

# Intelligent Internet



Nortel Networks

## Alteon Switched Firewall System

### Alteon Switched Firewall System Benefits

- Multi-Gigabit performance
- Active-Active high availability
- FW-1 NG software from Check Point Technologies
- Plug-and-play deployment
- Manageable and scalable
- Small footprint



### High-performance security—with no trade-offs

Today, network administrators and IT managers are faced with protecting corporate data assets and network infrastructure against an increasingly complex array of attacks targeting their applications and services. Threats such as Code Red and Nimda can impact the performance and reliability of the services their employees and customers depend on.

The Alteon Switched Firewall—with its unique switch-accelerated architecture—offers ease of management, unmatched scalability, and the performance of wire-speed switching, proactively safeguarding network assets while providing a solution that can flexibly adapt to meet future growth requirements.

### When it comes to firewall performance, raw throughput isn't enough

Since its introduction last year, more and more customers are recognizing the inherent value of the Alteon switch-accelerated firewall architecture.

Appliance-based firewall solutions are rooted in a single device that performs both packet inspection and data forwarding. This approach works well in situations where the volume of network traffic remains consistent and only a few rules are being applied.

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The problem with this approach becomes clear when your network starts experiencing bursts of traffic, (e.g., “flash crowds”) or when you want to selectively apply rule sets to the traffic coming into or out of specific areas of the network.

Firewall appliances based on PC architecture can show high throughput when configured with a single “allow all” rule, but throughput becomes severely constrained when the CPU gets busy. Firewalls using a single processor or even multiple processors in a single box cannot effectively support a high number of session connections, large rule sets, or virtual firewalls and can easily become bottlenecks in the network. Firewall appliances—scaled using load balancers—become unmanageable when scaling past a certain performance level.

## High-performance security architecture

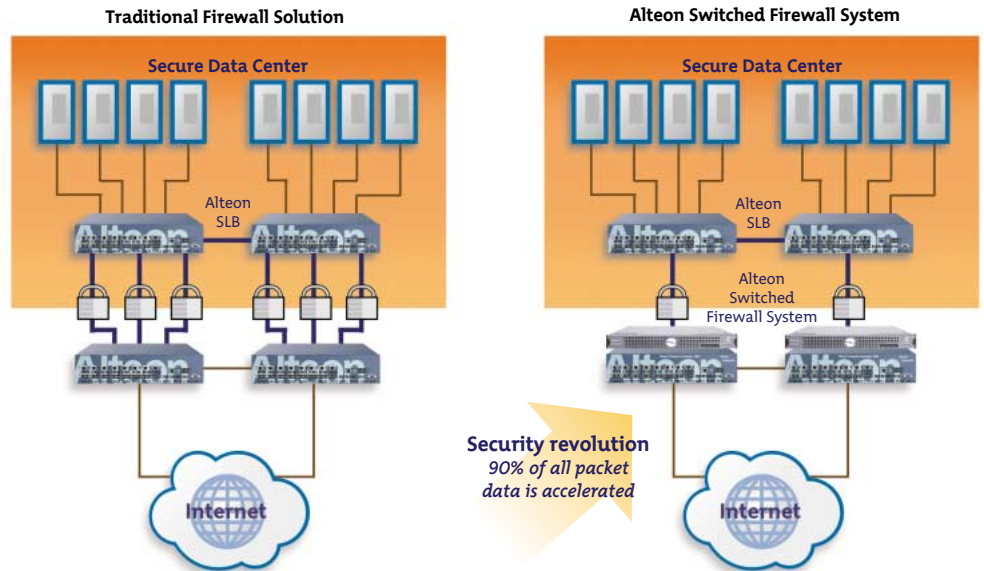
The Alteon Switched Firewall is a multi-component solution managed as a single system. It reflects a tight integration of two key components—an Alteon Switched Firewall Accelerator plus up to six Alteon Switched Firewall Directors.

The Alteon Switched Firewall implements a full firewall control plane, based on the industry’s leading firewall software—Check Point FireWall-1 Next Generation.

By using a high-speed ASIC-based switching fabric as a hardware accelerator, the offloading of traffic from the firewall inspection engine can be done at gigabit speeds while maintaining full security. Using Check Point’s Secure XL technology and Nortel Networks Open Security Architecture, the Firewall Directors and Firewall Accelerator can communicate to set up and tear down firewall sessions in real-time.

The Alteon Switched Firewall Director—running FireWall-1—performs policy checking for every new connection request, manages the connection table, and specifies the rules for handling packets in a session.

Figure 1. “Firewall Sandwich” configuration vs. Alteon Switched Firewall System



After a connection is established, the Switched Firewall Director passes its connection table to the Switched Firewall Accelerator. The Switched Firewall Accelerator applies the firewall rules at wire speed to subsequent packets within an existing connection. Up to 90 percent of traffic is accelerated as these packets bypass the core firewall logic on the Switched Firewall Director (see Figure 1). This unique acceleration technology, found only on the Alteon Switched Firewall System, makes it one of the leading high-performance firewalls on the market.

Performance is also accelerated through efficient handling of Network Address Translation (NAT). It is well known that enabling NAT on a firewall dramatically decreases performance, due to its intensive consumption of processor cycles. Within the Alteon Switched Firewall System, NAT is delegated to the Switched Firewall Accelerator, freeing the inspection engine residing on the Switched Firewall Director from the burden of translating network addresses.

## Why acceleration matters

All firewalls perform two basic functions: packet inspection and data forwarding. Because both functions separately consume CPU processing cycles, together they can impact the overall performance of any centralized solution when firewall load increases.

Nortel Networks has the only firewall switch-accelerated architecture that enables these discrete tasks to be performed by separate devices, with communication between them closely linked by the Nortel Application Acceleration Protocol (NAAP).

Like other Check Point solutions, a general-purpose processor performs stateful packet inspection. However, the ASF maintains a copy of the connection table in a firewall accelerator, along with the rules and state information for handling approved data packets. It is this unique coupling of an inspection engine with an ASIC-based accelerator (with multiple processors for data forwarding) that enables the Alteon Switched Firewall to deliver superior performance.



Nortel Networks Alteon Switched Firewall Accelerator



Nortel Networks Alteon Switched Firewall Director

A firewall’s ability to retain a large number of sessions at any given time is largely a matter of memory; consequently, many firewall vendors claim to support a high number of concurrent sessions. However, more important than the number of sessions is what the device does with those sessions. After a Firewall Director inspects the packets, up to 90 percent of the data in those same packets can be offloaded to the Firewall Accelerator, with a switching fabric designed for high-speed data forwarding. Practically speaking, the ASF’s ability to accelerate up to 500,000 concurrent sessions (1 million total sessions) means that the time it takes to process network traffic is greatly reduced compared to any other solution on the market.

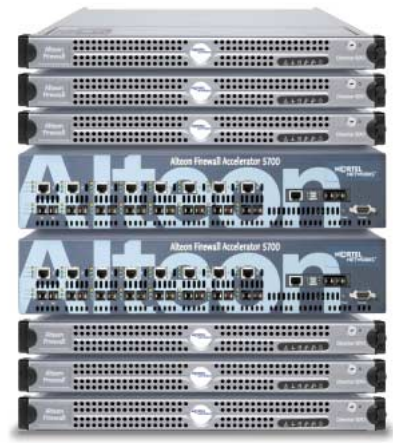
Figure 2. Plug-and-play reliability and scalability of the Alteon Switched Firewall



Start small



Grow seamlessly



Reach the highest performance and reliability level

### Active-Active High Availability features remove the risk of dropped sessions

A single Switched Firewall Accelerator can load balance up to six Switched Firewall Directors, continuously checking the health of each Switched Firewall Director and forwarding traffic only to a unit that is functioning properly. All of the Switched Firewall Directors in a cluster operate in active mode and support stateful fail-over. In addition, the system can be configured with two Switched Firewall Accelerators and multiple Switched Firewall Directors working together simultaneously to provide complete active-active high availability (see Figure 2).

The Nortel Networks Appliance Acceleration Protocol (NAAP) provides the communication channel between the Switched Firewall Accelerators and the Switched Firewall Directors. In conjunction with Check Point’s Secure XL technology, NAAP enables real-time replication of the connection table. This architecture is designed to ensure that not a single session is lost, whatever happens to the equipment or their links.

### Scaling the system is simple

Today, businesses need to carefully manage both capital and operational expenditures, while continuing to quickly respond to changing IT infrastructure

requirements. The Alteon Switched Firewall provides a data center solution that meets our customers’ need to simplify operations and control costs.

With its innovative architecture, the Alteon Switched Firewall helps move capital expenditures to a “pay as your traffic grows” model. A three rack-unit system delivers multi-gigabit throughput. The solution can easily expand to a high availability configuration. The system can grow to six Switched Firewall Directors attached to a single Switched Firewall Accelerator or to a total of six Switched Firewall Directors attached to two Switched Firewall Accelerators in a high-availability configuration.

The Alteon Switched Firewall also assists in controlling operational expenditures by being easy to configure and manage. A GUI application allows configuration of both the Alteon Switched Firewall Accelerator and the Alteon Switched Firewall Director as a single system.

Operational costs are minimized because administrators do not need to configure each Switched Firewall Director. The first Switched Firewall Director is provisioned in minutes using a configuration wizard. Its system image is then replicated to other Switched Firewall Directors in the cluster, making further configuration and growth of the system a simple plug-and-play operation.

Because the Alteon Switched Firewall integrates the Check Point FireWall-1 Next Generation software, the learning curve is short and only a minimal investment in training on firewall policy and operation is required.

### Unique features

The Alteon Switched Firewall System offers features and capabilities not available on other firewall solutions. By enabling Gateway Load Balancing, the ASF can dynamically health check and optimize traffic going out from the firewall.

Multi-Link Trunking allows all ports in a trunk group to act together as one interface to the firewall, increasing overall bandwidth. Alteon firewall products provide packet size flexibility through support for Jumbo Frames (9,000 bytes).

### Security + performance means higher profitability

Corporate networks are faced with ever-increasing traffic and the need to connect multiple sites and partners. These networks need a scalable, easy to manage firewall solution to protect access to data resources. The switch-accelerated firewall addresses these requirements.

The Alteon Switched Firewall is the only product available that leverages this new generation of security architecture. It meets existing business requirements for high-performance data center security and is ready to scale to meet their growing needs. For service providers, it provides a cost-effective way to ensure high-performance managed security services for demanding high-end customers. All ASF products have been rigorously tested to be certified as “Secured by Check Point,” ensuring optimal operation, interoperability, and ease of use.

### Flexible, adaptive security solutions

The Alteon best-of-breed firewall solution seamlessly integrates into any enterprise’s layered security strategy, thwarting malicious viruses and other attacks and enabling them to realize greater return on their infrastructure investment. It can be deployed to support specific security requirements (perimeter, extranet, data center, and campus), providing a higher level of protection of corporate assets and optimizing the utilization of network resources, reducing TCO.

With the latest firewall products, Nortel Networks Alteon Switched Firewall now offers unmatched flexibility with a broad range of security options at different price points, tailored to the requirements of both enterprise customers and service providers.

## Alteon Switched Firewall product bundles

Table 1. Alteon Switched Firewall features and capabilities

	ASF 5105	ASF 5112	ASF 5308	ASF 5408	ASF 5610	ASF 5710
<b>Bundle part number</b>	EB1639045	EB1639029	EB1639039	EB1639038	EB1639037	EB1639036
<b>Throughput</b>	200 Mbps	900+ Mbps	600 Mbps	600 Mbps	4.2 Gbps	4.2 Gbps
<b>Session connections/second</b>	2,000	5,500	5,500 - up to 32K	5,500 - up to 32K	5,500 - up to 32K	5,500 - up to 32K
<b>Accelerated concurrent sessions</b>	0	0	40,000	170,000	170,000	500,000
<b>Total concurrent sessions</b>	100,000	500,000	500,000	500,000	1,000,000	1,000,000
<b>Layer 3 protocols</b>	OSPF	OSPF	OSPF	OSPF	OSPF	OSPF
<b>Virtual firewalls</b>	No	No	Yes/up to 100	Yes/up to 100	Yes/up to 100	Yes/up to 100
<b>VLANs/IEEE 802.1Q</b>	Yes	Yes	Yes/up to 242	Yes/up to 242	Yes/up to 242	Yes/up to 242
<b>Health checks, load sharing</b>	No	No	Yes	Yes	Yes	Yes
<b>Multi-Link Trunking</b>	No	No	Yes	Yes	Yes	Yes
<b>Plug-and-play deployment</b>	Yes	Yes	Yes	Yes	Yes	Yes
<b>Single System Image upgrade</b>	Yes	Yes	Yes	Yes	Yes	Yes
<b>Scalability</b>	Only via ASF upgrade	Only via ASF upgrade	Yes	Yes	Yes	Yes
<b>High Availability</b>	Active-Standby	Active-Standby	Active-Active	Active-Active	Active-Active	Active-Active
<b>10/100 ports</b>	4	2	9	9	9	9
<b>Gigabit Ethernet ports</b>	0	2	1	1	9	9
<b>Rack units</b>	1	1	3	3	3	3

### When it comes to ensuring the safety of your network—one size never fits all

IT managers and network administrators require firewalls with different capacities to guard against threats to their network infrastructure.

Nortel Networks is introducing new ASF products and product bundles that augment the strength of the Alteon solution by providing additional configuration options for high-performance security.

**The Alteon Switched Firewall 5710** is our top-of-the-line firewall solution, with throughput performance exceeding 4 Gbps, up to 32,000 session connections per second, and 1 million concurrent sessions.

**The Alteon Switched Firewall 5610** is a high-performance accelerated firewall with the ability to support high bandwidth applications, jitter-sensitive traffic (VoIP and streaming media), and a large

number of simultaneous users. Along with the ASF 5710, it is well suited to virtual firewall applications in enterprise intranets and data centers.

Running Check Point FW-1 VSX, up to 100 virtual domains—each with discrete policies—can be applied to customers or to different groups and departments within the corporate network.

With built-in firewall load balancing, health checking, and scalability, the **Alteon Switched Firewall 5408 and 5308** are ideal perimeter security solutions for medium-size enterprises or medium-size sites within a large enterprise.

The **Alteon Firewall 5112** is our first non-accelerated Alteon firewall, offering robust throughput and a high number of session connections at a very competitive price point. Like all Alteon firewall products, the ASF 5112 features Check Point FW-1 NG software.

### Alteon “starter kit” firewall

Think of the ASF 5112 as a multi-gigabit “starter kit,” enabling enterprises to initially deploy an Alteon entry-level firewall product and scale to the higher performance, load balancing, and high availability features by adding a Firewall Accelerator (and additional Directors) as their network grows.

The **Alteon Firewall 5105** is the lowest priced ASF solution, ideal for small enterprises, branch offices, or to protect medium-sized network segments within a larger enterprise environment. Like the ASF 5112, the 5105 provides deployment flexibility and is a cost-effective Check Point stateful inspection engine that provides reliable network security, in either stand-alone mode or paired with an Alteon Firewall Accelerator and Firewall Directors.

Alteon Switched Firewall Director 5010



## Product specifications

Table 2. Alteon Switched Firewall Director product specifications

Part number	Product description
<b>EB1639030*</b>	Alteon Switched Firewall Director 5010: 1 1000BASE-SX port, 2 10/100 Mbps ports (does NOT include the Check Point FireWall-1 license)
<b>EB1639031*</b>	Alteon Switched Firewall Director 5008: 2 10/100 Mbps ports (does NOT include the Check Point FireWall-1 license)
Interfaces	
<b>10Base-T/100Base-TX Port</b>	10/100 full or half-duplex (auto-negotiation) with RJ-45 UTP port
<b>1000Base-SX Port</b>	Full-duplex Gigabit Ethernet with SC fiber connector
<b>RS-232C Console</b>	DB-9 serial connection, female DCE interface for out-of-band management
Dimensions	
<b>Width</b>	17.61 inches
<b>Depth</b>	24.00
<b>Height</b>	1.7 inches
<b>Weight</b>	22 lbs (9.9kg) (Standard 19" EIA 1U rack mountable)
Environmental specifications	
<b>Operating temperature</b>	10° to 35° C
<b>Operating humidity</b>	8% to 80% (non-condensing)
Power specifications	
<b>Power supply</b>	100-240 VAC@ 60-50 Hz, 3.6-1.8 A
<b>Power consumption</b>	240 Watts
<b>MTBF</b>	>50,000 hours
Certifications	
<b>Emissions</b>	<b>US</b> —FCC Class B <b>Canada</b> —DOC Class B <b>Europe</b> —CE Mark to EN55022/EN50082-1/ICE 801-2/ICE 801-3/ICE 801-4 <b>Safety</b> —UL 1950, CSA 950, CE Mark EN60950, IEC60950

\* Includes North American power cord and European "Schuko" power cord common in Austria, Belgium, Finland, France, and Germany.

Alteon Switched Firewall Accelerator 5700



Table 3. Alteon Switched Firewall Accelerator product specifications

Part number	Product description
EB1639032*	Alteon Switched Firewall Accelerator 5700 with AC Power – 9 10/100/1000 Mbps ports [includes Alteon Switched Firewall OS]
EB1639033*	Alteon Switched Firewall Accelerator 5600 with AC Power – 9 10/100/1000 Mbps ports [includes Alteon Switched Firewall OS]
EB1639034*	Alteon Switched Firewall Accelerator 5400 with AC Power – 8 10/100 Mbps ports, 1 1000BASE-SX port [includes Alteon Switched Firewall OS]
EB1639035*	Alteon Switched Firewall Accelerator 5300 with AC Power – 8 10/100 Mbps ports, 1 1000BASE-SX port [includes Alteon Switched Firewall OS]
Interfaces	
10Base-T/100Base-TX Port	10/100 full or half-duplex (auto-negotiation) with RJ-45 UTP port
1000Base-SX Port	Full-duplex Gigabit Ethernet with SC fiber connector
RS-232C Console	DB-9 serial connection, female DCE interface for out-of-band management
Dimensions	
Width	17.00 inches
Depth	18.00 inches
Height	3.47 inches
Weight	22 lbs (9.9kg) (Standard 19" EIA 1U rack mountable)
Environmental specifications	
Operating temperature	10° to 40° C
Operating humidity	5% to 85% (non-condensing)
Power specifications	
Power supply	90-265 VAC@ 47-65 Hz, auto-ranging
Power consumption	92 Watts
MTBF	>50,000 hours
Certifications	
Emissions	FCC, CFR 47 Part 15, Subpart A ANSI C63.4D11.4 1991, VCCI Class 1, FCC OST 55, CISPR 16, CISPR 22, CSA C108.8-M1983 (R1989), EN55022, CE, EN6100-3-2, EN60555-2 Safety UL 1950, CUL, DIN/VDE 0805, CSA 22.2 , No. 950-93, IEC 950 EN 60950, TUV EMKO-TSE (74-SEC) 207/94 Nordic Deviations to EN 60950

\* Includes North American power cord and European "Schuko" power cord common in Austria, Belgium, Finland, France, and Germany.



Table 4. Alteon Firewall (Non-Accelerated) product specifications

Part number	Product description
EB1639029*	Alteon Firewall 5112: 2 100BASE-SX ports, 2 10/100 Mbps ports (does NOT include the Check Point FireWall-1 license)
EB1639045*	Alteon Firewall 5105: 4 10/100 Mbps ports (does NOT include the Check Point FireWall-1 license)
<b>Interfaces</b>	
<b>10Base-T/100Base-TX Port</b>	10/100 full or half-duplex (auto-negotiation) with RJ-45 UTP port
<b>1000Base-SX Port</b>	Full-duplex Gigabit Ethernet with SC fiber connector
<b>RS-232C Console</b>	DB-9 serial connection, female DCE interface for out-of-band management
<b>Dimensions</b>	
<b>Width</b>	17.61 inches
<b>Depth</b>	24.00 inches
<b>Height</b>	1.7 inches
<b>Weight</b>	22lbs (9.9 kg) (Standard 19" EIA 1U rack mountable)
<b>Environmental specifications</b>	
<b>Operating temperature</b>	10° to 35° C
<b>Operating humidity</b>	8% to 80% (non-condensing)
<b>Power specifications</b>	
<b>Power supply</b>	100-240 VAC@ 60-50 Hz, 3.6-1.8 A
<b>Power consumption</b>	240 Watts
<b>MTBF</b>	>50,000 hours
<b>Certifications</b>	
<b>Emissions</b>	US – FCC Class B; Canada – DOC Class B; Europe – CE Mark to EN55022/EN50082-1/ICE 801-2/ICE 801-3/ICE 801-4 Safety: UL 1950, CSA 950, CE Mark EN60950, IEC60950

\* Includes North American power cord and European "Schuko" power cord common in Austria, Belgium, Finland, France, and Germany.

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