

Virtualization Redefined: Create a Software-Defined Infrastructure for the New Business Era

TRANSFORM VIRTUALIZATION ECONOMICS INNOVATE INSPIRE RELIABLE TRUSTED INFORMATION
AGENT TECHNOLOGY SERVICES VALUE INSIGHT OPPORTUNITY SOCIAL INFRASTRUCTURE
OVER COMPETITIVE ADVANTAGE ACCELERATE STRUCTURED UNSTRUCTURED REAL-TIME

Today's IT organizations have to take on two overarching challenges with a budget that barely stretches around one. On the one hand, they need to keep existing in-house enterprise applications, and the infrastructure that supports them, running efficiently inside the data center. This means managing massive data growth and meeting users' demand for 24/7 availability. On the other hand, IT needs to support innovation. This is more strategic as it requires the introduction and continual development of new end-user applications, delivered to globally distributed customers through a variety of access platforms.

Over the past 10 years, virtualization has been proven to help with the first challenge by driving up utilization, optimizing performance and streamlining the provisioning of compute and storage resources. But with the dual challenges of ensuring operational efficiency and enabling agile value creation, is this enough to propel the business forward in the next decade?

The Disruptive Business Landscape Demands IT Agility

In this era of hyper-accelerated market disruption and global competition, businesses must innovate or face the very real prospect of extinction. The pace of innovation is fueling a flurry of new application types delivered on a

variety of access platforms. This new world requires cloud services, which operate at Web-scale and can be rolled out very quickly. Taking a year or more to introduce a new customer experience is no longer an option.

For all its importance, however, innovation is not the only requirement for business success. IT still spends the lion's share of its time and budget running revenue-producing systems: IT must manage the complex layers of software designed to handle skyrocketing data volumes and deliver a predictable user experience with 24/7 data availability.

Faced with these challenges, it might seem an impossible task to carve out an IT budget that supports both innovation and better infrastructure

management. This is where the software-defined data center comes into the picture.

The software-defined data center promises to tackle both sets of business IT imperatives and bridge the worlds of traditional and Web-scale IT. It extends virtualization concepts such as abstraction, pooling, and automation to all the data center's resources to enable the delivery of IT as a service (ITaaS). This, in turn, results in tremendous enhancements in operational efficiency in the data center. It frees the IT team and the IT budget for innovation and new initiatives surrounding the cloud, mobility, social networking and analytics.

Virtualization Evolves to Address 10 Years of Application Changes

Applications have evolved significantly in the last 10 years, forcing us to look very differently at the way we build infrastructure.

Decision-support applications used to run on structured databases in RISC-based midrange systems that

had to be scaled up as resource requirements grew. Today, they run on a virtualized x86 architecture that scales out as new analytics applications are introduced.

We used to access data in two ways: block and file. Now, we use object storage for long-term retention of data, and application layers consume data services through Web-enabled application programming interfaces (APIs).

Businesses used to have a data center providing a number of fixed sites or branches with access to their data and applications. Now the data and applications sit in multiple data centers across metropolitan and continental boundaries, supports traditional and Web-scale workloads and can be accessed by a mix of business users and consumers.

When storage virtualization was first introduced by Hitachi Data Systems, businesses used it to improve resource utilization and the performance of critical applications. Nowadays, they use it to provide automated and intelligent data

placement for all types of applications, enabling continuous service delivery through a variety of access paths.

Building Abstraction, Access and Automation Into IT Environments

Today, virtualization is evolving towards the goal of creating a software-defined data center. As each system is virtualized, operations across the application life cycle can be automated to ensure that service-level requirements are met. Common provisioning, management, monitoring and protection capabilities can be extended across the IT environment irrespective of the compute, networking or storage systems that are in place.

To effectively leverage the software-defined infrastructure paradigm, three things have to be built into the IT environment: abstraction, access and automation (see Figure 1).

Abstraction: Pooling and converging more of the enterprise's infrastructure allows IT to focus on delivering application and data services rather

than fixating on the physical components like networking, compute and storage devices.

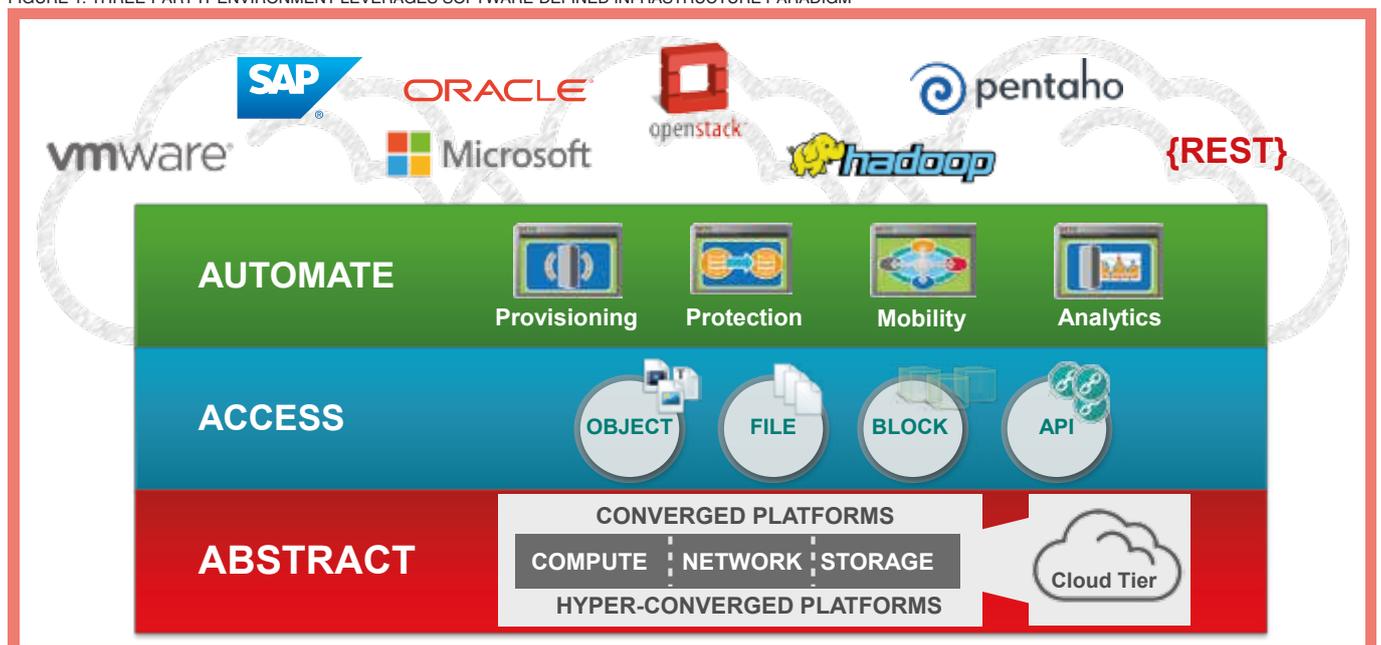
Access: The virtualized infrastructure must support block and file access for traditional applications. However, it also needs to mobilize information beyond the data center through object stores for Web-scale applications that are critical for building out information clouds. APIs have to be built to handle this and simplify access to data and functionality.

Automation: Automated data services have to be integrated across all layers of the infrastructure to create a smart, agile and application-aware services that can deliver the benefits of a software-defined data center (such as simplifying the IT environment or achieving a measurable return on total IT investment).

Business Agility Becomes a Reality With Storage Virtualization

At Hitachi Data Systems, storage virtualization has evolved along these lines to help enterprises reap the

FIGURE 1. THREE-PART IT ENVIRONMENT LEVERAGES SOFTWARE-DEFINED INFRASTRUCTURE PARADIGM



benefits of a software-defined infrastructure. We provide the foundation for abstracting the IT infrastructure and also the platform for delivering easy access to data, applications and infrastructure resources. We have a unified set of tools to simplify storage management and deliver visibility into all storage assets within the IT environment. Going forward, we will continue to enhance our automation capabilities in the areas of provisioning, mobility and analytics.

Provisioning: Expect to see tools incorporating service templates for rolling out application environments quickly. There will also be tools to automate provisioning and service-level compliance, and deliver around-the-clock data protection with improvements in data deduplication and backup.

Mobility: As users interact with applications in multiple locations and across different devices, it will become critical to mobilize data closer to where it is being consumed. To address this, intelligent gateways will emerge to extend and ingest data efficiently while ensuring compliance with data management policies. There will also be self-service file-sync-and-share applications that deliver data into the hands of the mobile workforce while applying appropriate protection levels.

Analytics: As real-time analytics become embedded in the customer experience, we will be rolling out integrated platforms for automating the setup and management of new data analytics environments, accelerating the time and reducing effort to activate big data scenarios.

Storage Virtualization Is More Important Than Ever

As we enter a new era of business innovation, the evolution of storage virtualization into the software-defined data center will enable enterprises to solve many of the key IT challenges that they face and hold the key to business success. At Hitachi Data Systems, we are evolving and expanding our portfolio to help businesses take full advantage of these developments.

Our goal is not only to help enterprises improve infrastructure efficiency, but to enable innovation through a tightly integrated agile infrastructure. We are doing this by providing enterprises with key capabilities in abstraction, data access and automation across the entire portfolio, which will enable them to transform the vision of a software-defined data center into a reality.



Adrian De Luca
Chief Technology Officer
Asia Pacific
Hitachi Data Systems

Adrian De Luca brings over 20 years of experience in information technology to Hitachi Data Systems. In his role as Chief Technology Officer for the region, he works closely with Hitachi customers and partners to develop innovative technology opportunities for the Asia Pacific market. As a member of the Global Office of Technology and Planning, he helps develop strategies and R&D opportunities to drive the continued delivery of innovative solutions. Adrian works actively with industry bodies such as the Storage Networking Industry Association (SNIA) and is an advisor on the National Standing Committee for Cloud Computing (NSCCC) for the Australian Government. He is also a popular keynote speaker at major industry events across the Asia Pacific, and has written a number of business discussion papers. He is also the co-author of “*Storage Virtualization for Dummies*”. Adrian’s blog is at <https://community.hds.com/community/innovation-center/blog/authors/adeluca>

Regional Contact Information