

WHITE PAPER

Why the Software Industry Is Building Appliance Solutions on Commercially Available Hardware

Sponsored by: Dell Inc.

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IDC OPINION

Enterprise IT managers are under pressure to accomplish more each year with budgets that are being held to little or no growth. Thus, they must find new solutions that are more efficient and more cost-effective. Appliance servers are proving to be cost-effective solutions, particularly for applications such as security, search, video streaming, storage, networking, and others. Appliances provide solutions that are much easier to install, run, and manage than the typical mix-and-match software and hardware solutions. This simplified environment lowers time to solution for new software applications and decreases management costs for IT. The industry has historically built these solutions as a closed environment with custom hardware and software optimized to run together. Hardware was limited to just what was required for the application or applications to run adequately. Software as well was trimmed to fit what was required — sometimes with stripped-down operating systems and applications to maximize performance and limit complexity of the solution. This also meant that appliance vendors had to develop both hardware and software. And the vendors had to have the associated expertise needed to design and support both hardware and software. They also found that they became captive to this custom hardware — stuck with inventory of appliances with obsolete components and increasing supply chain costs related to high failure rates. In a move to offer more holistic solutions to end customers, appliance vendors have started to leverage standard hardware from vendors with robust appliance development programs. Thus, they can reduce time to market and total service costs, freeing up resources to focus on their key strengths, which are typically software applications.

SITUATION OVERVIEW

What Are Appliance Servers?

Appliance servers are network-enabled devices explicitly designed to provide a single dedicated service, such as Web caching, email, file/print, or Internet access, or a predefined suite of services. These are preconfigured systems that run on a variety of functionally optimized and/or streamlined operating systems and chip architectures. Some are accessible, permitting remote access operating system or application upgrades, or both. They are sold as complete-solution units and are designed for ease of deployment and use as well as minimal cost of ownership.

Short History of Appliance Servers

The first appliance servers occurred originally as a way to offload applications such as networking or storage from the host server. While networking and storage systems fit the appliance server definition, because of the size of those segments, they are generally described as systems in those application areas and not appliances. Today, appliance servers are focused on a variety of applications that can benefit from ease of implementation and simplification of operations. Some of the applications include:

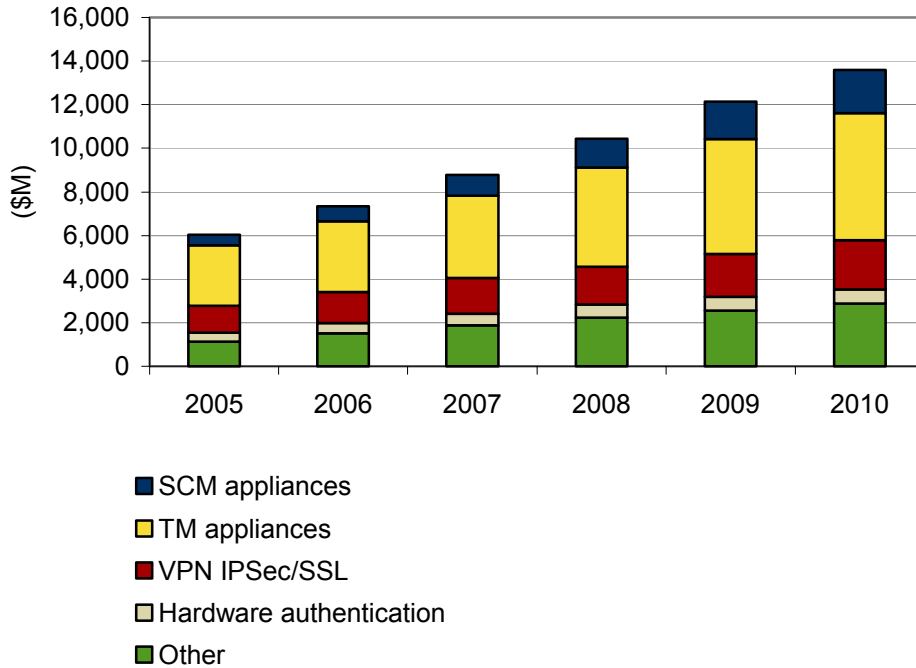
- ☒ Security (Secure Content Management [SCM] Gateway)
- ☒ Threat Management Security
- ☒ Firewall/VPN Security
- ☒ Unified Threat Management Security
- ☒ Network Intrusion Detection and Prevention Security
- ☒ Search
- ☒ Email Archiving
- ☒ Video Streaming
- ☒ Database
- ☒ Storage
- ☒ Networking

The key drivers behind appliances are simplification and cost. Appliance servers are built to simplify the implementation and running of the solution. Appliances provide a solution that is much easier to install, run, and manage than the typical mix-and-match software and hardware solutions. This simplified environment lowers time to solution and costs for end users.

As an example of a major application area, Figure 1 shows the penetration of appliance servers in the security market from 2005 to 2010. They are expected to grow from \$4.9 billion in 2005 to \$10 billion in 2010.

FIGURE 1

Worldwide IT Security Software, Hardware, and Services,
2005–2010



Source: IDC, 2008

Appliance Definitions

- ☒ SCM Appliances: Secure Content Management Appliances
- ☒ TM Appliances: Threat Management Appliances
- ☒ VPN IPsec/SSL: Virtual Private Network Internet Protocol Security/Secure Sockets Layer
- ☒ Hardware Authentication: Identity and Access Management
- ☒ Other: Other security hardware includes XML firewalls, storage security, encryption, and WAN application delivery (formerly called secure content and application delivery).

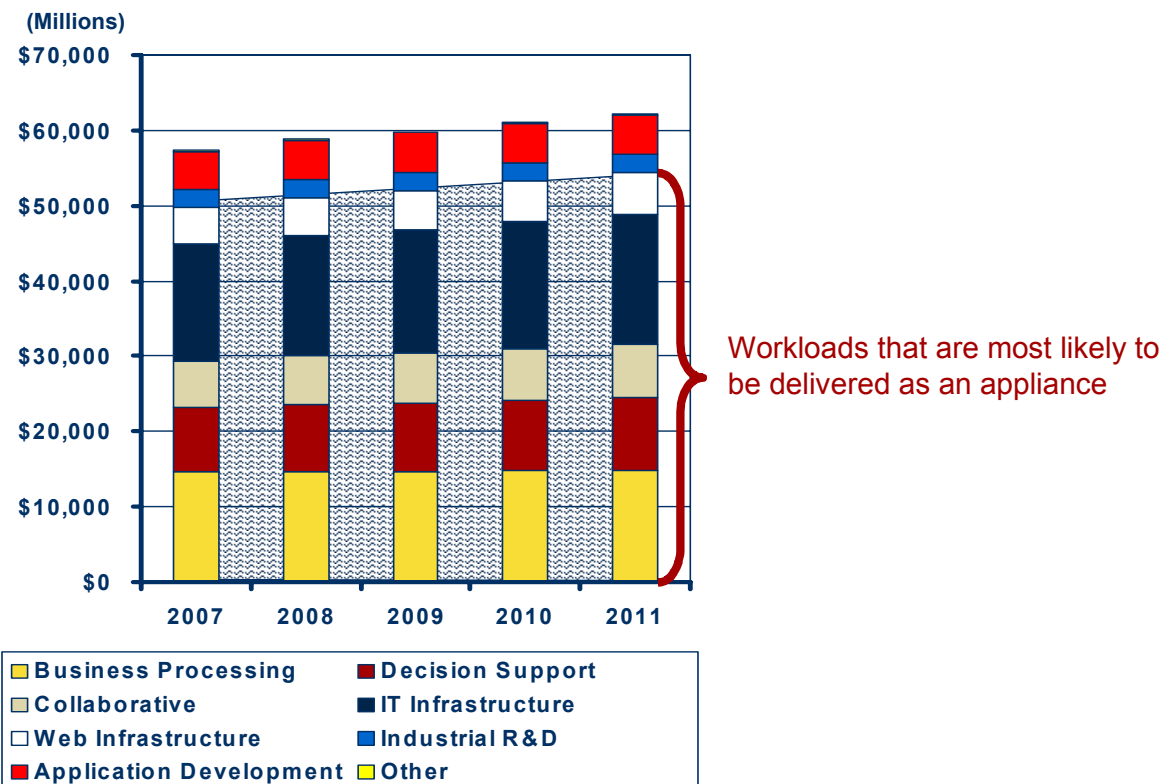
Which Additional Applications Have the Potential to Be Penetrated by Appliance Servers?

IDC has been tracking the server market by end-user use of workloads for over 10 years. This research creates a foundation for a better understanding of server usage by workload/application. Figure 2 illustrates these segments and IDC's projection of their market growth from 2007 to 2011.

The key workload areas using or starting to use appliances are *IT infrastructure*, *Web infrastructure*, *collaborative*, *decision support*, and *business processing*. Most of the major application areas are participating at some level in the appliance market, and the highlighted workload segments represent growth opportunity in the appliance market. These market segments represent approximately 87% of the available market revenue.

FIGURE 2

IDC's Server Workloads 2007 Model



Source: IDC, 2008

Why Appliances?

Software vendors are constantly looking for new and better ways to get their products to market and to new customers to build not only a larger customer base but also a larger market. Appliance servers are a way to reach less sophisticated end users and to better serve more sophisticated customers. Firewall appliances are a good example of an appliance that serves both segments very well. Large shops like the appliances because they are easier to acquire, install, and get into production, plus they cost significantly less than combining software and hardware with their own added tweaks to build solutions. Small shops like the appliances because they can afford them and easily bring them in and get them running properly with end-to-end solution support from the appliance vendor. In both environments, ongoing operational costs are lower as well.

Vendors need to be able to deliver affordable and consumable solutions to end users. End users want more functionality and capability that they can cost-effectively implement into their environments with the least amount of effort. Products that require less support for the end user also require less support for the vendor. A stable platform for an end user is also a stable platform for the vendor. If it's good for both parties, then why aren't there more appliances? First, it's not easy to develop an application that can cover a specific set of needs, and there needs to be enough demand in the market. This process takes time and does not cover all applications. Also, the industry needs to develop a fairly standard way for the application to behave.

The Vendors' Dilemma: Build Versus Buy

In the past few years, many companies have chosen security appliances as a way of protecting their networks and data. Security appliance vendors have responded to changing customer needs for more functionality. As a result, customers have become increasingly dependent on these appliances to protect assets and to enable business transactions. Integrated security appliances address customer concerns regarding cost, manageability, and stability. This cycle of increasing functionality has repeated itself for networking and storage as well as security appliances. As mentioned earlier, the appliance market is beginning to expand further into new application areas beyond networking, storage, and security. IDC expects this scenario to repeat for other appliance application areas as well. This cycle of increasing complexity has led many appliance vendors to look for ways to simplify and better manage their environments. This has led to the question of build versus buy when looking at the hardware component of their solution.

Many early appliances were built on custom processors and had custom operating systems. Today, with the increased performance and proliferation of x86-based hardware, most appliances are being built on x86-based hardware with standard or slightly modified x86-compatible operating systems. This creates a standard programming environment for software programmers and aids in lowering acquisition costs and simplifying support. Standard hardware also creates a stable, simplified deployment platform on which to run mission-critical applications.

Today, general-purpose server platforms such as those offered by Dell can provide ample computing power and can be adapted to many different types of applications with just a little customization.

What Is the Potential Future of Appliances?

Three areas covered by appliance servers today give some insight into the future of appliances. The broad categories are networking, storage, and security. When networking functions were moved from servers to standalone limited function boxes (appliances), they were very focused and had single or very limited capabilities. Over the years, they have increased in functions and number of functions per device. Today, networking devices perform a large array of functions. Storage is similar in that it started with single devices and now ranges from very simple devices to very complex devices such as SAN and NAS. Security started with simple, single-function devices such as firewalls and has grown into many different combinations across the spectrum of security needs. IDC estimates that networking devices and storage devices accounted for \$68 billion and \$29 billion, respectively, in 2006. Security appliances reached \$5.2 billion in 2006 and are forecast to grow to \$10.4 billion in 2011.

Appliances have been successful when:

- They fulfill a need across a broad enough segment of the market to support development and production over an extended period of time.
- They provide a better solution than other alternatives in the market.
- They are cost-effective and ease implementation.
- They simplify operations rather than increase complexity.
- They are able to change with market demands over time, adding needed functions and eliminating useless functions.
- They have adequate support and delivery channels to compete with other solutions and meet end-user requirements.
- Their value in the marketplace is easily demonstrated.

Beyond networking, storage, and security, there is no inherent limit to the application areas that may be developed into appliance solutions. Some of the other application areas include:

- Search
- Email Archiving
- Video Streaming
- Database
- Storage
- Networking
- Business Intelligence
- Picture Archiving and Communication System (PACS)

IDC believes that software companies adopting the appliance model will increasingly look to hardware vendors for total life-cycle support and value-added services to ensure their brand loyalty, keep reverse supply chain costs down, and maintain high levels of seamless customer experience. Over time, as virtualization becomes more broadly adopted, these software companies will also be able to leverage a virtualization layer as a way to reduce time to market and may be able to effect longer solution life cycles, solution stability, and improved user experience as the operating system and application become more platform independent.

FUTURE OUTLOOK

The Dell Value Story

As a manufacturer for and supplier to the computing environment, Dell has developed a comprehensive set of products and support and a fine-tuned set of processes to acquire and distribute products. This robust set of products and knowledge positions Dell to be a very capable partner for appliance vendors looking for a partner in developing a hardware solution. In fact, Dell has more than 10 years of experience helping software companies introduce appliance products. Today, Dell provides hardware and services for a wide range of appliance solutions across a broad range of applications. To better serve this market, Dell has created the Dell OEM Industry Solutions Group, which is completely focused on providing solutions in this space.

Some of the attributes of Dell's OEM Industry Solutions division are focused OEM sales teams, product development and customization services, dedicated engineering support teams, logistics support, worldwide distribution, and many other focused capabilities and services targeted specifically at OEM customers.

Why Partner with Dell?

Examples of the value added and costs saved by using a large multinational OEM are as follows:

- ☒ With a dedicated team focused on OEM sales, Dell is able to bring its scale and expertise to market more quickly and at a lower cost than most other vendors.
- ☒ With a broad product offering of client, server, storage, and networking, Dell has a foundation on which to leverage products that can be used off the shelf or customized to meet a vendor's specific needs. With a history of developing quality high-performance products and a build-to-order model, Dell is well-positioned to serve the appliance vendor community.
- ☒ For most of the applications, leveraging existing Dell platforms with minor modifications is an excellent solution that limits cost and time to market. These factors can be the difference between success and failure. Fully custom products are rarely needed today and increase the hardware and development cost, time to market, and support costs relative to the modifications discussed previously.

- ☒ Dell has a long history of using its supply chain as a business advantage. The company has done this by working with and managing its supply chain to maximize its ability to have products at the right place, at the right time, for the right price and quality necessary for success. Developing, managing, and working with supply chains involve added cost and effort that can be avoided by partnering with a vendor such as Dell.

- ☒ As a large multinational corporation, Dell has the size and scope to service clients anywhere at any time. The company has complemented its broad general service offerings with focused custom offerings for its OEM customers. This covers areas such as:
 - ☐ Custom factory integration of hardware and software in the Dell factory
 - ☐ Value-added logistics — staging, delivery, cabling, custom labels, drop-ship and custom logistics
 - ☐ Custom installation/support/recovery — onsite installation, accident damage service, OEM help desk, asset recovery service, end-of-life management
 - ☐ Global support that includes regulatory services for global shipping, limited hardware warranties, and break-fix/spare parts services

- ☒ Dell offers a range of product development, engineering, and life-cycle management support.

What Do Dell's OEM Customers Say?

IDC spoke with several of Dell's OEM customers to better understand the key reasons they selected commercially available systems and why they chose Dell. Several common areas such as product quality, product consistency, and delivery flexibility were highlighted by everyone. Each of the vendors' appliances sales had grown faster than their initial projections, and Dell's ability to meet the increased and varying demand and supply its customers was seen as extremely valuable.

On the question of moving from custom to commercially available hardware, Daniel Freeman, Director of Product Management at Symantec Corporation, said, "Dell enabled Symantec to focus on our core competency of software development and introduce compelling appliance products for the marketplace with a lower cost structure." He also mentioned that Dell was supplying critical hardware and operational expertise that Symantec did not have in-house.

When asked why his company selected Dell, Adam McGinty, Hardware Director at IronPort Systems, a Cisco business unit, said, "Our customers demand a high-quality, high-performance enterprise platform for our mission-critical security appliances, and Dell delivers on that need. As our hardware requirements have increased over time, Dell has responded to those needs and helped us stay current with the latest technologies. In a strong expansion stage of our business, IronPort is able to leverage Dell's significant manufacturing capacity to provide upside protection for our growing worldwide sales demand."

These customers have found Dell to be a very good partner with quality products and support that complements its capabilities in developing successful appliance server solutions.

CHALLENGES/OPPORTUNITIES

The following sections discuss the key challenges and opportunities for Dell created by its support of the appliance server market as a hardware OEM supplier.

Challenges

- ☒ Dell has an image as the low-cost hardware company selling directly to end users. Dell's partner activities with software companies are not well known. It needs to find ways to continue to "get the message out" and convince software vendors of the value-add of a complete end-to-end appliance program versus "just buying a box."
- ☒ Standard systems are perceived as being too expensive with unneeded capabilities relative to custom appliance offerings. Dell needs to educate the market and vendors on their ability to provide cost-effective, custom solutions where needed and the viability of standard systems to handle many of these applications more than adequately.
- ☒ Dell needs to increase the perception that it is a provider of advanced technology and that it can simplify the appliance solution.
- ☒ Appliances are a frequently misunderstood solution looking for a place to be used. Dell can help educate the market on this potentially valuable alternative to build-your-own solutions by end users, integrators, outsourcers.
- ☒ Dell needs to promote its services advantages as well as the TCO of its model versus the competition.
- ☒ Dell should consider leveraging its considerable retail channel to partner with appliance vendors and facilitate the adoption of appliance solutions among IT buyers.

Opportunities

- ☒ Dell brings a broad set of products and an infrastructure that ISVs can't match using white-box vendors. Dell can help speed time to market and quality of product for appliance vendors. This will increase the company's ability to compete more quickly across a broader market space.
- ☒ Dell's focused team effort should be well-received by software vendors looking to offer a complete solution or to reduce the complexity of managing hardware as a part of the solution.
- ☒ Dell can become the preferred provider as a partner to appliance vendors and to software vendors looking to develop software appliances where they might recommend the complete solution stack including hardware.

- ☒ Appliance vendors and Dell together represent a combination greater than the sum of the parts. The combination of Dell's innovation in hardware capability, worldwide support, and logistics and the application-specific expertise and innovation of the appliance vendors is potentially greater than what either could provide alone.

CONCLUSION

Appliances are continuing their growth in established segments as well as in many emerging segments. Security appliances have offered cost and management benefits and as a result are growing in volume and revenue and are expected to double in volume over the next five years. New applications and new methods of delivery are appearing in the appliance server market. These new applications will continue to accelerate the creation and production of appliances across the server marketplace. Leveraging this growth, as well as Dell's presence across the globe, is a potentially powerful combination for appliance server vendors that want to increase their ability to compete and deliver solutions.

Finding the right solution and figuring out how to educate and sell IT managers on the value of appliances is still a challenge. This will get easier over time because IT managers are looking for better, more cost-effective and efficient solutions. Security vendors have cracked the code on appliance adoption, and now other areas such as business processing and multimedia are creating their own set of appliance solutions.

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