

A Forrester Consulting Thought Leadership Paper Commissioned By HP

# Converged Application Appliances

Delivering Simplicity And Faster Time-To-Application Value

May 2011

FORRESTER

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## Executive Summary

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Simplicity is the most powerful tool. Appliances deliver simplicity and are having an impact on every component of the enterprise application architecture. The need for incrementally scalable application infrastructure components will continue to grow, stoked by relentless increases in transaction and data volumes across the cloud.

Enterprise IT professionals are deploying appliances for data warehousing (DW), business intelligence (BI), database consolidation, messaging, transaction processing, business process management (BPM), middleware, and infrastructure and operations requirements. Organizations are turning to a new market category — converged appliances — to implement all of these solutions without the complex configuration and optimization tasks associated with building it all from scratch.

Converged application appliances address key enterprise imperatives for simplicity, faster time-to-application value, reduced life-cycle costs, modular scalability, and risk mitigation in complex, fast-changing IT environments. Simplicity comes from unified tooling for deployment, administration, and optimization of applications on appliance platforms, which contributes to elastic, modular deployment and to greater IT staff productivity in the management of a broader range of application infrastructure.

In April 2011, HP commissioned Forrester Consulting to evaluate converged application appliances. Then to further explore this trend, Forrester developed a hypothesis that tested the assertion that the enterprise IT professionals require the ability to run multiple applications on unified appliance platforms. In conducting surveys/interviews with 230 IT professionals, Forrester found that these companies achieved the converged-appliance benefits of simplicity, faster time-to-application value, reduced costs, modular scalability, and mitigated IT project risks.

## Key Findings

Forrester's study yielded three key findings:

- **IT project failures have many causes.** Many respondents cited time, budget, staff, and business disruptions for application project failures. In addition, many are frustrated by performance, price, and functional limitations in traditional software-only commercial application solutions.
- **Appliances are mainstream.** Most enterprises now deploy appliances for some application functions and regard appliance-based solutions as priority platforms going forward, due to appliances' ability to address the key enterprise IT pain points discussed above. Most enterprises are strongly considering appliances for new applications. DW, BI, database management systems (DBMS), and messaging are among the top appliance-based applications.
- **Converged appliances are the future.** Most enterprises already buy application solutions from one key vendor or a few trusted incumbent solution providers. Many plan to acquire a more diverse range of applications on appliances and cite greater tool/application integration and lower life-cycle cost as key features they're looking for. They prefer converged appliances that are built to their specific functionality and performance needs. They also prefer vendors who can offer comprehensive lifetime support on all hardware and software components of their appliance solution families.

## Converged Appliances: Transforming Solution Delivery

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Enterprise solution providers have devised many ingenious new approaches for crafting quick-deploy, low-risk, robust, and extensible solutions. Over the past few years, many vendors have ventured well beyond their traditional focus on distinct solution piece parts such as licensed software packages or hardware components.

Increasing numbers of vendors of applications, middleware, and other enterprise solutions have taken a bold step into the world of appliance-based offerings. Even resellers and system integrators have jumped into the appliance market. An appliance integrates software with processors, storage, and other hardware to deliver function-specific, performance-optimized solutions for quick deployment. Essentially, an appliance allows a vendor to pre-equip a shrink-wrapped infrastructure component to fit a particular functional role and support a specific capacity, throughput, and performance profile. It is a function-specific, optimized, scalable infrastructure component that fits a specific role and capacity profile. It converges one or more solution functions into a solution that allows quick time to value. Customers can choose to extend themselves by integrating other functional components and adding capacity as their needs grow.

Converged application appliances are having an impact on every component of the enterprise application architecture. The need for incrementally scalable application infrastructure components will continue to grow, stoked by relentless increases in transaction and data volumes across the cloud. For example, many content-aware network appliances support routing, switching, load balancing, and other functions normally associated with layer-three networking devices and management tools. Likewise, appliances have revolutionized the enterprise data warehousing (EDW) and BI segments and are now the predominant enterprise approach for deploying this functionality.<sup>1</sup>

Today's appliance market encompasses solutions in all of the following solutions segments:

- **Data consolidation appliances.** The appliance is a core building block in many enterprises' archiving, information life-cycle management, data storage, and data replication infrastructures. The modern data center depends on appliances that provide the modularity, scalability, and efficiency of high-performance applications for these key data consolidation functions.
- **Analytic solution appliances.** The appliance has become one of the predominant approaches for deploying data analytics solutions, including analytic databases, EDWs, BI, online analytical processing (OLAP), advanced analytics, and data management. Most EDW vendors now deliver solutions as integrated appliances with all hardware, software, metadata, models, and other components needed to handle such core analytics functions as query, calculation, data loading, and data integration. In addition, vendors in adjacent segments such as search and enterprise content management (ECM) are beginning to favor the appliance go-to-market approach.
- **Robust middleware appliances.** The appliance is the foundation for middleware functions for service-oriented architecture (SOA), enterprise service bus (ESB), enterprise application integration (EAI), complex event processing (CEP), application-layer routing, orchestration, and caching. Many appliances support routing, content switching, load balancing, and other content-aware functions normally associated with layer-three networking devices and management tools. Through application-layer processing, content-aware appliances supplement and extend many of the functions performed by their lower-layer counterparts.

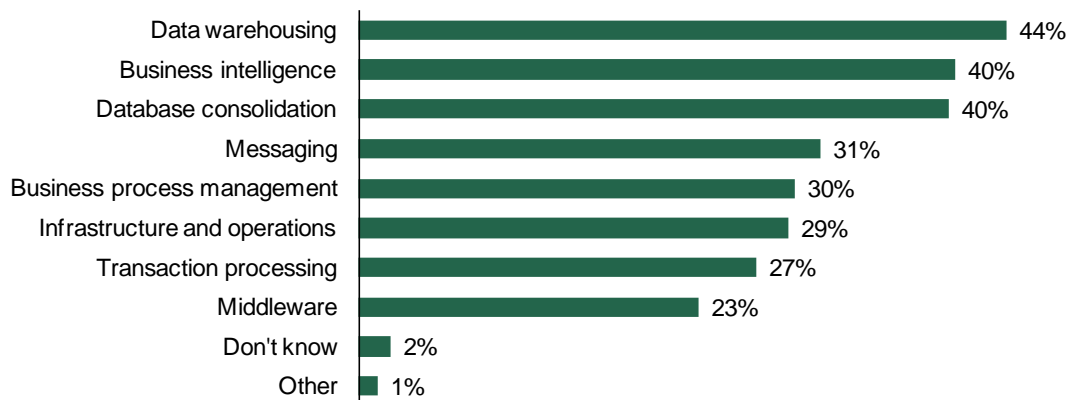
- **Messaging appliances.** The appliance has become a key component of enterprise email and instant messaging backbones. The commoditization of core email functionality has made this a natural for integrated hardware appliances that have the inexorable need for scalability, modularity, and reliability. As more enterprises rely on social messaging platforms, we expect to see commercial appliances emerge that bring enterprise-grade robust functionality to this segment as well.
- **Infrastructure operational appliances.** Applications are the operational foundation of many enterprise data centers, handling critical functions such as compression, encryption, authentication, load balancing, failover, elastic cloud provisioning, performance monitoring, security incident and event management, intrusion detection and prevention, and wide-area network optimization. Through deep content inspection, network appliances can apply a broad range of policies to network traffic.
- **Transaction processing and BPM appliances.** To ensure robust reliability and scalability, more solution vendors are adding appliances to their transactional and process applications families. Increasingly, we are seeing online transactional processing (OLTP) and BPM appliances that integrate tightly with data consolidation, analytics, middleware, messaging, and operations functions on converged application appliances.

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**Figure 1**Applications For Which Enterprises Have Adopted Appliances

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“Please select the specific applications for which your organization currently deploys appliances.”



Base: 230 global IT architecture decision-makers  
(multiple responses accepted)

Source: A commissioned study conducted by Forrester Consulting on behalf of HP, April 2011

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The principal benefits of application appliances are straightforward (see Table 1).

**Table 1**  
 Benefits Of Appliances

Benefit	Discussion
<b>Speed and simplicity provide a powerful value proposition</b>	Enterprise IT professionals need to deploy BI, DW, database consolidation, messaging, transaction processing, BPM, middleware, and infrastructure and operations quickly to address short-fuse requirements. In addition, organizations often need to implement all of this infrastructure without the complex configuration and optimization tasks associated with building it all from scratch. Solution appliances address these imperatives by promising faster time-to-application value, which some call “plug-and-play” simplicity. Unified tooling for deployment, administration, and optimization of all appliance applications and components contributes to low life-cycle costs, as fewer full-time technical staff can manage a wider range of infrastructure.
<b>Enterprise applications thrive on cheap horsepower</b>	Well-run organizations rely on increasingly complex layers of applications and infrastructure, which means that the amount of processing and the volume of data that the underlying platforms handle continue to skyrocket. Consequently, optimized hardware/software platforms are an expanding component of enterprise IT budgets. This trend causes organizations to search for cost-effective alternatives. Tailored solution appliances generally offer low-cost, low-risk, high-performance, and robust application and middleware processing at a fraction of the cost of running equivalent nonoptimized software and workloads on commodity hardware.
<b>Tailored business applications and content customize the appliance for specific industries and processes</b>	What distinguishes a solution appliance from a mere bundling of applications and tools is its depth of preintegrated business content that is tailored for particular vertical and/or horizontal use cases. Often, the industry refers to the sum total of such application-specific business content as a “solution accelerator.” <sup>2</sup>
<b>Professional services help customize appliances to enterprise requirements</b>	Vendors that offer solution appliances generally offer consulting — either from their own staff or through professional services or consulting partners — to help customers tailor and tweak the embedded business applications and content to specific requirements. In that way, a solution appliance often bundles the services of subject-matter experts to help customers integrate it all into their business process, information management, and application infrastructures at every level.

Source: Forrester Research, Inc.

Many enterprises prefer to source appliances, as they do other application platforms, from a core group of strategic providers of comprehensive offerings. Already, a third of users buy most of their enterprise applications in the appliance form factor (see Figure 2).

**Figure 2**  
 Enterprise Application Solution Sourcing Preferences



Base: 230 global IT architecture decision-makers

Source: A commissioned study conducted by Forrester Consulting on behalf of HP, April 2011

Due to the enterprise requirement for comprehensive single-sourcing of diverse solution appliances, Forrester believes there is a strong potential market for converged application appliances. As noted above, a converged application appliance is capable of supporting solutions in all key areas outlined above. It also comes with comprehensive enterprise-grade support services, delivery options, and deployment flexibility. However, in the current state of the market for converged application appliances, few vendors offer the full range of support services. Nevertheless, some vendors are rapidly addressing that requirement through a comprehensive program that provides the layers support (see Table 2). Enterprises evaluating the new generation of converged application appliances should use the following criteria to sort through the field of providers and offerings.

**Table 2**  
 Criteria For Evaluating Converged Application Appliances

Criterion	Discussion
<b>Converged delivery and support services</b>	Does the vendor provide a “single throat to choke” for support, service, and maintenance? It should provide comprehensive enterprise consulting and professional services for appliance planning, deployment, integration, optimization, customization, and management. Through these services, it provides 24x7

Criterion	Discussion
	availability and support with quick-turnaround on-site response on issues. It should provide this support through a flexible program of direct and indirect channels.
<b>Converged deployment profiles</b>	Has the vendor built the appliances for flexible deployment within the end user IT organization, at an outsourcing/cloud provider, by the solution vendor(s), or all of these in a hybrid configuration? The appliances should be deployable as any of the following solution platforms: fast-track solution appliances (can be assembled at the factory); workload-specific appliances (preinstalled, preassembled hardware and software solutions, ready to run in very short time and optimized for specific workloads with integrated support); or private-cloud appliances (virtualization layer, on-demand capacity, self-service provisioning and usage metering, and common platform across multiple database loads). Once deployed, all appliances should work together as a single system with a shared, virtualized, dynamic, elastic, self-provisioning, self-optimizing resource pool of servers, storage, memory, and network interconnect.
<b>Converged application functional components</b>	Can you configure an appliance with one or more application functional components? An application functional component is a repeatable, modular, extensible hardware/firmware component that supports a specific type of enterprise functionality, including (but not limited to) any or all of the following: BI, DW, database consolidation, messaging, transaction processing, BPM, middleware, and infrastructure and operations. An application functional component should be configurable as a single-SKU appliance or appliance blade for optimized deployment.
<b>Converged management tools</b>	Can you manage an appliance cost-effectively using unified system and solution management consoles and tools? The vendor should provide integrated tooling for setup, deployment, administration, upgrading, and tuning of all appliance components, including hardware, firmware, and software. Unified management tooling is important for low life-cycle cost of ownership and high administrator productivity.
<b>Converged interoperability frameworks</b>	Can you build, optimize, and extend the appliance in accordance with a documented reference architecture? This architecture provides a framework, cookbook, blueprint, or instructions with prescriptive configurations and component guidance. Reference architectures are important for customer, vendor, and system integrator customization of converged application appliances.

Source: Forrester Research, Inc.

## Enterprises Look For Solution Simplicity, Scalability, And Quick Time-To-Application Value

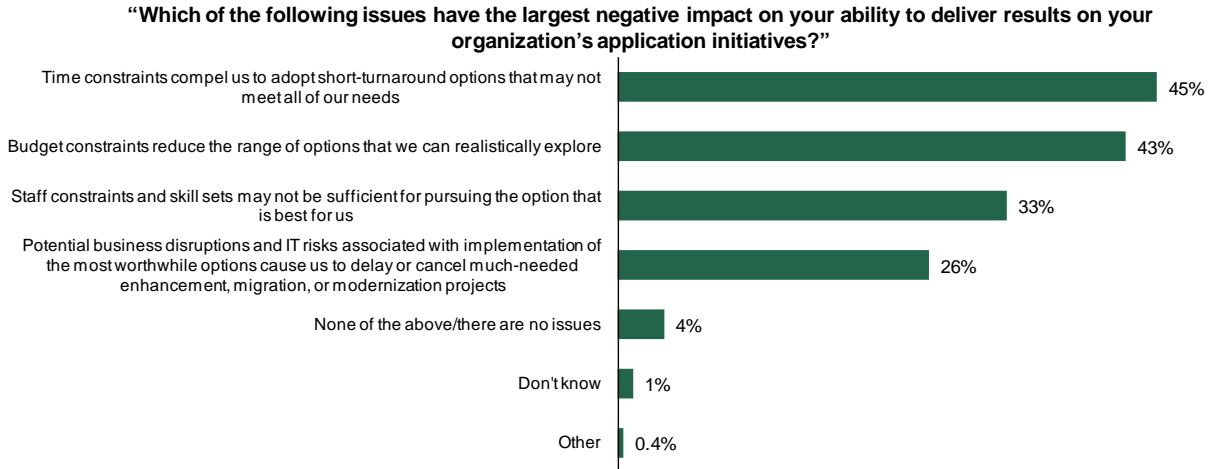
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Forrester's research shows that enterprises everywhere can benefit from the simplicity, scalability, and time-to-application value of converged application appliances.

For organizations of any size, delivering complex business applications can be a challenge. And it's only getting more difficult, costly, time-consuming, and risky. Success in enterprise application, middleware, and integration projects is often hit or miss. Although there are many factors to explain project failures, IT professionals often cite many or all of the following pain points with the traditional commercial solutions — in other words, those that rely on “some assembly required” hardware/software integration — on which these projects rely:

- **Traditional solutions are too expensive and labor-intensive to deliver full value.** For many organizations, IT budgets will remain tight, even as the economy improves. Forty-three percent of enterprise IT professionals say that budget constraints will continue to restrict the range of commercial solutions they can realistically explore (see Figure 3). Forty percent say that the price of traditional solutions generally is too high (see Figure 4). Thirty-five percent say that commercial solutions that meet their specific requirements are too expensive, 33% say that they require too much expensive customization to meet their needs, and 27% say that they are too resource-intensive to manage, administer, and maintain (see Figure 5).
- **Traditional solutions are too complex and time-consuming to deliver fast value.** For many enterprises, new IT projects are growing ferociously complex while the IT organization races to deliver on its existing commitments. Many IT organizations are severely short-staffed, do not have all required skill sets, or lack the time necessary to deliver full value on application projects. Thirty-three percent of IT personnel cite staff and skill constraints, and 45% cite time constraints as keeping them from successfully delivering on application projects.
- **Traditional solutions are too inflexible, feature-limited, and capacity-constrained to deliver flexible value.** For many IT professionals, vendor-proprietary lock-in is an acute pain point. Many IT professionals dread committing to solutions that lack the features, extensibility, customizability, and modularity needed to support their evolving needs. Thirty-six percent say that the functionality of traditional solutions generally is too limited. Seventeen percent say that available solutions fail to meet their specific needs, while 25% say that available solutions are too inflexible to expand and evolve incrementally.
- **Traditional solutions are too slow, risky, and unreliable to deliver consistent value.** Robust performance, availability, reliability, and security are the key requirements for any enterprise infrastructure. Fifty-three percent say that traditional solutions are generally deficient in any or all of these areas. Clearly, there is a pent-up demand for new solutions, approaches, and/or tools that deliver improvements in these mission-critical operational requirements.

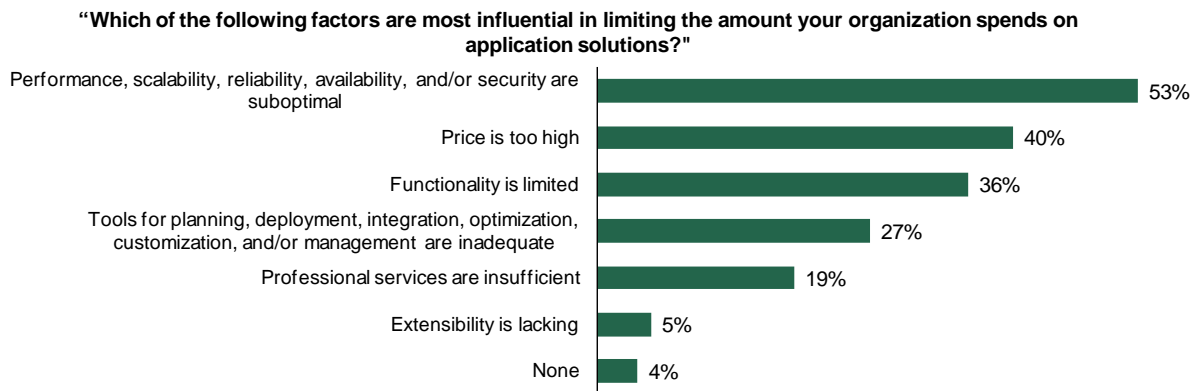
**Figure 3**  
Issues Affecting Enterprise Ability To Deliver Results On Application Initiatives



Base: 230 global IT architecture decision-makers  
(multiple responses accepted)

Source: A commissioned study conducted by Forrester Consulting on behalf of HP, April 2011

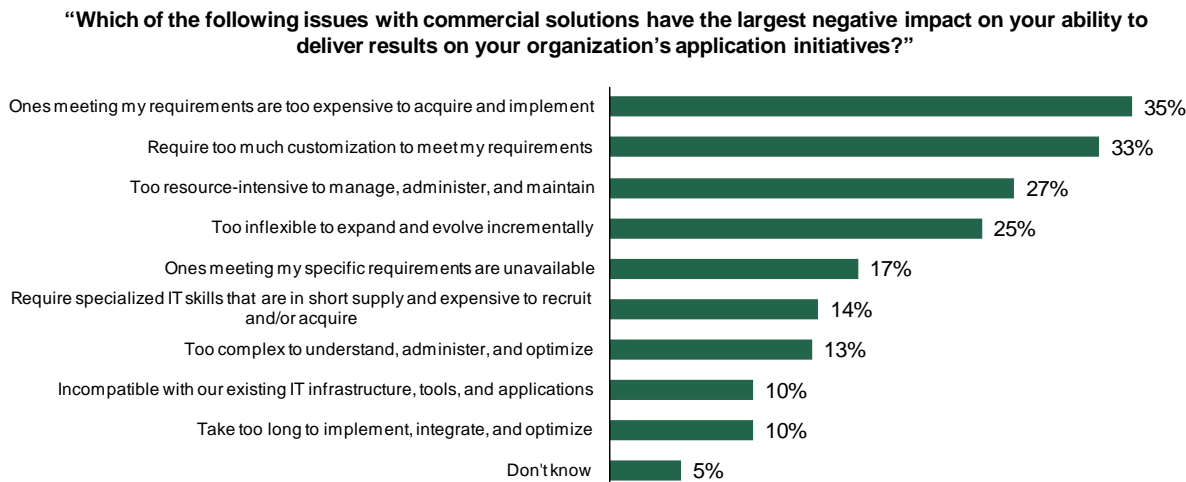
**Figure 4**  
Factors That Limit Enterprise Spending On Commercial Application Solutions



Base: 230 global IT architecture decision-makers  
(multiple responses accepted)

Source: A commissioned study conducted by Forrester Consulting on behalf of HP, April 2011

**Figure 5**  
Issues With Commercial Application Solutions That Increase Project Risk



Base: 230 global IT architecture decision-makers  
(multiple responses accepted)

Source: A commissioned study conducted by Forrester Consulting on behalf of HP, April 2011

## Clear Need For Appliance-Based Application Convergence

Converged application appliances deliver simplicity, performance, and robust application functionality. Forrester’s survey has found that enterprises of all sizes across all geographies now prefer to acquire most new application solutions on converged, robust, expandable appliances.

- Thirty-five percent of enterprise customers now deploy appliances for some application functions (see Figure 6).
- Appliance-based solutions are a priority for many going forward (see Figure 7). Fifty percent of respondents say that appliances are a promising approach that they are strongly considering for implementation of functionality.
- Most IT professionals (76%) are considering appliances for new applications (see Figure 8).
- DW (44%), BI (40%), DBMS (40%), and messaging (31%) remain the priority applications for appliance-based deployment (see Figure 9).
- Many plan to acquire a more diverse range of applications on function-specific appliances (see Figure 10).
- Many cite greater tool/app integration and lower cost as key features of converged appliances (see Figure 11).
- Many plan on implementing a broader range of applications on converged appliances (see Figure 12).

- Enterprise IT places priority (61% of respondents) on appliances that are factory-built to handle specific workloads (see Figure 13).
- Forty-nine percent of enterprise IT customers prefer to customize their appliances by selecting the specific hardware and software options that the appliance vendor will optimize for their requirements (see Figure 14).

**Figure 6**

Appliances Have Become Principal Enterprise Application Platforms

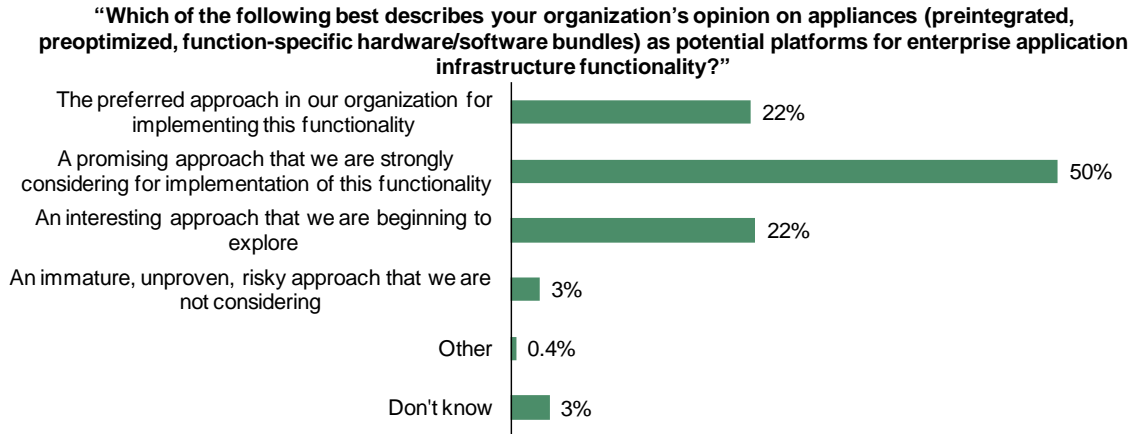


Base: 230 global IT architecture decision-makers

Source: A commissioned study conducted by Forrester Consulting on behalf of HP, April 2011

**Figure 7**  
Appliances Are A Key Priority In Enterprise IT Buying Plans

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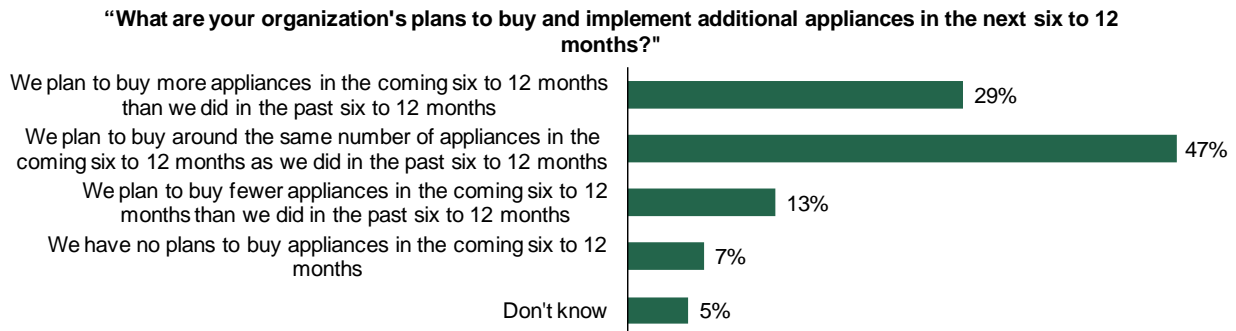
Base: 230 global IT architecture decision-makers  
(percentages do not total 100 because of rounding)

Source: A commissioned study conducted by Forrester Consulting on behalf of HP, April 2011

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**Figure 8**  
Appliances Are The Foundation For Enterprise Applications

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Base: 230 global IT architecture decision-makers

Source: A commissioned study conducted by Forrester Consulting on behalf of HP, April 2011

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**Figure 9**  
DW, BI, DBMS, And Messaging Are Principal Appliance Applications



Base: 230 global IT architecture decision-makers  
(multiple responses accepted)

Source: A commissioned study conducted by Forrester Consulting on behalf of HP, April 2011

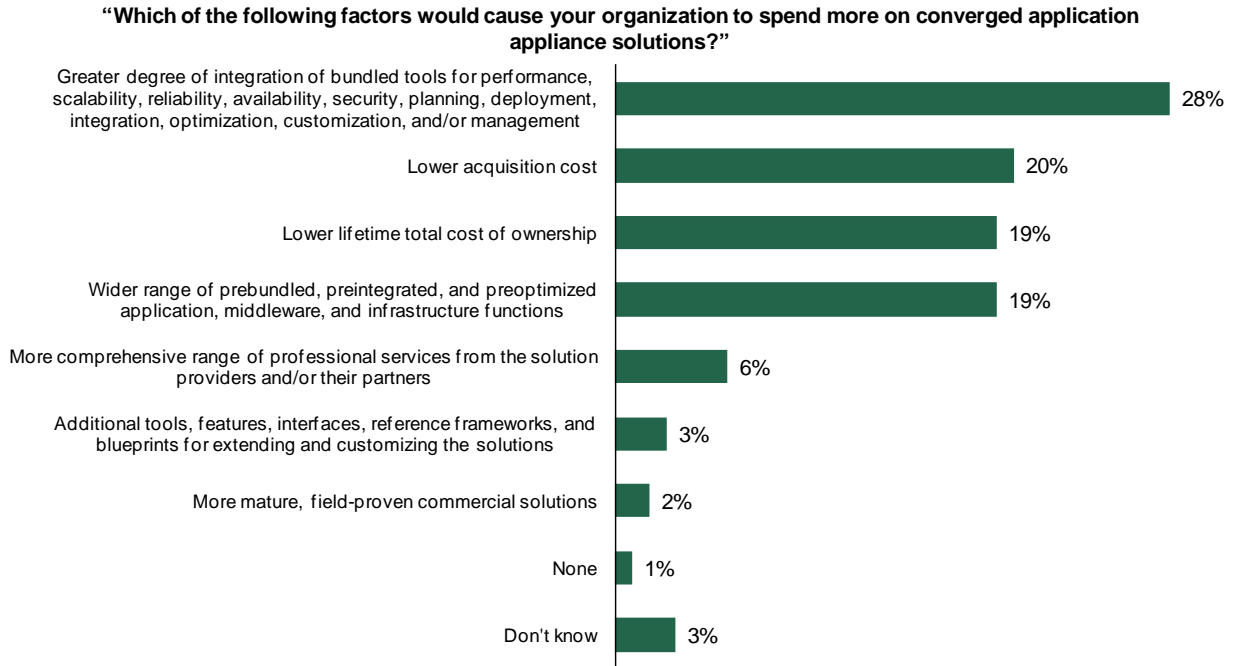
**Figure 10**  
Enterprises Planning To Add New Function-Specific Application Appliances



Base: 230 global IT architecture decision-makers  
(multiple responses accepted)

Source: A commissioned study conducted by Forrester Consulting on behalf of HP, April 2011

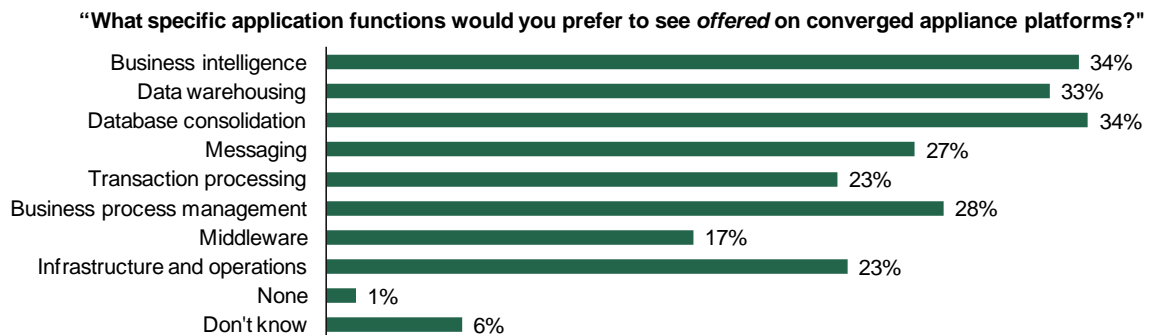
**Figure 11**  
 Enterprises Demanding Tighter Tool And Application Integration On Appliances



Base: 230 global IT architecture decision-makers  
 (top three responses accepted)

Source: A commissioned study conducted by Forrester Consulting on behalf of HP, April 2011

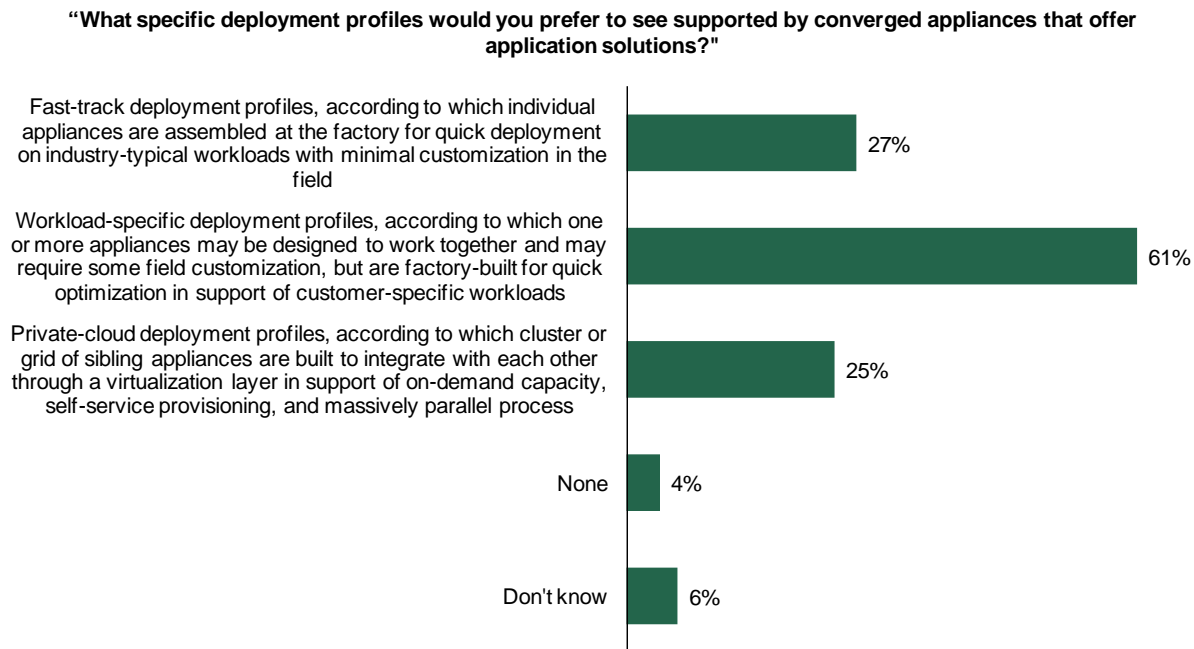
**Figure 12**  
 Enterprises Demanding More Applications On Converged Appliance Platforms



Base: 230 global IT architecture decision-makers  
 (multiple responses accepted)

Source: A commissioned study conducted by Forrester Consulting on behalf of HP, April 2011

**Figure 13**  
Enterprise IT Requires Appliances Optimized For Their Specific Workloads

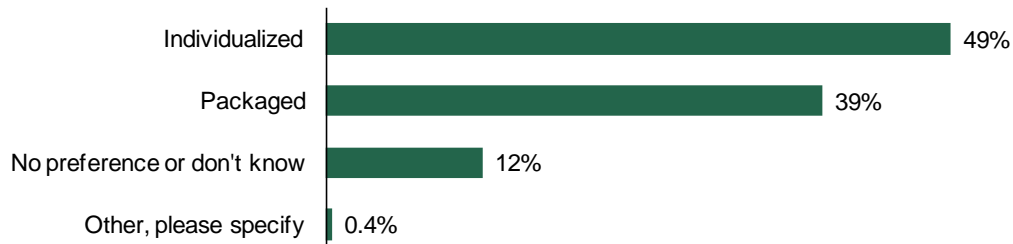


Base: 230 global IT architecture decision-makers  
(multiple responses accepted)

Source: A commissioned study conducted by Forrester Consulting on behalf of HP, April 2011

**Figure 14**  
Enterprises Want To Customize Appliance Hardware And Software To Their Needs

**“Do you prefer converged application appliances that are packaged for you or offerings where you are able to choose individual elements and combine them yourself?”**



Base: 230 global IT architecture decision-makers  
(percentages do not total 100 because of rounding)

Source: A commissioned study conducted by Forrester Consulting on behalf of HP, April 2011

## KEY RECOMMENDATIONS

Enterprises should begin right away to factor the new generation of converged application appliances into their analytics, messaging, and other IT infrastructure and operations strategies. Converged appliances are here to stay, delivering faster time-to-application value at various points in enterprise distributed infrastructures. Use the following guidelines to sort through the growing field of appliance-based solutions — from your EDW vendors and their partners — and to deploy these offerings effectively:

- **Consider your specific application solution requirements.** Many organizations have already deployed appliances for DW and BI, but many are also evaluating appliances to process growing transaction volumes at the application server, intranet perimeter, network backbone, enterprise service bus, and cloud. Be clear on your specific application requirements as you go deeper into this fast-evolving market.
- **Review your current application solution vendor's appliance-based offerings.** Your current vendor of DW, BI, OLTP, messaging, and other application solutions may not provide appliance-based offerings or may not have robust, high-performance, or low-cost appliance offerings. Look closely into the maturity of vendors' appliance products and into the ease, cost, and complexity of any migrations that might be necessary to incorporate those offerings in your application infrastructure.
- **Determine whether the vendor offers converged solutions for your specific needs.** Many solution vendors have begun to shift their packaging toward the appliance model. Some application vendors have more comprehensive application, middleware, and tool portfolios and a wider range of partnerships with complementary vendors. Make sure your vendor is committed to packaging appliance-based solutions that address your specific mix of applications and workloads.
- **Determine whether converged appliances integrate with your IT systems and tools.** As you integrate converged appliances in your data center, you will see the value of solutions that integrate out-of-the-box with your investments in network, systems, service, and application management tools. Give priority to application appliances that your data center staff can deploy, optimize, administer, and monitor with current automated tools. Also make sure that IT staff can deploy and scale appliance-based infrastructure seamlessly within your evolving private-cloud environment.
- **Assess whether the appliance vendor offers comprehensive support.** Your vendor of converged application appliances should be a strategic IT partner. Make sure you choose somebody that provides a "single throat to choke" for support, service, and maintenance. Commit to a vendor only if it can provide comprehensive enterprise consulting and professional services for appliance planning, deployment, integration, optimization, customization, and management. Through these services, your vendor should be able to ensure 24x7 availability and support with quick-turnaround on-site response on issues.

## Appendix A: Methodology

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In this study, Forrester conducted an online survey of global IT architecture decision-makers organizations in Japan, China, Germany, Spain, the UK, France, and the US to evaluate the potential applications and benefits to organizations that adopt any of the new generation of converged application appliances. Survey participants included decision-makers in roles of enterprise architects, messaging professionals, BI/DW professionals, DBMS professionals, OLTP professionals, business process professionals, middleware professionals, and infrastructure and operations professionals. For this survey, Forrester defined a converged application appliance as any solution that meets all of the following requirements:

- Preintegrates and optimizes software with processors, storage, memory, network interconnects, and other hardware components within one or more modular appliance servers, racks, or chassis.
- Enables integrated deployment of application, middleware, and/or infrastructure functions as one or more modular solution-block components within appliances.
- Supports fast provisioning, implementation, scaling, and optimization of appliances and solution blocks within individual appliances and/or two or more appliances deployed in parallel within a cluster, grid, or cloud.

Respondents were offered online survey credits as well as a relevant Forrester report as a thank you for time spent on the survey. The study was conducted in April 2011.

## Appendix B: Supplemental Material

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### Related Forrester Research

“The Forrester Wave™: Enterprise Data Warehousing Platforms, Q1 2011,” Forrester Research, Inc., February 10, 2011

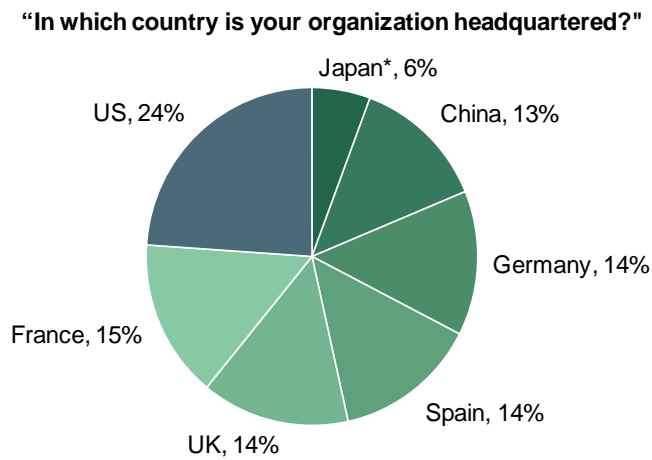
“Appliance Power: Deliver Advanced Analytics Into Customer-Facing Processes,” Forrester Research, Inc., February 9, 2011

## Appendix C: Demographics/Data

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**Figure 15**  
Respondents By Geography

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Base: 230 global IT architecture decision-makers

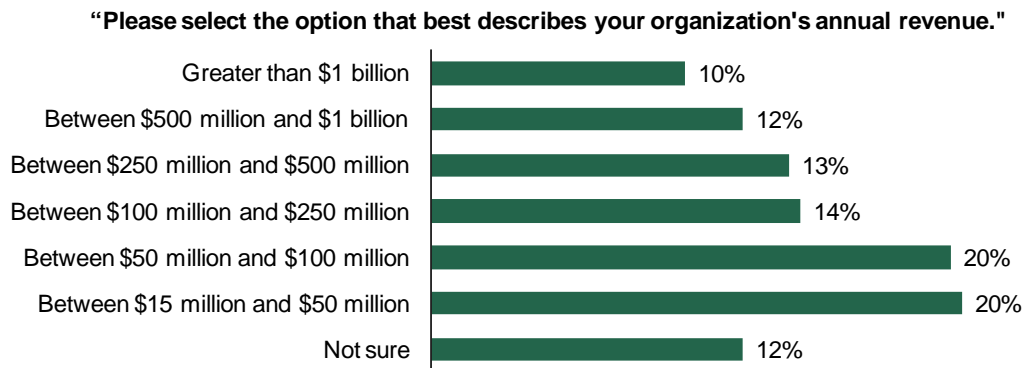
Source: A commissioned study conducted by Forrester Consulting on behalf of HP, April 2011

\*Based on the natural disasters in Japan, we spread out the quota among the other countries.

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**Figure 16**  
Respondents By Revenue

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Base: 230 global IT architecture decision-makers

Source: A commissioned study conducted by Forrester Consulting, April 2011

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## Appendix D: Endnotes

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<sup>1</sup> Source: “The Forrester Wave™: Enterprise Data Warehousing Platforms, Q1 2011,” Forrester Research, Inc., February 10, 2011.

<sup>2</sup> Source: “Appliance Power: Deliver Advanced Analytics Into Customer-Facing Processes,” Forrester Research, Inc., February 9, 2011.