

Brochure

# Build and manage your IaaS

HP CloudSystem Matrix



## Get started with infrastructure as a service for private/hybrid cloud deployment today

As a part of the HP Converged Cloud architecture, HP CloudSystem provides clients with a simplified, integrated platform for building and managing cloud services in private, public, and hybrid environments. HP CloudSystem Matrix, the entry level integrated platform as part of the CloudSystem portfolio, delivers infrastructure as a service (IaaS) for private and hybrid cloud environments, allowing users to provision infrastructure in minutes for both physical and virtual environments. This offering includes a self-service infrastructure portal for quick auto-provisioning, along with built-in infrastructure lifecycle management to optimize infrastructure, manage the resource pools, and help ensure uptime. CloudSystem Matrix is integrated by design with broad support of heterogeneous environments, including VMware, Microsoft® Hyper-V, and KVM through OpenStack as an enabling technology that manages and provisions virtual machines to the Red Hat KVM hosts. Matrix also provides additional capacity analysis, extends geographic reach, and leverages specialized infrastructure service offerings with out-of-the-box cloud bursting to a variety of public cloud providers including HP Cloud Services. HP CloudSystem Matrix is optimized for HP ProLiant and HP Integrity Servers as well as HP Storage and HP Networking, but also supports third-party x86 servers, networking, and storage. For more information, visit [hp.com/go/matrixoe](http://hp.com/go/matrixoe).

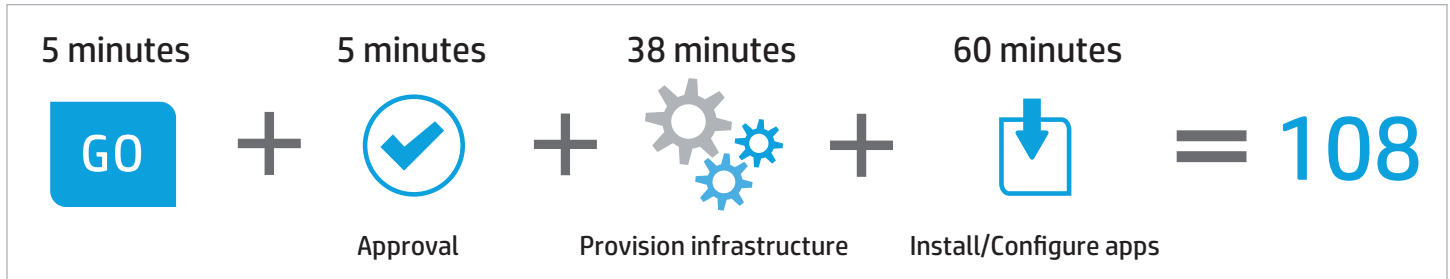
### Invest in productivity and innovation

If your company is like most companies, you have been adding servers, storage, and networking devices to keep pace with your business demands. You could be spending upwards of 70 percent of your IT budget on operations and maintenance, which means you are spending 30 percent or less on innovation that is critical to growing your business. You don't have to be captive to unmanageable IT sprawl. Solutions are available today to help you realign traditional technology silos into virtual pools shared by any application and flexible enough to change as business needs evolve.

By moving beyond a product-centric approach towards a service-centric private and hybrid cloud model, you can simplify your IT infrastructure. You can build a virtualized, highly automated environment with pools of shared resources that can be leveraged on demand. In addition, you can safely burst workloads to local and public cloud resources when you need additional computational headroom.

Whether you are planning to take your first step towards building an IaaS environment, or are ready to build your private/hybrid cloud to deliver IaaS, consider the CloudSystem Matrix. Investing now means immediate savings and the opportunity to channel your spending toward innovation. CloudSystem Matrix can be easily upgraded to HP CloudSystem Enterprise for provisioning and management through a single services view with advanced enterprise-grade application to infrastructure lifecycle management or to HP CloudSystem Service Provider for service aggregation for public or hosted private clouds. For more information on HP CloudSystem offerings, visit [hp.com/go/cloudsystem](http://hp.com/go/cloudsystem).

**108 minutes for one administrator to automatically provision infrastructure for an e-shopping application that, with traditional infrastructure, took 33 days**



## Provision infrastructure and applications in minutes for physical and virtual environments

### Speed matters in dynamic environments

CloudSystem Matrix simplifies the deployment of applications and business services by delivering IT capacity through requests from a self-service portal. The highly automated Matrix Operating Environment (OE) instantly adjusts to dynamic business demands by enabling rapid design, provisioning, and modification of a complex infrastructure in minutes. It then optimizes IT capacity across physical and virtual environments while helping to provide a predictable quality of service. As the e-shopping application example below shows, you can provision a complex multi-tier application infrastructure in less than two hours.<sup>1</sup> And CloudSystem Matrix lets you scale to up to 12,000 virtual machines with a federated CMS.

HP CloudSystem Matrix includes built-in multi-tenancy, which allows data center resources to be securely shared between many different tenants or organizations—Matrix provides each organization with its own dedicated environment.

Cloud bursting is a feature of HP CloudSystem that enables enterprises to broker and manage service delivery across multiple clouds from a single, integrated point of control. With cloud bursting, businesses can supplement their own local resources with resources from other cloud providers to meet extra capacity demands, to extend geographic reach, or to leverage specialized infrastructure service offerings.

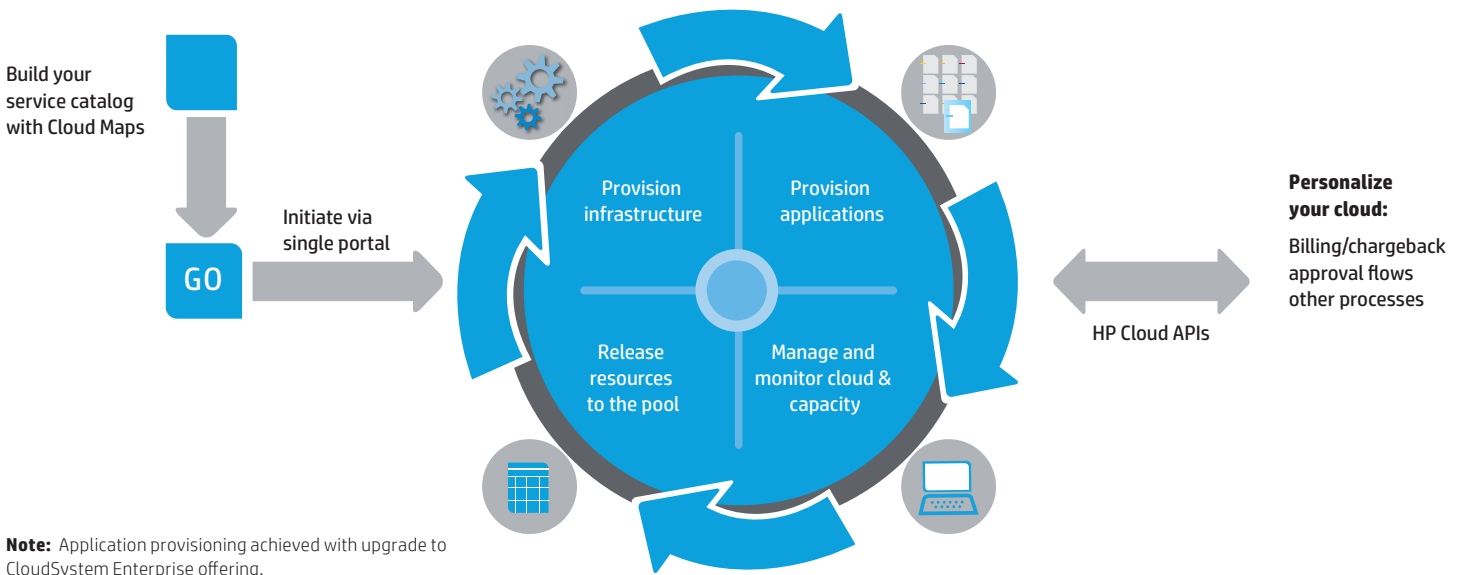
HP CloudSystem supports bursting to both public and private clouds, including managed clouds and virtual private clouds offered by many service providers. You can even burst from one CloudSystem to another CloudSystem in order to share resources within your company.

Integrated capacity planning and rebalancing tools in the Matrix OE let you quickly adjust and optimize your infrastructure over its lifecycle so that you can confidently make changes without time-consuming analysis. Key data points, such as power draw and CPU and network utilization, are captured every five minutes and used to generate ideal placement scenarios. When combined with built-in rebalancing tools, this can compress weeks or months of tedious planning and implementation. Capacity analytics automatically flags potential problems based on the specific queries you gave it. It can look for over-utilized systems, under-utilized systems, or targeted problems such as systems that will exceed capacity within the next year. Speed counts when you are pressured to meet service levels in a dynamic business environment. In addition, usage data can be collected and extracted for showback, chargeback, and billing purposes.

<sup>1</sup> Based on e-shopping application measured by HP in October 2010

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**Note:** Application provisioning achieved with upgrade to CloudSystem Enterprise offering.

On-demand storage provisioning automatically provisions storage LUNs during the deployment of a service for both EVA and HP 3PAR Fibre Channel (FC) storage arrays. Hooks within HP Storage, enables automated reporting and management through the same Matrix service catalog used by server administrators. This common approach to resource pool management reduces the time required to provision and deploy infrastructure for IT services.

CloudSystem Matrix makes it easier to protect and automatically recover whole services with a range of integrated solutions for availability and disaster recovery. You can rapidly fail over services on HP ProLiant servers and HP Integrity servers, across physical and virtual servers. You can recover blade servers in minutes—not days—with integrated, cost-effective disaster recovery that offers bi-directional failover to physical or virtual machines. With a simple mouse click, you can move services to other servers or sites and back again, greatly improving disaster recovery time.

## Reduce TCO with built-in infrastructure lifecycle management

CloudSystem Matrix transforms the economics of your data center, helping you double administrator productivity<sup>2</sup> and increase the capacity of your data center without necessarily adding power infrastructure. Your staff can configure and manage your entire server environment as a single domain, reducing the time required for routine tasks by 60 percent or more, which frees up staff to focus on other priorities.<sup>3</sup> With server management and administration personnel comprising a large part of the costs of a typical IT organization today, the results you get from CloudSystem Matrix can considerably lower those costs.

Virtual Connect technology, only from HP, lets you provision server network and storage connections upfront for your physical environment. HP Virtual Connect decreases up to 95 percent of network cabling at the server edge. Only one interconnect is needed to connect servers to Ethernet or FC fabrics. By eliminating the need for coordination among server, storage, and network administrators for everyday tasks, you save your administrators' time, and you save money.

CloudSystem Matrix also lets you assess the energy costs of different consolidation or rebalancing scenarios in minutes, helping you achieve even greater power efficiencies.

In addition to these operational efficiencies, you can increase asset utilization, cutting capital expenses in half.<sup>3</sup> Integrated capacity planning and lifecycle management tools in CloudSystem Matrix help you avoid over- and under-provisioning by enhancing server utilization and recapturing unused resources.

<sup>2</sup> "Gaining Business Value and ROI with HP Insight Control," Doc #224704R1, Micros Fidelio case study: IDC white paper, March, 2012

<sup>3</sup> Based on a comparison of purchasing 100 new, generic, 1U Intel®-based rack servers vs. an HP CloudSystem Matrix environment, using the HP BladeSystem and CloudSystem Matrix TCO Calculator. For more information, visit [hp.com/go/matrixoe](http://hp.com/go/matrixoe)

## Open and integrated by design

CloudSystem Matrix is built on the modular, standards-based HP BladeSystem and its proven innovations, including Virtual Connect and the Matrix Operating Environment. You get proven firmware and software, integrated by design.

With its open, extensible approach, CloudSystem Matrix runs any application workload and provisions the whole infrastructure in minutes, including servers, storage, and networking. It is optimized for HP ProLiant and HP Integrity servers as well as HP Storage and HP Networking but also supports third-party x86 servers, networking, and storage.

For customers who have chosen to employ VMware or Microsoft solutions as part of their cloud strategy, HP offers an integrated CloudSystem solution optimized for partner cloud environments. Additionally, HP CloudSystem also Matrix supports the choice to integrate with the partner cloud management software through the CloudSystem Matrix auto flexing capability. With auto flexing, CloudSystem automatically allocates your physical infrastructure to a VMware vCloud or Microsoft System Center clouds based on demands, reducing the complexity of building and managing clouds.

With CloudSystem Matrix's integrated stack, you can respond much more quickly to changing business requirements. Through our end-to-end capabilities across infrastructure and management, we enable customers to focus on innovation instead of maintenance. You can focus on growing your services portfolio. Cloud application program interfaces (APIs) let you customize services to a client's specific requirements, enabling integration of approval processes, chargeback, and billing, as well as other process-automation tasks. Clients can access consumption and chargeback reports in real time.

CloudSystem Matrix is suitable for all types of applications. For example, CloudSystem Matrix with HP-UX combines automated orchestration with the robustness of HP-UX and Serviceguard for mission-critical environments.

In addition to providing tested solutions, HP CloudSystem Developers Resource Center helps answer common developer questions on topics to make it easier to adopt cloud computing with HP CloudSystem. You can find best practices; white papers; sample code, integration, and customization techniques; and demos and tips. The center leverages knowledge from a broad CloudSystem base to enable developers to build their own cloud solutions quickly and confidently. For more information, visit [hp.com/go/csdevelopers](http://hp.com/go/csdevelopers).

### Easy to get started

Every customer can evolve to cloud at their own pace. You may want to deploy the CloudSystem Matrix solution today to implement IaaS or you may want to take a systematic, incremental approach: beginning with systems or data center consolidation, standardize on fewer models of servers or storage, and virtualize to increase resource utilization and availability. Perhaps you need to consolidate and modernize applications. Whatever your goal is, we can help you achieve it.

Implementing CloudSystem Matrix is simpler than you may think. It comes pre-configured, is installed by HP experts, and includes all-in-one implementation services to get you ready in days, not months. Matrix is drop shipped to your door, fully tested and configured by HP. Implementation experts facilitate fast and reliable deployment and startup, which means you are up and operating quickly.

Matrix configuration options can be found at:

- [CloudSystem Matrix QuickSpecs—Worldwide](#)
- [CloudSystem Matrix QuickSpecs—North America](#)

Customers who are already taking advantage of the benefits of virtualization and are ready to continue down the path to cloud can build a private cloud within a day with HP CloudSystem Matrix software. This is a complete IaaS implementation for virtual environments and it includes a built-in service designer, a self-service portal for IT, automated provisioning, and capacity planning.

## HP CloudStart

HP CloudStart builds a private cloud service catalog with up to four services and integrates into the customer's environment, including backup and security. It is based on the integrated HP CloudSystem Matrix solution including virtual and physical auto-provisioning allowing complex multi-tier infrastructure services. This engagement is a fixed-price, fixed-scope HP Services solution that allows you to start delivering services from a private cloud within 30 days. Besides having a CloudSystem tuned to your environment, you also get best practice guidance in deploying, customizing, and executing your long-term cloud vision as well as workshops and services to help your organization fully realize the business promise of private cloud computing. Your end users can:

Request a compute service from a number of pre-defined choices and prices

- Have the service provided immediately from a portal
- Scale or cancel the service easily
- Use the service and not worry about security, management or upgrades
- Receive a regular report on consumption or chargeback

## HP Converged Cloud Workshop

This workshop focuses on the key success factors and components required to develop a cloud solution, building consensus among stakeholders, and helping them understand the implications for the business and IT. During the one-day workshop, using highly visual displays, senior HP consultants cover topics such as cloud concepts, architecture, and key technologies—including CloudSystem. Other topics include the service portfolio, management, financials, governance, and more. [hp.com/services/convergedcloudworkshop](http://hp.com/services/convergedcloudworkshop)

## HP Technology Services

To address the design, deployment, and support needs for your CloudSystem Matrix solutions, HP Technology Services has an extensive portfolio of cloud and virtualization consultancy and support services. These cover all stages of the lifecycle of a CloudSystem Matrix: infrastructure design, deployment, testing, integration, migration, upgradation, and ongoing support. Our experienced professionals bring you the expertise required to address unplanned downtime, enhance cloud IT performance, and evolve IT to meet future business needs, while helping to reduce TCO. For instance, the HP CloudSystem Enablement Services provide pre-defined consulting and integration services for faster time-to-solution. Additionally, HP CloudSystem Matrix Conversion Services convert your existing HP BladeSystem equipment into a fully operational CloudSystem Matrix solution. Converting your existing equipment allows you to build on the investment in your BladeSystem infrastructure and benefit from the advantages that a CloudSystem Matrix solution provides. These services, tailored to each CloudSystem offering, accelerate the build-out of clients' first set of cloud services.

We understand that your critical business processes depend on the effectiveness of your technology infrastructure to provide the high performance, availability, and reliability required to compete aggressively in the market. To help you avoid unplanned downtime, we enable you to start planning right at the IT solution design stage, including mission-critical functions. For more information on these services, visit [hp.com/services](http://hp.com/services).

## HP Financial Services

For CloudSystem Matrix, HP Financial Services provides innovative financing and financial asset management programs, including Pay As You Grow and special lease rates, to help you cost-effectively acquire, manage, and ultimately retire your HP solutions. Our CloudSystem Financing helps qualified customers implement needed cloud solutions with a payment plan that helps them avoid upfront capital expenditures. For more information on these services, visit [hp.com/go/hpfinancialservices](http://hp.com/go/hpfinancialservices).

## HP Matrix Conversion Services

HP CloudSystem Matrix Conversion Services convert your existing HP BladeSystem equipment into a fully operational CloudSystem Matrix solution. Converting your existing equipment allows you to build on the investment in your BladeSystem infrastructure and benefit from the advantages that a CloudSystem Matrix solution provides.

## HP Cloud Maps

With HP Cloud Maps, customers can quickly build a comprehensive catalogue of applications for push button simple deployment with HP CloudSystem and HP Cloud Service Automation. Thus, reducing the time to deliver a new application from weeks or months, often to less than one hour. HP Cloud Maps are templates and additional content based on industry-leading intellectual property resulting from thousands of hours of development and testing, and decades of close partnerships between HP, our key independent software vendors (ISVs), systems integrators (SIs), and customers.

Learn more about the Cloud Maps that are available at [hp.com/go/cloudmaps](http://hp.com/go/cloudmaps).

## One platform, three integrated offerings

Based on proven, market-leading HP Converged Infrastructure and Cloud Service Automation, HP CloudSystem is tailored for the requirements of enterprises and service providers at various stages of cloud maturity with three offerings:

- HP CloudSystem Matrix delivers IaaS for private and hybrid cloud environments, allowing users to provision infrastructure in minutes for physical and virtual.
- HP CloudSystem Enterprise enables full-scale deployment of private and hybrid cloud environments, which lets customers deliver self-service applications and adds enterprise-grade infrastructure-to-application lifecycle management.
- HP CloudSystem Service Provider provides advanced capabilities for service providers, facilitating deployment of public and hosted private clouds that deliver complete service aggregation and management.

## Global citizenship at HP

At HP, global citizenship is our commitment to hold ourselves to high standards of integrity, contribution, and accountability in balancing our business goals with our impact on society and the planet. To learn more, visit [hp.com/hpinfo/globalcitizenship/](http://hp.com/hpinfo/globalcitizenship/), and for information about the HP Eco Solutions program, go to [hp.com/ecosolutions](http://hp.com/ecosolutions).

## HP Services

### When technology works, business works.

HP Technology Services offers a comprehensive portfolio of HP Care Pack services to help design, deploy, manage, and support your HP CloudSystem Matrix solution.

### Minimum recommended HP Care Pack service offerings

- Included with every Matrix solution—1-year, 24x7 Software Technical Support and Matrix implementation package
- 3-year, 24x7 consolidated Matrix Support plus 24 package for integrated Matrix hardware and software support

### Enhanced service-level Care Pack service offerings

- **Proactive Select:** Provides access to HP pre-packaged technical consultancy and service offers. Purchase service credits and obtain expertise as needed.
- **Proactive 24 or Critical Advantage Services:** An integrated proactive hardware and software support solution combines problem prevention with responsive technical assistance whenever you need it.

For more information, visit [hp.com/services/bladesystem](http://hp.com/services/bladesystem).

### For more information

HP CloudSystem Matrix, an ideal platform for private/hybrid cloud and IaaS, delivers IT services in minutes. To know more, visit [hp.com/go/matrix](http://hp.com/go/matrix).

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