



## I D C T E C H N O L O G Y S P O T L I G H T

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# Preparing the Datacenter for a New Age of Computing

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Adapted from *Worldwide Virtualization Services 2012–2016 Forecast* by Rob Brothers, Gard Little, Brad Nisbet, and Rohit Mehra, IDC #236816

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*Aligning IT with the goals of the business is top of mind for executives who need to understand how business plans, infrastructure, and people come together to impact business process. Convergence and virtualization are some of the most talked about technologies for helping align business goals because of their ability to create a dynamic infrastructure that can quickly adapt to business needs and that has the ability to improve the efficiency (leading to potential cost savings) of the datacenter environment. Organizations are modernizing their environments to help streamline business processes, and these initiatives include:*

- *Server/storage optimization and consolidation*
- *Converged infrastructure*
- *Private or hybrid cloud*
- *Business resiliency*

*However, planning, implementing, supporting, optimizing, and managing these environments can often be difficult tasks that require specific knowledge. As a result, enterprise organizations are increasingly seeking the help and expertise of external service providers in the areas of IT consulting and assessment services, systems and storage integration, optimization and operations, networking consulting and integration, hardware and software support and deployment services, and IT education and training. According to IDC, the market for virtualization services will grow from \$20.1 billion in 2011 to \$31.9 billion in 2016, for a five-year compound annual growth rate (CAGR) of 9.6%. This Technology Spotlight discusses the service trends that are helping enterprises streamline and optimize their business processes and highlights the role that HP plays in providing a variety of assessment and performance services to accelerate the utilization of these new technologies.*

### **Business-Enabling Technology Initiatives**

Over the past several years, enterprise IT convergence and virtualization have become some of the most discussed and implemented technologies because of their ability to reduce costs, improve the utilization of IT assets, and increase the speed at which IT can respond to the needs of the business. The ability to provision assets quickly and efficiently enables enterprises to address market needs more proactively. Most enterprises don't have the internal talent to properly optimize and manage their datacenter assets to take full advantage of the benefits that can be realized from highly efficient datacenters. An IDC survey shows how enterprise customers are turning to external sources to help plan and optimize their infrastructures to reap the benefits of a modernized datacenter. IDC has identified some of the most common strategies to help businesses streamline operations to create an alignment between enterprise needs and IT. They include the following:



- **Converged infrastructure.** Converged systems combine hardware and software products to create platforms designed to deliver private cloud infrastructure, including cloud infrastructure-as-a-service (IaaS), platform-as-a-service (PaaS), and software-as-a-service (SaaS) capabilities for the enterprise and service provider datacenter of the future.
- **Private cloud.** Private cloud as a use case for converged and virtual environments has grown significantly in the past few years. A private IT cloud is a datacenter environment that enables internal IT resources to be dynamically pooled and shared across multiple physical and virtual computing resources via the use of automated management tools in much the same way that public cloud services share computing resources across multiple customer accounts. IDC believes that the prominent use of external services for private cloud is driven by the complexity of its deployment and assessment of existing systems and applications. Cloud often involves a dramatic shift in the underlying architecture of the datacenter, where converged infrastructure will increasingly play an important role. This shift often requires specific expertise that an enterprise is not likely to possess internally. This optimization of resources is achieved by implementing one or more of the following:
  - **Dynamic resource scheduling.** This is the automatic and real-time rebalancing of workloads to ensure service levels.
  - **Resource pooling.** This involves taking many smaller resources and creating one large logical resource. A resource pool generally consists of multiple server, storage, and networking resources that are seen as a single infrastructure target for workloads.
  - **Tiering.** This includes using multiple hypervisors and different feature levels (high availability, etc.) to create multiple execution tiers with different service levels, functionality, and costs.
- **Server and storage optimization.** Most workloads today run at low utilization. By grouping several of these workloads on optimized storage and on fewer servers, each in its own virtual machine (VM), enterprises can achieve higher and more efficient utilization rates while still allocating sufficient resources to execute each workload. This in turn helps reduce datacenter footprint and operational costs. Consolidation ratios will vary depending on the workload and the hardware resources of the target server. The typical average ratio is 6:1 or higher. Enterprises will need to plan this piece carefully and look to best practices to avoid issues such as virtual sprawl and overallocation of resources.
- **Desktop virtualization.** Desktop virtualization uses x86 virtual machine software (VMS) to decouple a client software environment (including operating system, application, and data) from its host hardware while isolating it from other software running aboard that device. These decoupled software environments can be hosted on either x86 servers or x86 PCs. There are two deployment scenarios for desktop virtualization: centralized virtual desktops (also known as VDI) and distributed virtual desktops. Not all environments are created equally when looking at VDI; applications and network bandwidth need to be carefully planned to help create a pleasant end-user experience with VDI. Hence the process of carefully evaluating and optimizing datacenter assets is crucial to the proper implementation of VDI.
- **Business continuity/resiliency.** This use case is composed of three separate subuse cases: high availability, fault tolerance, and disaster recovery. All of these use cases are related because they center on the deployment of technology for the purposes of maintaining or improving the availability of workloads (applications and databases) running on virtual machines. Availability and clustering software (ACS) may be used in conjunction with or leveraged by virtualization management to achieve business continuity.

These initiatives can help organizations achieve a streamlined infrastructure that will increase speed to market with products, provide ubiquitous access to real-time data, and enable the ability to develop on-the-fly test and development environments to improve other facets of business processes. IDC recommends utilizing experienced resources with best practices and firsthand knowledge of implementing, optimizing, and managing such technologies.

## **Benefits of New Technologies**

Emerging technologies have enabled enterprise users to access, use, and manage information from anywhere, anytime; and they and other users are taking full advantage. Users have access to the Internet through smart mobile devices, tablets, laptops, PCs, and other systems. This unprecedented access to information has brought new challenges to enterprise IT departments. They not only must understand and keep abreast of advancements in emerging technologies but also must be prepared to help their organizations develop policies and procedures related to the use of these technologies, including security and privacy protections, and to identify and invest in revenue opportunities and realize other benefits.

The challenge for CIOs, datacenter managers, and their organizations is first to understand the risks in technologies that, by definition, are continuing to evolve. Then, organizations can develop the plans, policies, and systems to manage these risks; train staff in the use of these technologies (or hire outside vendors); and access the financial resources and make decisions about how to capitalize on the revenue-generating opportunities in emerging technologies. Converged and referenced architecture (a virtual environment that is constructed using best-of-breed or existing assets) is the dominant technology in today's datacenter. This architecture, by its very nature, needs services and tools that can provide a more holistic look across servers, storage, networking, and software. Hence this type of architecture lends itself to being more easily supported, but the downside may be vendor lock-in.

IDC has conducted surveys to identify how organizations are using external service providers to help provide the properly planned, implemented, optimized, and managed infrastructure to best accomplish their business initiatives. According to the most recent IDC survey, enterprises utilized an external service provider to help plan and implement a converged infrastructure 84% of the time. This makes good business sense. Utilizing resources with deep domain expertise and the best practices to quickly determine the best course of action for an organization will enable the IT department to quickly help solve business problems.

## **Product Profile**

HP Lifecycle Event Services are designed to be utilized throughout the entire IT environment. This includes not only the traditional datacenter environment but also all of the distributed IT that most organizations rely on. While much of the activity for converged infrastructure and virtualization occurs in the datacenter, neglecting the impact of these technologies on the distributed environment could lead to suboptimal performance. In a converged infrastructure, HP views virtualization as one of the key elements of a well-executed IT optimization strategy to enable key business initiatives. HP employs a best-of-breed and methodical approach to providing services and optimizing the performance of the environment. HP brings together four portfolios under the umbrella of HP Lifecycle Event Services: Packaged Consulting services for planning, Design Integration & Deployment Services to implement infrastructure, Technical Services to operate and optimize IT infrastructure, and Education Services to train in-house IT staff.

HP offers a number of technical and improvement services that are designed specifically to operate, optimize, and improve converged infrastructures. Technology is changing at a torrid pace, and companies are trying to get ahead of the curve. As a result, customers need to constantly modify their in-house IT skills, which is not only time and budget consuming but also impossible at times.

HP Technical Services offer a comprehensive portfolio of services to manage operations of these complex environments, such as virtualization and cloud, while helping keep the IT environment up to date and thus reducing the risk of unplanned downtime through services such as assessments and revision management.

HP provides support services for many aspects of the IT landscape through its comprehensive offerings for hardware, software, and network infrastructure technology. Services such as server, storage, and software operations address operational aspects of the building blocks of IT infrastructure.

HP also provides a number of assessment and optimization services designed to improve the management and operation of complex datacenter environments — the types of environments that need specialized performance optimization to take full advantage of the new technology. HP offers a comprehensive set of services to evaluate datacenter needs and to recommend steps for constant improvement, addressing people, process, and technology concerns related to the delivery of critical IT services.

Customers receive direct access to trained, highly skilled HP experts to address specific intermittent projects or ongoing annuity activities to improve operational maintenance and efficiency.

To address the performance issues of converged infrastructures, customers need to assess systems comprehensively by looking at how virtualized storage, servers, and networks, respectively, impact each other in an environment. HP offers organizations the following technical services that involve onsite interviews, data collection, analysis, and other services by HP or partner personnel:

### ***ITSM Assessment and Improvement Services***

These services involve an analysis of service management and operational procedures associated with a customer's virtualized environment. The services, which identify challenges and offer recommendations for improvement, are designed to do the following:

- Help an organization improve its understanding of its strengths, weaknesses, and risks in terms of the ability to deliver reliable service
- Provide a written report identifying and prioritizing areas where IT infrastructure can be strengthened to improve service quality
- Assist with increasing an organization's agility to manage and react to business change
- Provide a reference point for subsequent service improvement initiatives
- Help align an organization's IT environment and business needs

### ***HP Performance Analysis Service for HP Disk Arrays***

This service includes data collection, detailed I/O analysis, and enhanced recommendations for a customer's HP disk arrays. A report delivered with this service details disk array performance and is followed by a briefing session with HP personnel. Key service benefits include:

- Improve disk array performance, stability, and availability by identifying potential problems and understanding the possible solutions that may help avoid them
- Establish a baseline as a reference for future performance analysis and change management
- Receive help making informed, proactive decisions on the HP disk array system's capacity planning and avoid unnecessary and costly reactive upgrades

### ***HP 3PAR Health Check Service***

This service includes a scorecard assessment of system configuration, capacity, supportability, and interoperability for an HP 3PAR Storage system. The results of the assessment are designed to enable customers to improve the utilization of their storage systems and proactively identify issues before they impact performance. Additional 3PAR services include:

- 3PAR Storage Assessment
- 3PAR Rebalance Service
- HP Storage Thin Volume Conversion Service
- HP Assessment Services for SANs

For servers and operating systems, HP offers the following services:

### ***HP BladeSystem Health Check***

HP BladeSystem Health Check Service provides a holistic, high-level technical assessment of a BladeSystem infrastructure. Data gathered is compared with industry best practices to proactively identify risk factors and provide recommendations for risk mitigation. As a result, an action plan can be established to mitigate risk, resulting in improved availability, performance, and supportability. Ideally, the BladeSystem Health Check should be repeated on a routine basis to measure progress and identify new opportunities for improvement.

Key service benefits include the following:

- Help improve or maintain system uptime
- Raise awareness of recommended best practices and provide compliance guidance
- Highlight areas of elevated risk
- Provide recommendations to mitigate identified risks

### ***HP BladeSystem Firmware and Driver Update Process Review***

This workshop reviews a customer's firmware and driver update strategy and offers best practices and configuration advice in the use of SIM and Version Control in support of that strategy.

Key service benefits include:

- Help customers improve the performance and utilization of HP blade tools to support the current or desired customer strategy and practices for firmware and driver management update
- Help IT organizations manage and maintain their IT infrastructures to be more cost effective and change ready

Along with operational and improvement recommendations, HP offers resource and technical assistance that enables businesses to leverage HP resources for operational activities, releasing their internal resources to address other business-related strategic tasks or to supplement skills where and when needed.

HP offers a unique, flexible, and customizable way to purchase technical services. Customers can buy service credits up front and consume services from an extensive services menu whenever they need, or they can buy services on a per-event basis as and when required.

## Challenges

IDC believes that IT organizations will look to vendors to provide best practices and engineering talent to help manage and optimize their complex infrastructures. Customers face an ongoing struggle to coordinate efforts across heterogeneous IT landscapes, and many are looking for a provider to just "make it work." HP has consistently demonstrated success when working with hardware and software vendors to manage deliverables that span multiple vendors and technologies, and IDC expects that HP will utilize that advantage to expand those capabilities going forward. IDC believes these services will begin to blend in with the ongoing management and support of IT environments, and HP should watch for customer needs to continue to change as these services become table stakes over time. IDC believes that to be successful in this market, HP must continue to build capabilities as a trusted advisor for technical services.

## Conclusion

The emerging reality of today's "always on" global marketplace is that people and resources now exist in an increasingly integrated web of mobility, connectivity, and interactivity. As virtualization enhances the ability to provide cloud computing, advanced mobility, and new forms of complex analytics over the next several years, virtualized enterprise IT environments will continue to grow in sophistication. Managing operations in this complex, heterogeneous environment will continue to present significant challenges for resource-strapped IT departments. In addition, talent shortages in areas such as big data and cloud computing are already apparent, further taxing the ability of internal IT to meet complex business demands.

IDC believes that as a result, CIOs and IT managers will increasingly look to vendors with sophisticated and well-optioned support frameworks and service packages for help in building and maintaining their enterprise IT infrastructure through all phases of the IT life cycle. These services will cover the range of components in a virtualized environment. If HP can address the challenges highlighted in this paper, IDC believes the company has a significant opportunity for success.

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