

**Filing Information**

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# Firewalls

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## **Return of the Black Box: Firewall/VPN Security Appliances Unleashed**

### **Profile: Nokia**

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#### **IDC Opinion**

*What are the factors behind the firewall/virtual private network (VPN) security appliance market's triple-digit growth over the past two years? Will this growth continue, and what vendors are leading the way?*

Firewall/VPN security appliance revenue grew 105% from 1998 to 1999 and 152% from 1999 to 2000. The firewall appliance market will increase at a more modest 34% compound annual growth rate (CAGR) from 2000 to 2005. Total revenue for this sector will reach \$4.0 billion by 2005. Units sold in 2000 were about 383,000.

## Introduction

The firewall/VPN security appliance market is growing explosively. In 1998, the market generated a modest \$182.2 million in revenue; in 1999, the market more than doubled to \$373.5 million. By 2000, the black box firewall/VPN security appliance market exploded with total revenue of nearly \$1 billion (i.e., \$942.8 million). By 2005, IDC anticipates that the firewall/VPN security appliance market will grow to \$4.0 billion.

For comparison purposes, the software firewall market in 2000 had a total revenue of \$735.8 million and is expected to reach \$1.56 billion by 2005, which is a CAGR of 16%. This comparison is to put the firewall/VPN security appliance market in perspective. A direct comparison would be unfair because appliances have a revenue advantage from hardware and hardware maintenance. (Reference *Worldwide Internet Security Software Market Forecast and Analysis 2000–2005*, IDC #24773, June 2001.)

Although geographical percentages will change over the next five years, IDC expects the rankings to remain the same. The United States has the largest share of this market, followed by Europe, Asia/Pacific, and then the rest of the world (ROW).

## Firewall/VPN Security Appliance Definition

IDC defines a firewall/VPN security appliance as a combination of hardware, software, and networking technologies whose primary function is to act as a firewall and to come equipped with VPN capabilities. At a deeper level, it is a single-board computer with a hardened operating system (OS) and a limited applications set.

In addition to the firewall software, the appliances generally include encryption capabilities to establish a VPN. Additional features may also be available, such as URL filtering, security management, policy management, and bandwidth management. Lastly, many firewall/VPN security appliances offer additional software for additional security functionality, such as virus scanning.

Although IDC does not expect this definition to change in the future, we do expect an evolution of Internet security appliances that are also focused on applications such as intrusion detection and bandwidth management.

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## **Why Firewall/VPN Security Appliances?**

Why are people buying firewall appliances when so many excellent software-based firewalls are already on the market? Simply put, convenience and ease of installation are the key advantages of firewall appliances. The following sections outline the factors that have encouraged the extraordinary growth of the firewall/VPN security appliance.

### ***Benefits to Customers***

From a customer standpoint, most firewall appliances are easily installed and often manageable across the network. For SMBs, customers are most interested in avoiding the complexities of installation and configuration. As for the management of a firewall appliance, several firewall vendors offer managed security services either solely or in partnership with service providers. IDC expects this trend to gain strength.

Over the next two or three years, many SMBs will turn to application service providers (ASPs), Internet service providers (ISPs), and Web hosting companies for firewall services. Just as firewall/VPN security appliances currently provide a way to limit the complexity and integration of security products, managed security services will enable customers to further reduce their reliance on internal IT people for security functions.

### ***Benefits to Service Providers***

Firewall/VPN security appliances are a great benefit to value-added resellers (VARs), value-added dealers (VADs), and managed service providers (MSPs). The boxes are easy to install and configure at the customer location and can be centrally managed from a remote site, thus removing this concern for SMBs while increasing service revenue. In most cases, the appliances are leased by the customers. Customers are willing to pay monthly fees for the service because it frees them up to concentrate on their business. The appliances allow the VARs and VADs to build on their existing relationships. With the appliances, resellers have the opportunity to upsell additional security features as they are needed. The appliance model also reduces the time spent on troubleshooting because the ease of installation and the leasing model usually make it easier to swap out a faulty box.

### ***Operating System Agnosticism***

In the security markets, one issue remains a problem for vendors and customers alike: What OS should I support? Vendors need to decide what OSs their products will support, and users worry about having too many products that utilize different OSs. The OS conundrum is solved in the firewall/VPN appliance with a hardened, embedded OS that is inaccessible to end users, eliminating security threats and minimizing configuration chores. The appliances run on hardened versions of Linux, FreeBSD, or proprietary systems. The ability to harden the OS improves security, and performance is also

optimized by the vendor. Additionally, since the OS is contained in the box, it eliminates the need for OS dependencies. That is, I don't need to worry about what OS the software I want can run on or what it is maximized for. This worry has been completely removed.

### ***Black Box Benefits***

The benefits of the black box approach are as follows:

- **Reduced complexity.** The all-in-one approach simplifies product selection, product integration, and ongoing support.
- **Avoidance of software installation and proliferating servers.** Customers or, more often, VARs, VADs, or MSPs, can easily install and maintain the products. Increasingly, this process is handled remotely.
- **Install and forget.** The appliances are generally “plug and play,” with very little installation required.
- **Synergy with high-end software solutions.** Appliances are used in remote sites where an enterprise does not have security professionals on the ground. A plug-and-play appliance can be installed and then managed remotely. This management is synergistic with large, centralized software-based firewalls. Firewall appliance vendors such as Nokia and WatchGuard exist comfortably in Check Point accounts.
- **Bundled functions without systems integration (SI).** Firewall appliances often come bundled with several other security functions, such as VPN, blocking, management, and bandwidth management. Whether customers ever turn on these capabilities is unknown. However, customers perceive that these additional features, options, and upgrades add greater value to firewall appliances, especially when these features can be installed remotely without customer intervention.
- **Less operator interaction.** Users have a tendency to play with things, and the black box approach limits the “damage” users can do. This reduces trouble calls and improves security.
- **Troubleshooting ease.** When a box fails, it is easier to swap it out than troubleshoot. This process gets the node back online quicker, and it can also be done by a nontechnical person. This feature is especially important for remote offices of large enterprises in that they don't need to retain technical staff at all sites.
- **Channel benefits.** With the combination of hardware and software, appliances offer an important margin opportunity for the channel (i.e., companies that sell, install, and maintain the products). The appliances offer companies opportunities for revenue and margin growth. Much of this success (and the loyalty it breeds) is what has helped this market grow so quickly.

## **Convergence: Appliances and Software**

Software-based firewalls and appliances are not mutually exclusive. Distributed firewall appliances often work seamlessly with large, centralized firewall software products. Moreover, some software firewall vendors license their software to the appliance vendors. (For example, Check Point sells its own firewall, VPN, and bandwidth management software. It also licenses this software to appliance vendors such as Nokia, Intrusion.com, and Crossbeam.) Some firewall appliance vendors plan to migrate in the opposite direction. For example, WatchGuard will slowly de-emphasize hardware and transform itself into a software and service company.

## **Future Trends for Firewall/VPN Security Appliance Market**

Several notable trends in the firewall appliance market should come to fruition in the next 24 months:

- Lower-end appliances will be provided by service providers as part of a security service for SMBs and possibly for consumers with DSL or cable modem Internet access.
- Gigabit-speed appliance offerings are expanding. Vendors are rolling out faster and faster firewall/VPN security appliances to meet the needs of large enterprises and service provider customers demanding high-speed connections. The faster devices will also provide future headroom for expansion. Gigabit-speed appliances are also being driven by the desire to consolidate firewall/VPN farms into a single complex with a lower cost of administration and improved security.
- Firewall/VPN security appliances will converge with intrusion detection, content security, and policy management to become a single security appliance. These single point appliances will be more prevalent in the lower ends of the market.
- Additional software components can be integrated into the appliances. A number of companies offer this feature now, with eSoft being a pioneer. Through the use of SoftPaks, customers can add many features to eSoft's appliance. The software additions can be functional (e.g., Web server and mail server) or security (e.g., virus scanning and Web filtering). Nokia, with its Horizon Manager, also allows for the installation of supported third-party applications.
- Firewall functionality will become more common in consumer access devices. NIC cards, SOHO routers, and modems will have embedded security functionality that is provided by leading security vendors.
- Security appliances will remain a fractured market with many niche players because the costs of entry are low and the need is great.
- Check Point firewall/VPN software sales will be driven by the "Secured by Check Point" certified appliances.

## Firewall/VPN Security Appliance Market, 1998 to 2000

In line with the explosive growth of the Internet, a firewall appliance's ability to safely connect customers to the Web caused sales to explode in 2000 to more than five times the 1998 amount. As Table 1 shows, this market jumped from \$182.2 million in 1998 to \$942.8 million in 2000.

**Table 1**  
**Worldwide Firewall/VPN Security Appliance Revenue by Vendor, 1998–2000**

|                                    | Revenue (\$M) |             |              | 2000<br>Share (%) | 1999–2000<br>Growth (%) |
|------------------------------------|---------------|-------------|--------------|-------------------|-------------------------|
|                                    | 1998          | 1999        | 2000         |                   |                         |
| Cisco                              | 130.5         | 225.0       | 425.9        | 45.2              | 89.3                    |
| <b>Nokia</b>                       | <b>12.0</b>   | <b>39.1</b> | <b>208.2</b> | <b>22.1</b>       | <b>432.9</b>            |
| SonicWALL                          | 2.3           | 20.0        | 61.3         | 6.5               | 207.3                   |
| WatchGuard                         | 11.1          | 20.6        | 60.7         | 6.4               | 194.7                   |
| NetScreen                          | 1.8           | 7.6         | 39.0         | 4.1               | 413.2                   |
| Lucent                             | 7.0           | 10.3        | 23.0         | 2.4               | 123.3                   |
| CyberGuard                         | —             | —           | 16.0         | 1.7               | NA                      |
| RadGuard                           | 8.0           | 12.0        | 10.8         | 1.1               | -10.0                   |
| eSoft                              | 2.0           | 2.3         | 7.6          | 0.8               | 237.8                   |
| DICA                               | —             | 1.0         | 7.0          | 0.7               | 600.0                   |
| Red Creek                          | —             | 2.2         | 6.6          | 0.7               | 200.0                   |
| Alcatel                            | 2.5           | 4.5         | 6.5          | 0.7               | 44.4                    |
| Other firewall appliances          | 5.0           | 25.0        | 51.0         | 5.4               | 104.0                   |
| Other consumer firewall appliances | —             | 4.0         | 19.3         | 2.0               | 381.3                   |
| Total                              | 182.2         | 373.5       | 942.8        | 100.0             | 152.5                   |
| Growth (%)                         | NA            | 105.0       | 152.5        |                   |                         |

### Key Assumptions:

- Firewall/VPN security appliances bundle dedicated hardware, firewall software, and security utilities into a single turnkey system.
- Vendor revenue information is derived from publicly or privately available sources.
- Firewall/VPN security appliances sales benefit from value-added resellers (VARs), value-added dealers (VADs), or managed service providers (MSPs).
- Appliances have become more popular for small and medium-sized businesses as more companies move to broadband Internet connections.

### Messages in the Data:

- The firewall/VPN security appliance market has more than doubled each of the last two years.
- All vendors had positive growth rates with the exception of one, which left the market in 2000.
- Cisco led the market in 2000 with a 45% share, followed by Nokia, SonicWALL, WatchGuard, and NetScreen.

Source: IDC, 2001

Cisco, at 45.2% share, led the market in 2000, followed by Nokia at 22.1%, SonicWALL at 6.5%, WatchGuard at 6.4%, and NetScreen at 4.1%. It must be noted that Nokia is at a slight disadvantage in this comparison because it does not receive revenue for the Check Point firewall/VPN software, which is licensed separately and installed by a reseller. If the value of the software were included, it would have a larger share, although Cisco would remain the market leader.

Normally, Cisco's 89% growth rate would be an exceptional feat. In this market, however, it was below the growth of the other major competitors. Nokia led the parade with more than 430% growth. NetScreen also had over 400% growth, and SonicWALL and WatchGuard both had growth rates of approximately 200%. If these competitors are able to maintain growth rates at multiples of Cisco, one of them could lead the market in the coming years.

### Worldwide Forecast for Firewall/VPN Security Appliance Market

IDC expects the worldwide firewall appliance market to grow from \$942.8 million in 2000 to \$4.0 billion in 2005. This translates to a 34% CAGR, as shown in Table 2.

Although the United States will remain the largest worldwide firewall market (with 45% share in 2005), some convergence in shares with Europe will occur. The other three regions (not including the United States) will grow at approximately a 38–39% CAGR.

**Table 2**  
**Worldwide Firewall/VPN Security Appliance Revenue by Region, 2000–2005 (\$M)**

|                | 2000  | 2001    | 2002    | 2003    | 2004    | 2005    | 2000<br>Share (%) | 2000–2005<br>CAGR (%) | 2005<br>Share (%) |
|----------------|-------|---------|---------|---------|---------|---------|-------------------|-----------------------|-------------------|
| United States  | 509.1 | 721.2   | 1,001.7 | 1,286.8 | 1,574.8 | 1,809.4 | 54                | 29                    | 45                |
| Western Europe | 245.1 | 381.8   | 552.0   | 777.4   | 1,005.2 | 1,246.5 | 26                | 38                    | 31                |
| Asia/Pacific   | 103.7 | 169.7   | 236.3   | 321.7   | 402.0   | 522.7   | 11                | 38                    | 13                |
| ROW            | 84.8  | 141.5   | 204.5   | 294.9   | 368.5   | 442.4   | 9                 | 39                    | 11                |
| Worldwide      | 942.8 | 1,414.2 | 1,985.6 | 2,680.6 | 3,350.7 | 4,020.8 | 100               | 34                    | 100               |
| Growth (%)     | NA    | 50      | 40      | 35      | 25      | 20      |                   |                       |                   |

**Key Assumptions:**

- Regional shares of the market will change from 2000 to 2005.
- Growth rates outside the United States will be very similar.

**Messages in the Data:**

- The worldwide firewall/VPN security appliance market will increase at a 39% CAGR.
- The U.S. market should exceed \$1 billion by 2002.
- By 2003, the U.S. portion of the market will be less than 50%.

Source: IDC, 2001

## **Nokia**

Nokia is second in the firewall appliance area with 22% market share and 2000 revenue of \$208.2 million. This revenue excludes licensing fees paid to Check Point Software for its firewall software. Although Nokia is better known for cell phones, Nokia Internet Communications is a prominent worldwide vendor of firewall/VPN security appliances.

Nokia has been the high flyer of this overall market with growth of 330% in 1999 and over 430% in 2000. Although it does not lead in any one price band, it is a consistent competitor in the price bands in which it has offerings.

One area where Nokia was lacking was the SOHO/distributed firewall area. Although they carry small margins, these products are important to a complete enterprise solution because they can tie remote offices and mobile workers to the corporate network. They are also keys to some managed services areas. Nokia filled this product void with the purchase of Ramp Networks.

Ramp's SOHO appliance also used the Check Point software, so this acquisition is a perfect fit for Nokia. The vendor has other appliance offerings for intrusion detection. Although it is hard to believe Nokia can maintain its growth rates, IDC does expect the vendor to remain one of the premier vendors in the security appliance market.

## **Conclusion**

The firewall appliance market has passed the software-based firewall market in total revenue. Although this was expected, the speed at which this was accomplished was surprising. To meet this new competitive threat, software vendors will partner with appliance vendors to ensure that they are not left out of the boom in security appliances. Vendors will continue to enter the market and will migrate among the price bands as they search for a sweet spot.

Additionally, the new black box security devices will include multiple security features in a single platform. The market will be in constant motion as the firewall/VPN functions become embedded into network interface cards, modems, and other board-level components.

Finally, IDC expects that this market will remain extremely strong, but it will not remain stagnant. Something interesting will always be happening.