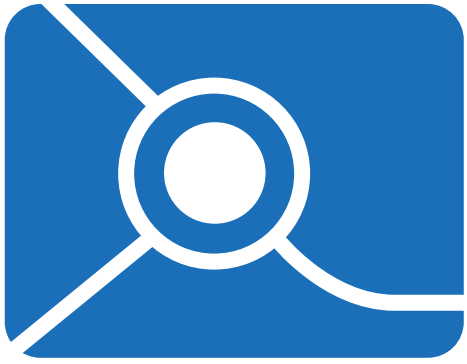


IT consolidation

IT utility

hp invent

IT utility

This guide focuses on the benefits an enterprise can realize by incorporating the IT utility concept into its environment. It shows you how HP's unique capabilities can help you do this more quickly and effectively.

This is one of six HP IT consolidation guides. If you are interested in a journey overview, collocation, hardware/data integration, application integration, or gaining a deeper understanding of HP's leading methodology and consolidation practices, feel free to review the appropriate guide.

where is your consolidation journey headed?

In the past, IT investments were considered an infrastructure expense—necessary to support the business. Given the increased power of technology, IT's relationship to the business has changed dramatically. Now, more than just supporting the business, IT often generates substantial revenue through new products and services. At the very least, IT plays a critical role in ways the company responds to its customers and makes its employees more productive.

As markets change more and more quickly, the enterprise must grow increasingly more agile to keep pace—cutting costs while keeping up with change and creating new products or services. And the ability to quickly contract or expand the business' IT infrastructure is strategically important.

Locking into an inflexible IT solution today makes future changes more difficult, time-consuming, and costly. Whether your company owns, borrows, or rents its IT resources to meet capacity-on-demand needs, the ultimate goal is achieving business agility to keep your options open.

In fact, your enterprise must have optimal flexibility from its IT department to survive—let alone succeed—in the uncertain, uncharted waters of the changing marketplace. In response, your department has sought increasing utility and flexibility from the resources on which it relies.

traveling in the right direction

As you have moved your IT environment to progressively greater computing efficiency and effectiveness—whether you've consolidated from many data centers to just a few, added components like partitioned servers and storage area networks (SANs), or explored flexible, pay-as-you-go financing arrangements—you've sought the enhanced utility and flexibility that your internal and external customers demand. That means you've already embarked on the IT consolidation journey—one in which your ultimate destination is a place where your infrastructure dynamically allocates resources as they are needed—a destination we refer to as IT utility.

On your IT consolidation journey, you're building an adaptive IT infrastructure that provides continuous and secure operations, is managed automatically and intelligently, and dynamically and optimally uses your infrastructure resources. There are four major stops on the way to IT utility—distributed environments, collocated environments, hardware/data integration, and application integration. You can begin your journey from any of those places.

moving toward an IT utility

IT utility is a vision of computing in which resources are available as needed, on demand. In this new world, high service levels are guaranteed, resources are instantly reallocated as business needs require, and organizations pay only for what they use.

In 1982, Joel Birnbaum, the long-time Director of HP Labs and HP's Chief Scientist, described a world where the value of technology is driven by its ability to achieve total collaboration through openness and ubiquity. Now this vision is coming true, as we move away from computer-centric environments to a place where information technology capabilities are provisioned, delivered, managed, and metered as services. Devices, dynamic services, and infrastructure all collaborate intelligently and seamlessly as an information utility.

With utility computing, applications share infrastructure rather than reside on a dedicated server. Adopting utility computing allows you to trade resources globally—which means scalability is unlimited, optimizing existing resources to meet future demands. Pay-as-you-go billing complements this capability, ensuring optimum cash flow and cost management to address scalability needs in a cost-efficient fashion.

Today, HP provides an adaptive infrastructure for on-demand computing from a utility perspective. You can manage some or all of this infrastructure, or outsource it to HP and adopt a usage-based payment model. For example, pay for e-mail hosting based on the number of mailboxes, or choose a solution such as HP's Instant Capacity on Demand, or iCOD, that allows you to purchase servers with extra processors that you turn on when business volume demands.

four steps forward

There are four key elements in an IT utility environment

- adaptive infrastructure—includes network storage solutions, industry-standard servers, business-critical servers, and software
- on-demand computing—combines products, services, and financing to deliver computing resources when and where you need them, on a pay-per-use basis
- utility data center—incorporates technology that's been widely anticipated for years to enable you to create a virtual pool of IT resources which you can share between internal organizations or offer to customers
- outsourcing—offers a variety of HP Managed Services to bring you successful, cost-effective results

the adaptive infrastructure—pulling out the stops

Business happens in real time. Because your IT infrastructure is very likely woven into the fabric of the enterprise—in the way it delivers products or services and in the way employees, vendors, and others interact to deliver those products or services—the infrastructure must react and adapt to your business' needs immediately. Otherwise, IT becomes part of the problem, not part of the solution.

Now more than ever, information technology is tied to business success, and core business challenges have a direct impact on your IT systems. These challenges create new pressures to deliver greater business value. To respond effectively and drive the agility of your enterprise, your IT infrastructure must be stable yet flexible, reduce IT complexity, optimize your IT assets, and extend the value and reach of the enterprise.

characteristics of an adaptive infrastructure

By some estimates, the business environment is changing seven times faster than IT can enable change. Yesterday's infrastructure was built for stability and manageability, but that isn't enough anymore.

Today, an adaptive IT infrastructure evolves as needed, and delivers measurable business improvements without disrupting IT functions or business processes. And unlike most legacy systems, an adaptive infrastructure responds to new business conditions and opportunities, supports rapid business change, takes advantage of new technologies, accommodates unanticipated revisions, and demonstrates its value through a measurements-driven approach.

Adaptive infrastructures allow you to

- quickly implement new business models
- make frequent business process and product changes
- rapidly distribute and collect information and provide access for customers, partners, and employees
- integrate or separate IT assets in response to mergers, acquisitions, divestitures, or restructuring

As demands for your business change and grow, you need immediate flexibility to employ the right amount of resources for the task at hand. You also need to ensure that the assets in which you've already invested continue to perform and add value to your business.

stability and flexibility

The business requirement for highly available and secure, yet flexible, infrastructure solutions is now absolute. You must guarantee the stability of your business-critical infrastructure in the face of change, while ensuring it's cost-effective and responsive to the changes you encounter.

reduced complexity

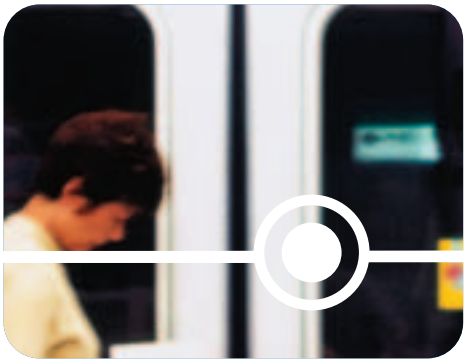
Another crucial challenge—taking the cost and pain out of managing your entire infrastructure. You need end-to-end management that stretches across platforms and devices to give you seamless control. Needless to say, a single, consistent view of all your diverse resources makes it much simpler to streamline performance and ensure delivery of critical business services.

optimized assets

As demands for your business change and grow, you need immediate flexibility to employ the right amount of resources for the task at hand. You also need to ensure that the assets in which you've already invested continue to perform and add value to your business. That requires a more dynamic approach to managing your assets today, while providing a foundation for the future that allows for and incorporates next-generation technologies.

extended value and reach of the enterprise

The boundaries of your business are blurring and new opportunities abound. An infrastructure that integrates disparate internal systems and links those systems with partners, suppliers, and customers to extend information to those who need it anytime, anywhere, is imperative for growing and increasing your company's value-creation capabilities.



open to ongoing advantages

A truly adaptive infrastructure dynamically adjusts to your business needs in real time. It is resilient and reliable, ensuring critical resources are always there when you need them. It adjusts to fit your needs, with the most appropriate options for your environment today and an open, extensible foundation for the future.

If this describes your infrastructure, then it has become a core asset for your enterprise, aligning and adapting to your business' performance and enabling the success of the evolving enterprise. Your adaptive technology keeps pace with change as your business shifts, allowing you to anticipate and smoothly respond to new opportunities and demands with minimal friction.

The adaptive nature of HP's infrastructure offerings ensures your business' uninterrupted operation—even in times of unpredictability and threat. And they incorporate intelligence at every level, giving you better control over delivery of essential business services.

The adaptive nature of HP's infrastructure offerings ensures your business' uninterrupted operation—even in times of unpredictability and threat. And they incorporate intelligence at every level, giving you better control over delivery of essential business services. How? Through automatic, routine maintenance and resource allocation tasks, as well as by monitoring systems and processes to proactively identify and prevent faults, optimize performance, and manage service delivery end to end.

HP's industry-leading virtualization capabilities across servers and storage deliver a whole new level of flexibility by allowing rapid allocation of resources with minimal effort and cost. Also, HP Services helps you design, build, integrate, manage, and evolve your infrastructure in a way that makes the most sense for your business.

But building an adaptive infrastructure doesn't require that you overhaul yours. In fact, if you're well along your IT journey, you've probably already taken the initial steps, which, when combined with new capabilities, deliver exponentially greater flexibility, agility, and availability—and cost-effectively provide business value.

on-demand computing—ready when you are

On Demand Solutions from HP offer a compelling alternative to the traditional way of acquiring IT resources and services. These solutions combine products, services, and financing to deliver computing resources as a utility, when and where you need them, and you pay based on use. As a result, you can

- reduce upfront capital expense
- scale up or down through instant capacity and metering technologies
- better control and predict costs
- simplify IT acquisition and management
- optimize assets with end-to-end managed solutions

On Demand solutions simplify purchasing and management of your IT infrastructure by allowing you to pay based on how you use the solution. And HP's On Demand programs fit all parts of your IT infrastructure—servers, storage, access products, imaging and printing, and messaging.

"Pay as you go" and "IT as a utility" are the future of IT procurement, and are especially attractive in the current business climate. HP brings you these benefits with three types of On Demand programs

- instant capacity provides immediate access to server or storage capacity with payment based on planned usage, or when activated
- metered capacity offers "dial up and down" capability for HP servers, printing and imaging, and storage, with payment based on actual use
- managed capacity offers outsourced end-to-end solution management, with usage-based payment for products and services alike. Managed programs are available for desktop and access products, storage, Microsoft Exchange® 2000, and imaging and printing.

solutions that deliver the future today

Instant Capacity on Demand, or iCOD, enables you to install reserve power onsite and pay for it only when used, or according to planned use. Servers are loaded with reserve CPUs that are instantly activated whenever demand surges.

Pay per Use for Servers enables you to increase or decrease capacity as business needs change. Preconfigured servers with metering software are placed on site. Through a lease-based contract, you pay a base fee plus a variable fee for what you use.

Access on Demand is a single point of contact for procuring, supporting, and managing desktop and mobile technology. For a fixed monthly fee per seat, you get thin clients, desktop and notebook computing platforms, next-generation software, and lifecycle services including acquisition, installation, help-desk support, moves, asset and inventory reporting, and technology refresh.

Managed Storage Solution enables you to increase or decrease storage resources as business changes. Storage Capacity Package includes HP StorageWorks products along with full remote storage management, installation, support, and optional services, with a price-per-gigabyte bill for everything. Multivendor Storage Management offers pay-per-use management and support for heterogeneous storage environments that include HP and other leading storage area network and network attached storage technologies.

Microsoft Exchange 2000 on Demand provides fully managed Exchange at a fixed price per user mailbox. The package includes the data center infrastructure, software tool licensing, HP ProLiant servers and StorageWorks products, and lifecycle services, including migration consulting, installation and support, and operations management. The servers reside on your site or at an HP operations management center.

Imaging and Printing on Demand offers a choice between an internal or outsourced managed environment and pay-per-use plan or set monthly fee. Pay per Use Imaging and Printing is an internal total printing solution that includes HP printer technology, print cartridges, maintenance and support, and financing. Enterprise Output Service is a customized end-to-end outsourcing service that helps customers optimize, manage, and support their output device environment, including printing, copying, faxing, and scanning.

IT utility and the utility data center—transforming data center economics

Building IT utility through an adaptive infrastructure is a continuous process. Perhaps you've consolidated IT resources into one location or a few locations from many, or built in business continuity solutions to ensure availability, or added management tools to ensure that your system runs optimally. In effect, you have been building utility computing to achieve better use of your IT resources.

The ultimate stage of the journey—IT utility—improves the benefits you've been building into your system through virtualization. You may very well have taken the first step on your journey when you moved from IT as a cost center to IT as a service broker. You're nearing the ultimate destination when your IT services are available whenever and wherever they're needed, are offered on a pay-as-you-go basis, and are scalable to meet any level of demand.

the elements of utility computing

Utility computing architecture builds the following elements into the IT environment

- the infrastructure is always on—even in the unlikely event that an individual component fails, applications remain available
- additional capacity is instantly available on a pay-as-you-go basis, so you don't need to pay for capacity until you need it
- you can physically and logically connect to any resources anytime, anywhere
- your sensitive information is secure
- finally, manageability and control are integrated and accessible via easy-to-use browser-based tools across the entire range of your enterprise's technology

hp's utility data center

Financial approaches to flexible computing that match expense with consumption only go so far in creating a true IT utility. Today's data centers, whether owned by businesses or service providers, have limited ability to dynamically share IT capacity between applications. To truly make an impact here, technological innovation is necessary.

Widely anticipated for years, utility computing is available today with HP's Utility Data Center, or UDC. This is the first enterprise-class solution enabling true utility computing.

With the HP UDC, you create a virtual pool of IT resources—servers, storage, networking, firewalls, and load balancers—enabling you to efficiently and cost-effectively share computing power between internal organizations or offer it as a service to your customers. All resources are wired together at one time. By creating this virtual pool, the UDC allows you to quickly and easily move networking, storage, and server resources among applications to maximize resource utilization and service availability.

Management racks control the environment, providing preintegrated operations support with HP OpenView Management software. HP Utility Controller software rapidly allocates resources within the UDC to specific workloads, enabling users to design, configure, and dynamically reassign data center resources with drag-and-drop simplicity.

the following chart illustrates the attributes of hp's UDC

open systems	flexible *extensive support for industry leaders & legacy environments*	• third-party component interfaces • business process integration • multi-OS
self adapting	built-in intelligence *minimal human intervention*	• self-healing • responsive to varying service demands • user location awareness
proactive	automate operations *management, optimization, and planning*	• asset selection • service delivery • shared resource utilization
utility	pay-as-you-go *built-in utility models*	• assets usage • pay-by-service, -group, or -user • license management and reporting
policy driven	extensible automation *sentient behaviors*	• closed-loop control behaviors from policy hierarchies • infrastructure, services, and communities knowledge

the many benefits of a UDC

In a UDC, you connect everything once. Then you virtually configure it any number of ways or times by simply dragging and dropping IT resources via a graphical user interface. Once your system resources are allocated and activated, your UDC behaves just as your four-tier architecture did in your traditional environment.

What does that mean to you? You can shift computing resources among applications simply and dynamically, optimizing data center utilization. And you can ignite new applications and their associated infrastructure components in record time and at very low cost.

There are three reasons to journey to IT utility via HP's Utility Data Center. Our UDC gives you pay-as-you-go resource utilization and availability, helps you reduce operating costs, and lets you build a flexible architecture.

pay-as-you-go resource utilization and availability

IT utility is a flexible, self-managed IT environment. Like power or water, you get as much as you want, when you want it. You pay only for what you use, and you can count on it being there.

Because all infrastructure resources are pooled within a UDC, as business requirements change, IT resources can be reassigned among applications virtually instantly. And if systems within a UDC fail, others immediately replace them, without needing human intervention.

HP's UDC is closer to the notion of total IT utility than any solution on the market today.

reduce operating costs by easily deploying in minutes

Data centers are complex, and the process of reconfiguring resources is prone to human error. By removing the need to physically move resources, and enabling changes with a simple click-and-drag, HP solutions and tools reduce the costs incurred due to common mistakes. The UDC also frees up resources devoted to data center maintenance for higher value tasks.

build a flexible architecture to balance TCO and business requirements

Historically, when companies deploy new applications or introduce new services, ROI isn't achieved for months—even years. Delays occur while analysts examine business requirements and write specifications, programmers write the application, and IT buys, configures, and integrates new equipment. HP's UDC enables you to deploy a new application or service immediately after it's specified, simply by entering requirements at a console. In effect, the infrastructure builds itself, and ROI is achieved within weeks.

the economic advantages of hp's UDC

physical provisioning economies	operational economies	metering economies	upgrading & migration economies
• deployment costs reduced from 30%–80%	• self-adapting technologies reduce management costs from 80%–100%	• overall costs reduced from 5%–30%	• activity costs reduced from 20%–40%
• capacity planning costs reduced from 5%–40%	• security costs reduced from 20%–30%		

HP's UDC is a complete solution, with the necessary hardware, operating systems, integrated management software, consulting and support services, and innovative financing. This solution includes the scalability you need to manage the changing demands of your business today and tomorrow. With the advantages of a true IT utility, you can deliver new services faster and more effectively, and reap financial benefits immediately.

HP will help you move toward the advantages of a UDC with an approach that includes

- measurement-based profiling and assessment services
- architectural models and roadmaps driven by agility design principles and metrics
- answers to key business and IT challenges
- ongoing measurement and management services that optimize performance and evolve the infrastructure

The 24x7 paradigm demands that your systems support your business' proactive and reactive responses to market changes. And while keeping pace with those changes, you must balance the resources with available budgets. This can be a daunting task, because more users and more computing transactions across your network have increased the demands for scalability, flexibility, adaptability, and agility in your IT systems. And as you do all of this today, you must plan for tomorrow's IT challenges.

Ultimately, your goal is to be more agile and better able to manage the changes your company encounters, to help your business succeed—even flourish. To be more agile, the enterprise may rely entirely on internal resources or go outside for some or all of the IT support.

outsourcing—a strategic alternative

In the 1990s, outsourcing initiatives primarily sought to cut costs. Now it's just as likely, perhaps even more so, that a company outsources to gain a competitive advantage. It's harder and harder to have in-house expertise on every existing and new technology. Effective IT strategies and execution lead to potential competitive advantages in a number of ways—time to market, broader reach, and expense reduction, to name a few.

A comprehensive outsourcing solution is tailored to your individual needs, infrastructure, and business goals. Before you outsource, you need to consider

- financial risk management and loss of control
- execution and its affect on uptime, availability, response time, and cost control
- evolution, because you might not be able to keep up with new developments in technology and still manage your core business

A successful outsourcing relationship is built on clear understanding of objectives, and an upfront agreement on priorities and measurements. A one-size-fits-all approach to outsourcing simply does not work. HP Services works hard to understand business objectives up front, define appropriate approaches to different issues, and set expectations and measures to assure mutual satisfaction.

On top of that, we have the experience to manage multivendor environments. For example, HP Services manages the largest Sun SAP implementation in the world. A large, HP Services-managed IBM installation for a major Canadian banking customer processes 4.2 billion transactions per year. We also have significant experience with Dell server and desktop systems.

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defining your unique destination

Business objectives vary widely from department to department and often change from quarter to quarter. The common mandate every organization shares is maximizing the potential of its assets.

Where do you see your company in the years to come? Odds are high that wherever you are, IT costs will be reeled in. You'll also need to conserve space, improve service, and better align IT objectives with your business.

Amid the uncertainty caused by those challenges, two things are certain. No one understands your company's IT destination better than you. And HP will help you define the road you take to get there.

How does HP help? By partnering with you in designing and then following a roadmap entirely unique to your company that outlines your journey toward IT utility. This roadmap sets the steps to consolidation in manageable, lower-risk phases that build on what your IT department has already accomplished, and very likely ensures increased savings and flexibility across the enterprise.

IT consolidation benefits

While the path to the future is different for every company, it is clear that by consolidating systems, enterprises realize the following benefits

- decreased labor and software licensing costs and hardware depreciation
- fewer systems outages
- greater agility
- increased revenue
- reduced total cost of ownership
- improved quality of service and customer satisfaction

aligning business with IT

As part of the consolidation journey, IT and business enjoy a symbiotic relationship and the priorities of both are addressed jointly. When a massive consolidation of data centers across a huge enterprise is planned, corporate and IT executives build consensus on the consolidation's objectives long before the first server is moved.

Identifying the opportunities to achieve specific benefits becomes paramount for each company's unique business. For example, if your company needs to drastically cut costs in the short term, your budget might reveal extensive facility costs. Terminating building leases by closing data centers could be the first phase in the journey, amounting to significant short-term savings. Thus, from planning comes prioritizing, allowing you to bring high-benefit projects to completion first and provide measurable benefits in as few as four to six months.

why take the journey?

When has anyone seriously said to you, "Don't worry about how much it costs, what it takes, or how long it will take?" Money, staff, and time are precious commodities. Add in the challenges brought by a tight economy—the demands of existing customers, the need to expand your customer base, the constant pressure of competitive action—and it's enough to leave even the hardiest IT managers looking for alternatives.

You can't control the changes your business encounters. But you can manage how your business handles change—as long as your IT department is agile enough to anticipate or react to new opportunities driven by a continually and dramatically changing marketplace.

And that's why you should start your IT consolidation journey now. How will the journey payoff? Consider these three ways

- reduced costs and improved return on your company's IT investment
- improved IT service levels and availability
- increased overall agility for your business

why hp?

You need expertise to accomplish truly adaptive results. Any partner must be a thought leader on this new technological frontier and act as a trusted advisor, with the business expertise to deliver solutions that meet your needs.

Our experience guiding companies on the consolidation journey has made HP the undisputed leader in refining IT infrastructures to deliver greater business value. If your company is serious about cutting costs, increasing flexibility, reducing complexity, optimizing assets, and extending the value and reach of the enterprise through consolidation, HP is your best choice.

Call hp and ask about IT consolidation.

When it really counts, hp delivers.

Contact HP today to learn about adaptive infrastructure—through IT consolidation solutions based on the best of HP's broad family of storage, software, servers, and services.

Courage. Imagination. Vision. Partner with HP.
Ride the streamline—journey to the future.

Start now.

To learn more about HP IT consolidation solutions, and how you can improve business agility, please visit **www.hp.com/large**.