

HP Insight Dynamics for ProLiant

Instantly adjust to dynamic business demands.



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Executive summary

HP Insight Dynamics for ProLiant servers is advanced infrastructure management software that helps you instantly adjust to dynamic business demands. This new class of software helps you reduce the cost of common data center tasks by up to 40 percent while keeping pace with your changing business.

HP Insight Dynamics provides the automated provisioning, optimization, and recovery management capabilities for HP BladeSystem Matrix, a fully integrated converged infrastructure platform that enables shared services. In addition, HP Insight Dynamics is available as a standalone solution.

HP Insight Dynamics combines the best of the industry-leading HP infrastructure management portfolio—including HP Systems Insight Manager and HP Insight Control—into one integrated offering for HP BladeSystem and HP ProLiant servers.¹ The result is a single toolkit that helps you accelerate complex technology projects and simplify daily operations. Insight Dynamics enables a change-ready infrastructure, with all the freedom and flexibility of virtualization delivered across your physical infrastructure.

New management challenges

To deliver better business outcomes, today's data centers need to make better use of their resources. Many suffer from a proliferation of under-utilized servers that take up valuable floor space, drive up power and cooling costs, and put a strain on management resources.

Server virtualization helps data centers use resources more efficiently. Virtualization is more than proven to lower costs and increase flexibility. But virtual environments bring their own set of management challenges. So even with virtualized solutions in place, data centers around the world continue to wrestle with cost, time, quality, and energy issues. These issues are the heart of the need for HP Insight Dynamics for ProLiant servers.

Lower cost

Improving capacity planning

When it comes time for evaluating data center capacity requirements, many data center managers find themselves living with spreadsheets and best guesses about their dynamic environments. This leads to costly over-provisioning of resources—just to be sure that systems can meet the peak needs of some applications. So capacity waste becomes a part of day-to-day business.

To solve this problem, you need better knowledge of your environment, including detailed information on system usage, patterns, and workload characterizations. That is one of the keys to allocating virtual and physical resources in a more flexible manner—and to avoiding over-provisioning. But to make this shift to a more flexible world, you first need better tools for capacity planning and resource optimization.

¹ For HP Integrity servers, the capabilities of HP Insight Dynamics are available through HP Insight Dynamics – VSE (formerly Virtual Server Environment) for Integrity, the HP-UX Virtual Server Operating Environment, and the HP-UX Data Center Operating Environment. To learn more, visit www.hp.com/go/vse.

Controlling virtual server sprawl

High on this list of virtualization challenges is the need to combat “virtual sprawl”—which comes on top of the pre-existing problem of physical server sprawl. With the ease of deploying virtual machines (VMs), many companies have found themselves with a proliferation of virtual servers, which creates a whole new set of management challenges. Ideally, virtual servers should be provisioned and governed under the same policies you use for your physical servers. That’s one of the keys to simplifying management of a virtualized technology environment.

Accelerate speed of change.

Unifying management of virtual and physical resources

Virtualized environments can easily become silos that require their own tools, skills sets, and processes. Many virtualized data centers have one team to manage virtual machines and another to manage physical servers. Each team has its own processes and many organizations employ more than one type of virtualization technology, further exacerbating the complexity.

That kind of duplication is costly. It drains staff productivity, drives up training costs, and forces your company to buy, use, and manage different sets of management software. In a better world, physical servers and virtual machines would be managed together—in the same way, by the same people, using the same tools, under the same processes.

Simplifying consolidation

When it comes to server consolidation, data centers are caught in a paradox: They find themselves using a complex, time-consuming process in an attempt to reduce complexity and lower cost. Extensive planning, manual work, and the involvement of many different parts of the organization make consolidation a laborious task.

To achieve a greater range of benefits from consolidation, your organization needs tools that allow you to transform project-based consolidation into a routine initiative to rebalance and tune the infrastructure to generate ongoing incremental benefits. In particular, you need tools that provide real-time information on server workloads, available capacity, and opportunities to shift workloads among physical servers and virtual machines.

Automating infrastructure provisioning

For IT teams, infrastructure provisioning can be both time-consuming and resource-draining. Each time a business unit, application owner, or development team requests resources, a lengthy process begins. IT experts have to capture system requirements, design the solution from scratch, and then identify the resources that are currently available and those that need to be procured. After that, an often-lengthy management approval process begins. All the while, the people who need to put the infrastructure to work are locked into a waiting game.

To avoid this cumbersome, time-consuming system, your organization needs software tools that help you standardize, automate, and accelerate processes for provisioning and repurposing infrastructure. Among other capabilities, these tools should enable your IT architects to create templates with specific, approved configurations and then reuse those templates over and over.

Deliver higher quality of service.

Extending high availability to more applications

High availability usually means resource-intensive clustering solutions, which aren’t appropriate for all applications. Yet the success of your organization probably depends on the availability of many applications, both large and small. To keep your business operating at its peak and enhance the quality of services you deliver, you need ways to extend high availability features, along with fast recovery capabilities, to the full breadth of your applications.

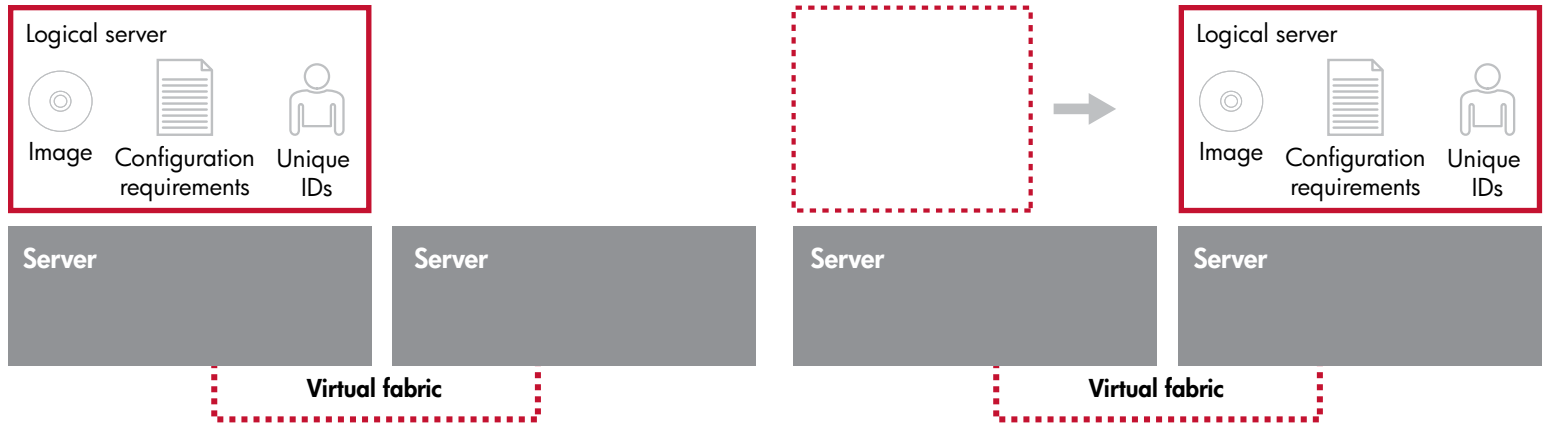
Extending the benefits of virtualization to your entire infrastructure

For most organizations, the suggestion to “virtualize everything” is not a viable option. Many workloads are not suitable for deployment in virtual machines. According to a leading analyst firm, by the end of the decade, only half of all server workloads will be virtualized.

Applications that run on physical servers can be time-consuming and resource-intensive to deploy, manage, and recover. When you need to make changes in the physical servers, chances are you are going to have to involve multiple organizations. That invariably takes time and drives up costs. What’s needed is a way to extend the freedom and efficiency of virtualization to physical servers, as well as virtual machines.

Bringing the flexibility of virtualization to physical servers

A logical server profile is easily created and freely moved across physical and virtual machines. Logical servers can be physical blade servers, virtual machines, or offline templates.



Increase energy efficiency.

Consolidating power-hungry servers

In data centers around the world, energy costs are rising rapidly and consuming an ever-greater portion of technology budgets. Data center electricity use has more than doubled since 2000, according to a research report.² The same study found that the total electric bill for operating data center servers and associated infrastructure was about \$2.7 billion in the United States and \$7.2 billion in the world. And all the while, the cost of energy has been spiraling upward.

To control rising energy expenditures, data center managers need to find ways to consolidate power-hungry servers and factor energy consumption into capacity planning decisions. Here again, this takes better information, including tools that allow you to make energy usage a key part of your capacity planning decisions.

HP Insight Dynamics was designed specifically to address these challenges that come with the optimization of a virtual and physical environment.

Overcoming the challenges with HP Insight Dynamics

HP Insight Dynamics is advanced infrastructure management software that allows you to continuously analyze and optimize your adaptive infrastructure. It's the world's first integrated solution that lets you visualize, plan, and change physical and virtual resources in exactly the same way.

HP Insight Dynamics helps your enterprise:

- **Reduce costs**—HP estimates the software will cut the cost of common data center tasks by as much as 40 percent, reducing costs associated with capacity planning, provisioning, upgrades and changes, and energy. Your enterprise can realize the cost benefits of virtualization faster by cutting analysis time for capacity planning and consolidation from months to days. Complex spreadsheets and expensive services engagements are replaced by instantly available data.
- **Increase speed of change**—By collapsing steps and saving administrative time with key tasks, your enterprise can accelerate key technology projects. For example, moving a workload from one server to another with a simple drag-and-drop function takes minutes, while conventional approaches take weeks and often require extensive coordination among server, storage, and networking groups.
- **Improve quality**—Insight Dynamics software enables everyday high availability previously unavailable to many applications due to complex and potentially expensive clustering requirements. By easily re-deploying logical servers in the event of hardware failure, you can enjoy fast and affordable protection.
- **Manage energy**—Consolidation and virtualization are great ways to save energy. But your actual power savings may depend on the choices you make. Insight Dynamics makes comparing energy consumption of different data center configurations easy.

² "Estimating Total Power Consumption by Servers In the U.S. and the World," Jonathan G. Koomey, Ph.D., Staff Scientist, Lawrence Berkeley National Laboratory, and Consulting Professor, Stanford University, February 15, 2007. <http://enterprise.amd.com/Downloads/svrpwrusecompletefinal.pdf>

“Application hosting is a very competitive business. Using HP Insight Dynamics, we are able to deliver a substantially higher level of service than our competitors.”

—Pete Simpson, Vice President Business Technology,
Micros Fidelio Europe, Africa, Middle East

In essence, Insight Dynamics enables your organization to get ahead of the curve by giving you the information you need to proactively deal with potential issues (such as performance, power, and space constraints) before they become problems that impact your business. You no longer have to wait for a server to be overloaded or to experience an outage requiring a recovery. And if failures do occur, the logical server capability of Insight Dynamics, and the fast provisioning it enables, make recovery quick and easy to execute. You can now use Insight Dynamics to ward off problems by balancing resources across your data center to enable higher levels of availability and quality of service.

HP Insight Dynamics is designed to serve as the command center of HP Converged Infrastructure solutions. It is available both as a standalone solution and as the integrated management console for the HP BladeSystem Matrix platform.

Key product capabilities

HP Insight Dynamics for ProLiant includes three key capabilities that drive value across your data center. It allows you to provision infrastructure in minutes, optimize infrastructure confidently, and protect the continuity of services.

Provision infrastructure in minutes.

HP Insight Dynamics lets you build a complete infrastructure environment ready for your applications in minutes—by automating the provisioning of virtual and physical servers with their storage and networking connections. A complex application infrastructure can be up and running in minutes, rather than weeks or months.

HP Insight Dynamics accelerates provisioning with infrastructure orchestration capabilities. Your IT architects can visually design a catalog of infrastructure service templates based on best practices such as HP reference architectures. These templates can include a variety of configurations—from single virtual machines to multi-tier, multi-node configurations with physical and virtual servers—that can be quickly provisioned when needed.

To ease the load on your IT staff and streamline processes, HP Insight Dynamics enables self-service provisioning. Authorized users can provision infrastructure from pools of shared server and storage resources via a self-service portal. This portal includes features to automate and streamline the approval process for requested infrastructure.

In addition, HP Insight Dynamics is designed to integrate with existing IT management tools and processes using an embedded workflow automation tool. Integration can make the infrastructure delivery process work more efficiently and reliably across IT architects, administrators, and operations teams.

HP Insight Dynamics helps you:

- Easily design best-practice infrastructure templates
- Reliably provision infrastructure through a self-service portal
- Seamlessly integrate with existing systems and processes

Optimize infrastructure confidently.

HP Insight Dynamics provides deep insight into your infrastructure and lets you quickly adjust your environment over its lifecycle, so that you can predictably make changes without time-consuming analysis. Key data points like power use,³ CPU, memory, and network utilization are captured every five minutes (more than a thousand data points per server per day) to create a clear record of server resource utilization. This information is used to generate consolidation scenarios that fit right. When combined with built-in rebalancing tools, this can reduce weeks or months of tedious planning and implementation.

Utilization data can be collected in two ways: via software agents installed on monitored servers or via the system monitoring tools built into compatible server operating systems. Data can be collected from HP ProLiant, HP BladeSystem, HP Integrity, and certain non-HP Windows®-based x86 servers.

To put this data to work, HP Insight Dynamics uses Smart Solver technology developed by HP Labs. This technology can show you the best fit for your workloads on the fewest number of physical servers. With the five-star rating system of HP Insight Dynamics, you'll see in real time if a logical server can be moved. If so, you can actually drag and drop the logical server to place it in the new location.

Like having a team of Ph.D.s behind you, Insight Dynamics takes the tedious research and guesswork out of traditional capacity planning. Using easy drag-and-drop tools, you can move logical servers across physical and virtual resources to verify that your environment's utilization is efficiently balanced. Insight Dynamics allows you to migrate workloads from physical to virtual infrastructure and back, from non-HP x86 servers to HP ProLiant servers or server blades, or from one hypervisor to another, creating a more agile, flexible infrastructure.

Viewed from another level, HP Insight Dynamics enables you to visualize and manage all physical and virtual resources from a single tool—with the ability to drill down as far as needed without logging into another tool.

HP Insight Dynamics helps you:

- Significantly improve server consolidation ratios
- Cut server consolidation time down from months to days or hours
- Adjust resources in minutes to respond to dynamic business requirements
- Get advanced consolidation reports for cost allocation
- Reclaim up to 50 percent of data center circuit capacity

³ Power data is gathered for instrumented systems that support power metering. In addition, power can be estimated for what-if configurations.

Protect continuity of services.

Insight Dynamics protects continuity of services by providing, enabling, or enhancing a wide spectrum of availability and recovery solutions. For ProLiant, the continuum of solutions ranges from server-aware and application-aware availability to disaster recovery solutions for distances from campus to continental, supporting both physical and virtual server environments.

With the combination of advanced visualization, real-time planning, and the speed and ease of moving resources, HP Insight Dynamics helps you achieve higher levels of availability and protect the overall continuity of services. Server profiles can be quickly moved to spare capacity to maintain availability. Stored templates can be activated to restart applications to maintain the level of service quality to the business. Maintenance windows can be shortened by using server profiles to create and move workloads.

For the utmost in integrated disaster recovery, HP Insight Dynamics recovery management lets you move workloads to other servers or sites with a simple mouse click, improving recovery time up to 80 percent or more. Failed-over workloads are dealt with in as little as five minutes across physical and virtual servers.

HP Insight Dynamics helps you:

- Deploy failover and recovery capabilities for both physical and virtual environments
- Integrate your management command center with VMware vSphere and Microsoft® Hyper-V™ virtualization environments⁴

- Integrate your management command center with HP EVA and XP storage data replication solutions, providing recovery for environments from metropolitan to continental distances
- Gain an easy-to-use GUI for creation and testing of failover and recovery scenarios, with recovery initiated with the push of a button

Services and delivery

Lifecycle services

HP offers services to assist with virtualization in each phase of the technology lifecycle. HP services professionals will help with installation and ongoing support of HP Insight Dynamics, while evolving your virtualization initiative to make it a strategic enabler of the business.

Lifecycle services include:

- Strategize to understand the potential of HP Insight Dynamics and assess its impact on your existing virtual and physical environment.
- Design and integrate HP Insight Dynamics into your technology management and automation framework across the data center.
- Install and implement HP Insight Dynamics easily into your existing environment.
- Transition your legacy environments into a new virtualization architecture that includes HP Insight Dynamics.
- Make continual improvement on the service levels you deliver to the business.

⁴ Hyper-V support through Technology Preview.

Delivery options

- HP BladeSystem Matrix, a converged infrastructure solution, includes HP Insight Dynamics as the core management software. BladeSystem Matrix converges compute, storage, and network resources into a platform that can be easily purchased and quickly deployed to enable shared services.
- HP Insight Dynamics is also available in a software-only package for HP ProLiant servers and server blades. In addition to Insight Control, capacity planning, and configuration management capabilities, it now also includes infrastructure orchestration and recovery management capabilities.
- For HP Integrity servers, the capabilities of HP Insight Dynamics are available through HP Insight Dynamics – VSE (formerly Virtual Server Environment) for Integrity, the HP-UX Virtual Server Operating Environment, and the HP-UX Data Center Operating Environment.
- HP Insight Capacity Advisor Consolidation software provides a limited-time-use license for just the capacity planning capability when consolidating older servers.

New ways to tackle the toughest technology projects

HP Insight Dynamics creates new possibilities for addressing your toughest technology challenges and top business priorities in previously unimaginable ways. Here are a few of the ways to put the software to work to drive better business outcomes:

Ongoing consolidation

Transform long-term projects into ongoing efforts.

Today, server consolidation is typically conducted one project at a time, often over one to five years.

Once completed, the process begins again. HP Insight Dynamics changes the ground rules of the consolidation game. It accelerates your large-scale consolidation projects and then lets you optimize your resources on a more continuous basis.

First, Insight Dynamics lets you quickly evaluate different scenarios for consolidating older and under-utilized physical servers onto virtual machines. Using thousands of historical data points for each server, you can simulate different workload configurations on different sets of server resources. You can automatically find best-fit solutions for dozens of servers, or even more. And you can easily see which alternatives use the least computing power, the least space, even the least energy.

Then HP Insight Dynamics gives you the information you need to quickly rebalance and repurpose infrastructure based on changing technology and business priorities. When you need to deploy a new workload, the five-star rating system lets you instantly see the best place to put it in your existing infrastructure. Using logical servers, you can then drag and drop the workload onto a suitable virtual or physical server that has free capacity. Insight Dynamics supports leading virtualization technology, including VMware ESX and VMware ESXi and Microsoft Hyper-V.

You can quickly recognize opportunities to rebalance workloads—identifying servers that often push their capacity limits, and then shift the loads to servers that are often under-utilized. You can see how repurposing infrastructure could make you more efficient. A server that runs certain workloads at night, such as a backup application, might sit idle during the day. With Insight Dynamics, you have the information you need to confidently shift certain daytime workloads to the idle server, so you can take advantage of the open computing capacity.

This day-to-day work can make a big difference in the life of your data center. You're not locked into the rigid allocation of resources. You can complement your long-term consolidation initiatives with continuous optimization of resources. You can initially deploy resources in one place and then later move workloads to systems that have free capacity—fine tuning your environment on an as-needed basis. By optimizing utilization continuously, you can save valuable real estate, avoid costly expansion projects, and extend the life of your data center.

Energy-aware capacity planning

Consolidate workloads for increased power efficiency.

Power, cooling, and space are top expenses and limitations in today's data centers. Energy not only costs more, but data centers are using more of it. It's no surprise then that energy expenditures are taking an ever-larger bite out of operating expenditure (OPEX) budgets. And, regardless of the cost issues, some data centers are having trouble acquiring sufficient power to meet their energy needs. In this new era, power and cooling becomes a key consideration when planning a technology environment or adding hardware to an existing data center.

HP Insight Dynamics helps you overcome your power and cooling challenges by enabling energy-aware capacity planning. It gives you the hard data you need to intelligently plan for your server capacity and power needs, taking service levels into account. In addition to considering metrics on CPU, memory utilization, and disk storage capacity, it helps your planning staff take a hard look at your power consumption.

Insight Dynamics can show you the power implications of different scenarios. For example, you can run scenarios that show what happens under different consolidation approaches and compare different configurations to determine your best options for power utilization. The software's five-star rating system helps you quickly see your best choices for provisioning and redeploying servers in an energy-efficient manner.

These kinds of insights ease your energy pains through better utilization of power and cooling resources and better placement of workloads. By quickly identifying and consolidating inefficient servers onto fewer, more power-efficient ones, you can reduce energy consumption, cut costs, and extend the life of your data center.

Everyday high availability

Enable fast and affordable recovery and maintenance.

High system availability is now an imperative for an increasing number of applications. If your business depends on certain applications, it can't tolerate downtime for those applications. Yet in many cases the use of high availability (HA) failover is restricted to a limited number of business-critical applications in complex, clustered configurations.

HP Insight Dynamics changes the ground rules for HA. It introduces the concept of "everyday high availability" for a wide range of applications. You can now protect more of your systems and shrink maintenance windows using spare capacity that is fast and affordable to set up, using existing virtual machines or physical servers.

During periods of unplanned downtime, you can use Insight Dynamics to shift workloads to physical servers or virtual machines at an alternate location to enable higher availability for certain applications. This is made possible by the use of logical servers that can be easily created and freely moved across your infrastructure.

This is the same approach that is used to enable an agile test and development environment. It's now being used to support a simple, everyday HA environment.

"Freeze" and "thaw" profiles.

A blade profile can be stored as ready-to-use, or "freeze-dried." Then in the event of unplanned downtime, you can use a spare blade (either locally or at a distance) to get the profile up and running, or "thawed," in about the time it takes to re-boot a system.

These same capabilities help you maintain availability during planned maintenance. When you're ready to take a server down for maintenance, you can easily move a blade or virtual machine over to another physical location. After you have updated the firmware or made other changes to the hardware, you can then move the logical servers back to their original systems.

This can help you shrink maintenance windows considerably when compared to the time needed to bring a server down for the entire duration of the maintenance work. And because you can shrink the window, this maintenance can often be done at a more convenient time than, say, Sunday at 3 a.m.

Dynamic infrastructure provisioning

Quickly repurpose test and development infrastructure without reinstallation.

Today, test and development teams wrestle with inefficiencies. Average server utilization in test environments is often in the single digits. Moving, testing, or troubleshooting applications on standalone servers can be a cumbersome process that stretches across multiple organizations.

Compared with production environments, test and development environments need to be set up quickly. They are often used for a relatively short period of time, and then they are retired. What's more, the actual demand on the workload is usually characterized by short, high levels of utilization, followed by long periods of little or no use.

Given these operating circumstances, test and development environments need more than static, standalone servers. They are best placed in an agile computing environment, in which resources can be easily reallocated throughout the test and development lifecycle. While virtual servers are a common approach, they are not suited for all test environments.

HP Insight Dynamics enables a more dynamic test and development environment for both physical and virtual servers. It allows you to quickly create, distribute, and tear down development and test environments. This is made possible by the use of logical server profiles. This is one of the keys to accelerating the development-to-production cycle.

Insight Dynamics helps you accelerate time to production by sharing hardware between test and development teams and archiving test environments for reuse, a task that can usually be accomplished in a matter of minutes. This is one of the keys to maintaining a dynamic test and development infrastructure that can respond faster to business needs.

Automate infrastructure provisioning and repurposing.

To gain greater agility, you can make use of the infrastructure orchestration capabilities of HP Insight Dynamics. These capabilities allow your IT organization to provision infrastructure consistently and automatically from pools of shared resources using standardized templates and a self-service portal. With HP Insight Dynamics infrastructure orchestration, you can rapidly provision resources ranging from a single virtual machine to complex multi-tier environments with physical and virtual servers and storage systems.

This means standard IT services don't have to be provisioned from scratch. Instead, when you receive a request for resources, you can select an appropriate standardized template from your catalog of infrastructure services. In addition, you can authorize people who frequently need IT resources, such as test and development specialists, to request their own resources from your self-service portal and its standard catalog of infrastructure services.

Key takeaways

A new class of management software

HP Insight Dynamics allows you to continuously analyze and optimize your adaptive infrastructure.

It's the industry's first integrated solution to visualize, plan, and change physical and virtual resources. The software brings the freedom and flexibility of virtualization to physical infrastructure.

An integrated management tool

Insight Dynamics brings together the best of the industry-leading HP infrastructure management portfolio, including HP Systems Insight Manager, HP Insight Control, and HP Virtual Server Environment, into one integrated offering. It provides a toolkit to help you accelerate complex technology projects, simplify daily operations, and proactively manage data center capacity.

Business-driven benefits

Insight Dynamics can help you cut operational costs and adapt your infrastructure as your business grows. It is designed to accelerate project schedules and reduce the number of steps and costs associated with common data center tasks, such as server provisioning, upgrades, and changes, with cost savings of up to 40 percent in key areas. It enables you to proactively manage data center capacity to free untapped resources and make better use of power, cooling, and space.

Key capabilities

HP Insight Dynamics has three key capabilities that drive value across your data center. It allows you to:

- Provision infrastructure in minutes
- Optimize infrastructure confidently
- Protect continuity of services

Key use cases

Insight Dynamics helps you tackle some of your toughest technology projects and top business priorities in previously unimaginable ways. It enables:

- Ongoing consolidation
- Energy-aware capacity planning
- Everyday high availability
- Dynamic infrastructure provisioning

Technology for better business outcomes

To learn more, visit www.hp.com/go/insightdynamics

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