03.2.00
2FA with TOTP		Yes		
Access to management restricted by VLAN	Yes	Yes	Yes	
ACL flow-based limiting	Yes (partial/limited by platform)	Yes		
ACL hit counter	Yes (partial/limited by platform)	Yes		
Application layer firewall		Yes		
Appropriate use banner	Yes			
Audit trail	Yes	Yes		Yes
Basic ACL		Yes		Yes
Captive portal		Yes		
CLI logging	Yes			
Configurable number of login attempts	Yes			
Configurable password policy	Yes			
Deep Packet Inspection: AMP	Yes	Yes		
Deep Packet Inspection: DNP3	Yes	Yes		Yes
Deep Packet Inspection: EtherNet/IP	Yes	Yes		Yes
Deep Packet Inspection: IEC104	Yes	Yes		Yes
Deep Packet Inspection: IEC61850 GOOSE	Yes	Yes		Yes
Deep Packet Inspection: Modbus TCP	Yes	Yes		Yes
Deep Packet Inspection: OPC	Yes	Yes		Yes
Deep Packet Inspection: Siemens S7 and S7 Plus	Yes	Yes		
Denial-of-service prevention	Yes	Yes	Yes	
Device security indication	Yes			
DHCP snooping				
DoS prevention drop counter		Yes	Yes	
Dynamic ARP inspection				
Egress IPv4-based ACL		Yes		
Egress MAC-based ACL		Yes		
Egress VLAN-based ACL		Yes		
Firewall Learning Mode	Yes	Yes	Yes	
Format options for MAC authentication bypass				
Guest/unauthenticated VLAN				
HAProxy reverse proxy		Yes		
HTTPS certificate management	Yes	Yes		
Identity awareness		Yes		

Security & access control	HiSecOS v07.0.00	Belden OS v1.1.0	Classic OS v5.3.0	Tofino Security v03.2.00
Ingress IPv4-based ACL	Yes (partial/limited by platform)	Yes		
Ingress MAC-based ACL	Yes (partial/limited by platform)	Yes		
Ingress VLAN-based ACL	Yes (partial/limited by platform)	Yes		
Integrated Authentication Server (IAS)				
Intrusion protection engine		Yes		
IP source guard				
IP-based port security	Yes	Yes		
IPsec IKE v1/v2	Yes	Yes	Yes	
LDAP	Yes	Yes		
Letsencrypt (public and private server)		Yes		
Limiter by buckets		Yes		
Limiter by firewall rule	Yes	Yes		
Local user management	Yes	Yes		
MAC authentication bypass				
MAC-based port security	Yes	Yes		
Multi-client authentication per port				
Multiple privilege levels	Yes	Yes		Yes
OpenVPN		Yes		Yes
OpenVPN with TOTP		Yes		
Password change on first login	Yes	Yes	Yes	
Persistent MAC learning	Yes (FDB and static entries)			
Port-based access control with 802.1X		Yes		
RADIUS Client	Yes	Yes	Yes	
RADIUS Policy Assignment				
RADIUS VLAN Assignment				
Remote authentication via RADIUS	Yes	Yes	Yes	Yes
Restricted management access	Yes	Yes	Yes	Yes
Secure boot		Yes		
Signed firmware images		Yes		
SNMP logging	Yes		Yes	
Stateful Packet Inspection (SPI) for routed traffic (Routing Mode)	Yes	Yes (IPv4 + IPv6)	Yes	
Stateful Packet Inspection (SPI) for switched traffic (Transparent Mode)	Yes	Yes (IPv4 + IPv6)	Yes	
Time-based ACL		Yes		
Transparent webfilter		Yes		
Tunnel (GRE/GRETAP/IPIP/SIT)		Yes		
User account locking	Yes	Yes		
User-based firewall			Yes	
Virus scanner for webfilter		Yes		
VLAN-based ACL	Yes (partial/limited by platform)	Yes		
Web application firewall		Yes		
Webfilter		Yes		
Webfilter blocklists		Yes		
WebVPN		Yes		
WebVPN with TOTP		Yes		



Security & access control	HiSecOS v07.0.00	Belden OS v1.1.0	Classic OS v5.3.0	Tofino Security v03.2.00
WireGuard		Yes		
XDP Firewall Accelerator		Yes (partial/limited by platform)		
Zerotier		Yes		

Switching & routing	HiSecOS v07.0.00	Belden OS v1.1.0	Classic OS v5.3.0	Tofino Security v03.2.00
1:1 NAT	Yes	Yes	Yes	
1:1 NAT 1 GBit/s		Yes		
BFD		Yes		
BGP		Yes		
Bond interface		Yes		
Bridge interface		Yes		
CoS queue management	Yes			
Destination NAT	Yes	Yes		
Disable learning (hub functionality)				
Double NAT	Yes	Yes	Yes	
Double VLAN tagging (QinQ)		Yes		
DVMRP				
Egress broadcast limiter per port	Yes	Yes		
Egress interface shaping		Yes		
Equal Cost Multiple Path (ECMP)	Yes			
Fast aging	Yes			
Flow control (802.3X)		Yes		
Forward unknown multicast to query ports				
Forward unknown multicast to query ports per VLAN				
Full wire-speed routing		Yes		
GARP Multicast Registration Protocol (GMRP)				
GARP VLAN Registration Protocol (GVRP)				
Gateway fallbacks		Yes		
Hirschmann Address Mapping		Yes	Yes	
ICMP filter	Yes	Yes	Yes	
ICMP router discovery (IRDP)		Yes		
IGMP proxy		Yes		
IGMP querier	Yes (partial/limited by platform)			
IGMP snooping/querier (v1/v2/v3)	Yes (partial/limited by platform)			
IGMP snooping/querier per VLAN (v1/v2/v3)				
IGMP v1/v2/v3	Yes (partial/limited by platform)			
Independent VLAN learning	Yes			
Ingress storm protection	Yes			
Integrated routing & bridging	Yes			
Interface Trust Mode				

Switching & routing	HiSecOS v07.0.00	Belden OS v1.1.0	Classic OS v5.3.0	Tofino Security v03.2.00
IP Egress DiffServ classification and policing				
IP Ingress DiffServ classification and policing				
IP masquerading (N:1 NAT)	Yes	Yes	Yes	
IP subnet-based VLAN	Yes	Yes		
IP/UDP Helper				
IPv6 router advertisement		Yes		
ISIS		Yes		
Jumbo frames	Yes	Yes		
Loopback interface	Yes	Yes		
MAC-based VLAN		Yes		
MacVLAN		Yes		
Multiple MAC Registration Protocol (MMRP)				
Multiple Registration Protocol (MRP)				
Multiple routing tables		Yes		
Multiple VLAN Registration Protocol (MVRP)				
Net-directed broadcasts				
OSPF v2	Yes	Yes		
OSPF v3		Yes		
PIM-DM (RFC3973)				
PIM-SM / SSM (RFC4601)	Yes (EAGLE40-6M Only)			
Port forwarding	Yes	Yes	Yes	
Port-based router interfaces	Yes	Yes		
PPPoE interface		Yes		
Protocol-based VLAN				
Proxy ARP	Yes	Yes	Yes	
QinQ interface		Yes		
QoS / port prioritization (802.1D/p)	Yes			
QoS traffic shaping		Yes		
Queue-shaping / max. queue bandwidth		Yes		
RIP v1/v2				
Routing table load balancing		Yes		
Static route tracking	Yes	Yes		
Static Unicast routing	Yes	Yes	Yes	
Static Unicast/Multicast address entries	Yes	Yes		
TOS/DSCP prioritization		Yes		
TSN 802.1Qbv support on interfaces 1/1 - 1/3.				
Unknown Multicast filtering				
UPNP NAT		Yes		
VLAN (802.1Q)	Yes	Yes	Yes	
VLAN trunking		Yes		
VLAN Unaware Mode		Yes		
VLAN-based router interfaces	Yes	Yes		
Voice VLAN		Yes		
VRF		Yes		
VXLAN		Yes		



Redundancy	HiSecOS v07.0.00	Belden OS v1.1.0	Classic OS v5.3.0	Tofino Security v03.2.00
Advanced Ring Configuration for MRP				
Device Level Ring (DLR)				
Fast HIPER-Ring				
Fast MRP (IEC62439-2)				
High Availability	Yes	Yes		
High Availability Seamless Redundancy Protocol (HSR) (IEC62439-3)				
HIPER-Ring (Manager)				
HIPER-Ring (Ring Switch)				
HIPER-Ring over Link Aggregation				
HiVRRP (VRRP enhancements)				
HSR 1 GBit/s				
Link Aggregation with LACP		Yes		
Link backup		Yes		
Media Redundancy Protocol (MRP) (IEC62439-2)				
MRP over Link Aggregation				
MSTP (802.1Q)				
Parallel Redundancy Protocol (PRP) (IEC62439-3)				
PRP 1 GBit/s				
Redundant network coupling			Yes	
RSTP 802.1D-2004 (IEC62439-1)		Yes		
RSTP guards				
RSTP over MRP				
Sub ring manager				
VRRP	Yes	Yes	Yes	
VRRP ping answer				
VRRP tracking	Yes	Yes		
VRRP with enabled proxy_arp for 1:1 NAT	Yes			

Hardware support	HiSecOS v07.0.00	Belden OS v1.1.0	Classic OS v5.3.0	Tofino Security v03.2.00
APC UPS		Yes		
Configurable autoneg advertisement bits				
Digital IO management	Yes (CAMP on EAGLE40-03 only)		Yes	Yes
LAN bypass	Yes (partial/limited by platform)			
LTE/5G support		Yes (partial/limited by platform)		
Manual cable crossing	Yes			
PoE (802.3af)				
PoE Fast Startup				
PoE+ (802.3at)				
PoE+ Manual Power Management				
Port power down	Yes			



Hardware support	HiSecOS v07.0.00	Belden OS v1.1.0	Classic OS v5.3.0	Tofino Security v03.2.00
SFP Hirschmann Vendor Lock without Allowed List				
SFP management	Yes (partial/limited by platform)	Yes		
SHDSL support	Yes (partial/limited by platform)	Yes (partial/limited by platform)		
VDSL support		Yes (partial/limited by platform)		
Wifi Client support		Yes (partial/limited by platform)		

Application support	HiSecOS v07.0.00	Belden OS v1.1.0	Classic OS v5.3.0	Tofino Security v03.2.00
Docker runtime environment	Yes (EAGLE40-6M only)	Yes		



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