

The Best Way to Build a Cloud

HP CloudSystem Matrix and HP 3PAR Utility Storage provide solid, flexible foundation



TRANSFORM Your Data Center

HP 3PAR Utility Storage delivers 100% of the simplicity, agility and efficiency demanded by the virtual data center and cloud computing environments.

IN MOST COMPANIES, the needs of the business are outpacing what IT can deliver. Technology is the foundation and enabler of business innovation, but developing and implementing new solutions is resource-intensive. Integrating and optimizing islands of IT is complex, time-consuming and costly.

Now, with the advent of cloud-based infrastructure and business process, IT is both a builder and a broker, simultaneously needing to build internal private clouds, consume services from the public cloud, and manage all of these services. Virtually every company is interested in transforming its infrastructure and applications to take advantage of the cloud and a more flexible, efficient IT infrastructure.

In order to boost efficiency in an increasingly shared, converged or cloud environment, the roles and responsibilities of server and storage administrators must be clearly understood and coordinated. Server administrators manage and deploy the server infrastructure and the applications that run on them, whereas storage administrators maintain the overall health of storage and manage the consumption and protection of data. Many solutions fail to take this into account: While both are IT administrators, their roles are different with few opportunities for interaction, and it is often difficult for them to collaborate on a joint task. It is important to pick a private cloud solution that addresses both roles.

// **HP CLOUDSYSTEM MATRIX**

When venturing into the cloud, many enterprises prefer to build private clouds first. Often, executives

feel more comfortable deploying sensitive services and applications within environments and infrastructures they own, because they are likely to retain the most control. However, implementing a private cloud can be complex and daunting. HP's solution, CloudSystem Matrix, helps you build a turnkey private cloud environment to deliver the benefits of the cloud to your business users.

You can get started today with HP CloudSystem Matrix, a ready-to-go solution built on HP Converged Infrastructure and HP Cloud Service Automation for Matrix. Matrix is a standards-based solution that encompasses the leading virtualization technologies,



[Watch this video to learn more about HP CloudSystem Matrix solution.](#)

SPOTLIGHT: HP CONVERGED INFRASTRUCTURE

HP Converged Infrastructure (CI) helps overcome the rigidity and high cost created by IT sprawl. The HP CI architectural blueprint eliminates silos and integrates technologies into shared pools of interoperable resources, all managed from a common management platform and all based on standards and customer choice. The result is a data center that delivers a new level of simplicity, integration and automation. More resources can be applied to innovation to deliver your desired business outcomes, including faster time-to-revenue, lower acquisition and implementation costs, flexibility to respond to business changes, and lower risk.



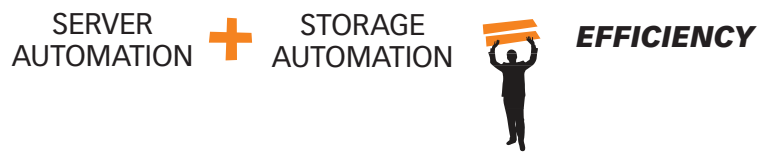
operating systems, applications and lifecycle management, and is a great platform for consolidation, private cloud and Infrastructure-as-a-Service.

With key capabilities including a tool for designing standardized services, a self-service portal for IT end users, automated storage provisioning, and shared resource pools that can be dynamically scaled, Matrix enables you to move quickly to a private cloud model. Once Matrix is up and running, users can provision services in minutes.

HP CloudSystem Matrix uses industry-standard, modular components, but is far more than simply a collection of components. In a Converged Infrastructure platform, Matrix integrates proven technologies from across the HP enterprise portfolio to provide value in today's demanding data-center environments.

**// BETTER TOGETHER:
HP CLOUDSYSTEM MATRIX WITH
HP 3PAR UTILITY STORAGE**

FIGURE 1: HP CloudSystem Matrix with 3PAR



- >> **Save Time** Minutes, not hours or days to provision a service
- >> **Be Efficient** Provision and grow resources on demand
- >> **Stay Secure** Role based access
- >> **Avoid Errors** SPM discovers and verifies configurations
- >> **Provision Services** Includes Storage and SAN Fabric

A key requirement of an optimized cloud environment is an integrated infrastructure to improve your organization's agility and speed of execution. HP has developed a new storage provisioning technology for CloudSystem Matrix, called Storage Provisioning Manager (SPM). SPM helps streamline server and storage setup while eliminating time-consuming legacy processes to deliver new IT services in your organization. HP has enabled SPM when HP CloudSystem Matrix is used with 3PAR, P6000 EVA or P9500 storage arrays (see Figure 1).

When you deploy HP CloudSystem Matrix with 3PAR as the back-end storage, you can quickly and easily roll out Infrastructure as a Service (IaaS) based on templates from a single management console, as well as a host of other benefits.

Unlike many solutions, the SPM capability within Matrix with 3PAR provides for the distinctly different roles of server and storage administrators. SPM with HP CloudSystem Matrix provides a single solution for both types of administrators (see Figure 2).

Though it can be used separately, HP 3PAR is designed to provide the agility, performance and scalability optimal for HP CloudSystem products. HP 3PAR storage uses thin technologies guaranteed to save at least 50 percent on a storage refresh by dramatically reducing overall capacity requirements and keeping utilization rates high (see box, Get Thin Guarantee).

HP CloudSystem Matrix with 3PAR storage used with SPM provides a best-of-breed converged infrastructure platform for the cloud. SPM enables the creation of a storage catalog in Matrix that allows the storage administrator to establish a set of secure, optimized storage resources that adhere to governance policies. The resources can then be provisioned and utilized by the server administrators with minimal interaction. This saves time, improves storage efficiency and maintains a secure, available environment, all within a repeatable, reliable process.

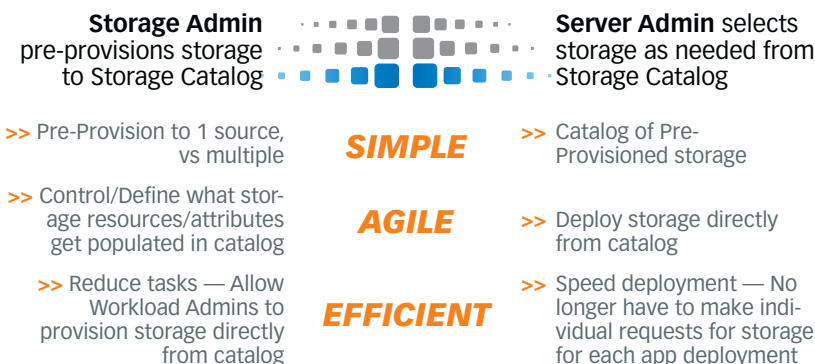
THE HP GET THIN GUARANTEE



With the HP Get Thin Guarantee, deploy HP 3PAR Utility Storage as part of your next technology refresh and you are guaranteed to halve the amount of capacity required to store your data. Join the hundreds of customers that have cut disk capacity, SAN costs, floor space requirements, and energy expenses with a storage technology refresh, featuring next-generation HP 3PAR Storage Systems with Thin Built In™.

[Learn more](#) about the **HP Get Thin Guarantee** program

**FIGURE 2: Storage Provisioning Manager:
Fewer Steps, More Control**



- >> Pre-Provision to 1 source, vs multiple
 - >> Control/Define what storage resources/attributes get populated in catalog
 - >> Reduce tasks — Allow Workload Admins to provision storage directly from catalog
- SIMPLE**
- AGILE**
- EFFICIENT**
- >> Catalog of Pre-Provisioned storage
 - >> Deploy storage directly from catalog
 - >> Speed deployment — No longer have to make individual requests for storage for each app deployment

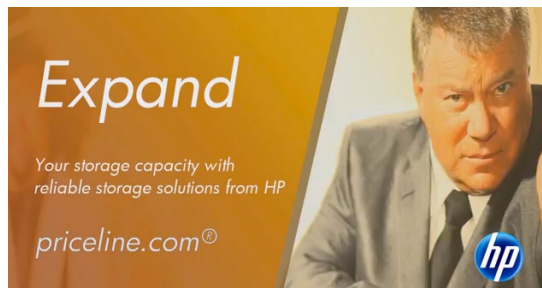


FOR MORE INFORMATION

www.hp.com/go/cloudsystem

www.hp.com/go/matrix

www.hp.com/go/3PAR



[See how Priceline.com saves 50% in administration time with HP 3PAR storage.](#)

The HP Storage Provisioning Manager allows the storage administrator to publish a catalog of storage volumes that can be consumed as needed. This further streamlines the provisioning process by allowing the storage administrator to create the volumes and do SAN zoning in advance. This, in

turn, enables automatic fulfillment of server administrator storage requests, rather than the storage administrator having to intervene manually each time provisioning requires storage. SPM finds the right resources to deliver the right service—automatically. Cloud Maps, also included, help automate the deployment and delivery of applications in a matter of minutes instead of days.

Customers buy CloudSystem Matrix because they want the advantages of an integrated cloud solution with the benefits of automated provisioning and simplified storage management. It helps you maximize efficiency, stay secure and avoid errors. Thanks to the SPM catalog, storage administrators can provision services seamlessly based on credentials and available resources, meeting server administrators' requests in a timely, efficient manner. HP CloudSystem Matrix with 3PAR is the right foundation for cloud.

Suggested Reading

These additional resources include business white papers and previously published articles from IDG Enterprise.



Survey: CIOs Are Putting the Cloud First

Traditional IT models are taking a backseat to the cloud when it comes to new technology investments.

By Lauren Brousell, CIO

Cloud computing is practically mainstream, according to the latest CIO Economic Impact survey of 291 IT leaders. In fact, nearly half (48 percent) of the CIOs surveyed said they have adopted the government's Cloud First policy, which requires agencies to evaluate cloud options first, over traditional IT approaches, before making any new IT investments.

Cloud budgets reflect this shift, with 48 percent of IT leaders putting more money toward cloud, up from 44 percent in November 2010 and 38 percent in August 2010. More than half (53 percent) of CIOs said they expect to increase their IT budgets overall, up 5 percent from a year ago.

[Read the full article](#)



Private clouds hold a wide lead over public clouds among IT pros polled

Biggest roadblocks to cloud adoption are security and cost, CDW poll says

By Tim Greene, Network World

Public clouds have a way to go if they want to be the top choice of businesses looking to put resources in a shared, centralized computing environment, according to a poll of 1,200 IT professionals.

Just 7% of respondents say they'd most likely use public cloud services while 47% say they would make a private cloud their first pick, according to the CDW 2011 Cloud Computing Tracking Poll.

Overall, security concern was the major deterrent to adoption with 41% of respondents indicating it's a worry. But nearly as many, 40%, say cost is a concern as well. Coming in a distant third with 26% was privacy and compliance concerns.

[Read the full article](#)



Suggested Reading



Thin provisioning optimizes storage utilization and reduces costs

While provisioning all the capacity of an external disk to a given application, known as full provisioning, ensures the app has plenty of growth potential, it results in poor utilization rates, a costly problem that can be addressed with thin provisioning technology.

By Galvin Chang, Network World

While provisioning all the capacity of an external disk to a given application, known as full provisioning, ensures the app has plenty of growth potential, it results in poor utilization rates, a costly problem that can be addressed with thin provisioning technology.

Research shows that storage utilization rates achieved by most companies is 40% or lower. That means buyers are acquiring more capacity than they really need and the very existence of that extra capacity requires more space and cooling.

Furthermore, the traditional method of provisioning leads to increased management workloads due to the fact that the extra but unused capacity still needs to be monitored and managed. If applications reach their capacity limits and IT managers have to re-provision capacity, complex management tasks can be involved. More management requires more human resources, further driving up costs associated with storage management.

Additionally, if an application is taken offline to re-provision capacity, it is then unable to serve business needs and can lead to revenue loss.

Thin provisioning provides a way to address these limitations. By automatically allocating system capacity to applications as needed, thin provisioning technology can help achieve up to 90% storage utilization, while at the same time significantly reducing power consumption.

Thin provisioning allows users to allocate a large amount of virtual capacity for an application, regardless of the physical capacity actually available. At

initial setup, thin provisioning does not physically allocate capacity to the prescribed data volume, and the actual space is used only when data writes occur.

This on-demand method for capacity allocation not only optimizes storage utilization, but also greatly simplifies capacity planning and management. In order to help users easily monitor capacity utilization, storage systems automatically issue notifications when the total capacity utilization is reaching the threshold set by the user. If users wish to expand capacity, they can do so non-disruptively.

With traditional provisioning, it is difficult to move data across logical partitions in a storage architecture. If thin provisioning is applied, storage capacity from different logical partitions can be consolidated, enabling it to be dynamically allocated. From the opposite perspective, this means that the storage controller can move data dynamically across logical partitions based on how resources are designed to function.

Furthermore, thin provisioning opens the door for other advances in storage design, including automated storage tiering. Storage tiering involves grouping data into different categories and assigning these categories to different types of storage media in order to optimize storage utilization.

Automated tiering ensures applications have access to the performance levels they need. High-performance applications can be assigned to high-performance tiers featuring drives such as SSDs or SAS, while applications requiring less performance can be assigned to lower tiers featuring low-performance drives such as SATA.

This ensures that no storage resources are wasted and that applications can function properly. In addition, this technology helps automatically migrate data based on usage patterns. If data in higher tiers has not been used for an extended period of time, it is demoted to lower tiers. Conversely, if data in lower tiers is frequently accessed, it is promoted to higher tiers. Storage efficiency can be greatly improved with this technology.

[Read the full article](#) 