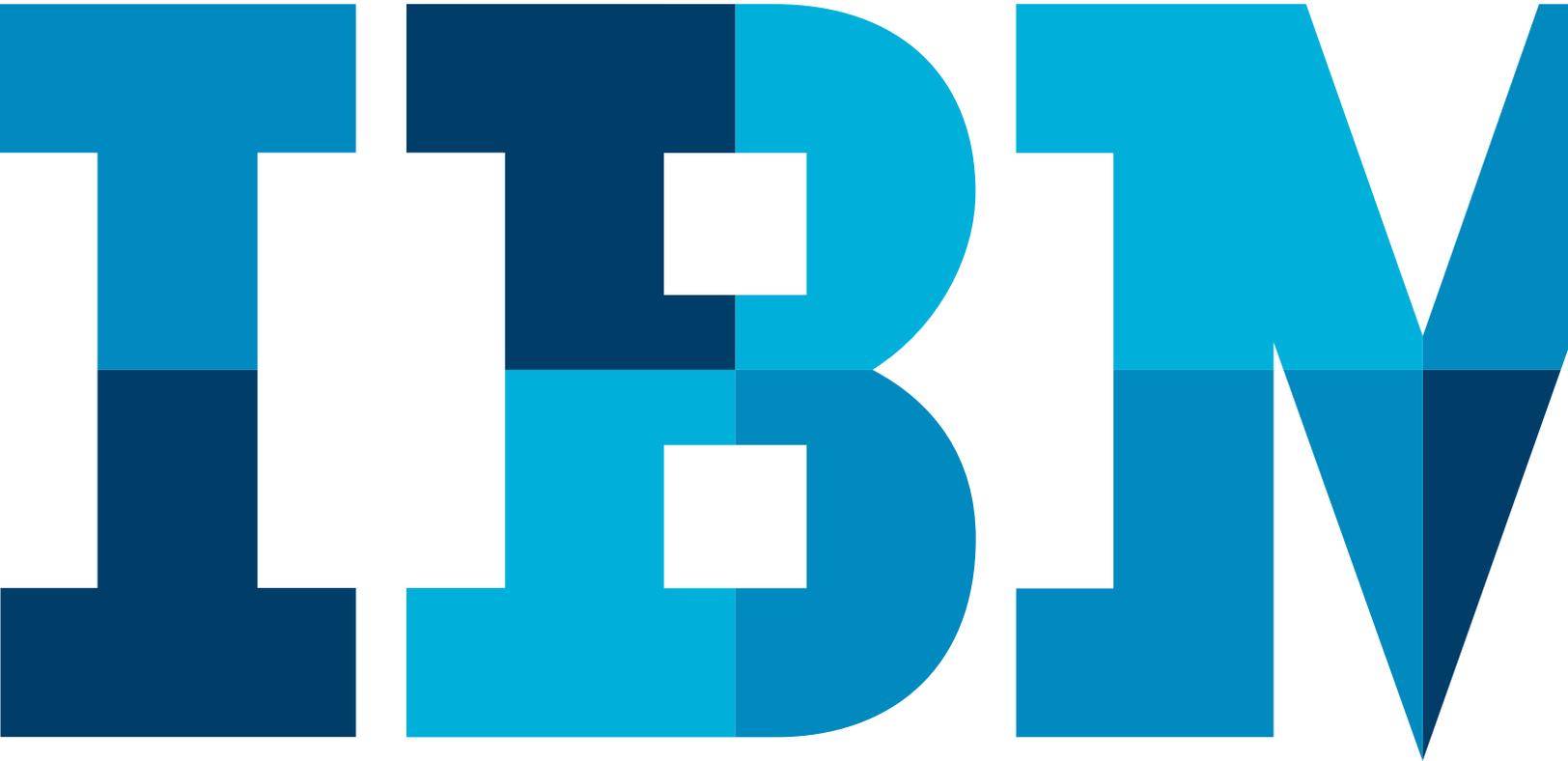


Private cloud services from IBM

*Flexible, end-to-end solutions for transforming
the enterprise*



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Introduction

Cloud technologies have proven to be a force of change, upending established methods of acquiring, managing and using technology, and providing exceptional opportunities for transforming traditional business models. As the evidence mounts, cloud computing is increasingly becoming a priority for many companies. The IBM 2011 Global CIO Study and 2012 Data Center Study pointed to rising levels of interest and adoption.^{1,2} Within the cloud spectrum, private clouds have moved to the forefront, their growing popularity due in large part to the increased level of control and strategic enablement they provide.

Private clouds are the perfect compromise, delivering the expected benefits and efficiencies of cloud technology without the privacy and compliance concerns of multitenant cloud models. Understandably, they are more easily embraced for companies' fundamental business applications and sensitive workloads. But it's private cloud's self-service, automation and metering capabilities that can make a huge difference to the organization economically and operationally. These capabilities can substantially reduce manual administration, lower the cost of IT maintenance and support, and facilitate the dynamic consumption of IT services and provisioning of IT resources. The result: greater agility, innovation and speed to market.

Given the business pressure to deliver IT services faster and cheaper, it's no wonder companies are gravitating to private clouds. Still, IT leaders need to move thoughtfully to understand what's involved in such a move and take sufficient steps to plan and implement private clouds. Companies that make the greatest gains recognize that designing, building and managing a private cloud infrastructure is not an overnight project. It's a long-term strategy that requires a holistic view of cloud computing in the context of the enterprise IT and business operation.

IBM's end-to-end portfolio of private cloud solutions is designed to support this strategic view with services that accommodate the range of cloud maturity levels and span the entire deployment lifecycle, from strategic planning and assessment to implementation and management. Whether you are looking to start the transition to private cloud, expand

existing capabilities or cloud-enable your data center, IBM services and experience can help you harness the benefits of private cloud quickly and cost-effectively. This paper provides an overview of the services comprising the IBM private cloud services portfolio and the many pathways offered for achieving private cloud's transformational benefits.

Private cloud: Transforming the enterprise business model

Private clouds enable internal IT resources to be dynamically pooled and shared across the enterprise, providing near instant access to those resources without the administrative overhead of traditional IT deployment. Private clouds are uprooting the IT order, accelerating the kind of transformative business model change that is strongly needed in a difficult economy by:

- **Speeding time to market** by streamlining provisioning of not only server, storage and network resources, but also middleware and database resources required for experimentation and new product development
- **Providing rapid scalability** to deliver new services more quickly wherever and whenever they are requested
- **Automating administration and service management**, eliminating rote tasks that can drive up operational costs
- **Integrating data and insights** from employees, customers, partners and other stakeholders, reducing redundancy and improving efficiency
- **Metering usage** and users of cloud-delivered services and resources.

Private cloud's ability to transform business may well explain why the scope and pace of adoption have picked up dramatically. In fact, most organizations surveyed by the

Infrastructure Executive Council plan to deliver at least 30 percent of their capacity via private clouds by 2015.³ Private cloud already accounts for the lion's share of cloud infrastructure spending, and that trend is expected to continue. According to IDC's IT Cloud Infrastructure Financing Forecast, by 2015 annual spending for private IT cloud infrastructure is expected to grow to \$18.9 billion compared to \$13.4 billion for IT public cloud infrastructure.⁴ Private clouds offer the privacy, governance and compliance benefits of an onsite hosting solution with the cost and efficiency benefits of the cloud. They deliver these efficiencies, but they do it behind a firewall.

Private clouds enable IT to go from being a technology caretaker to a provisioner of services and, in doing so, they facilitate a better customer experience. With infrastructure and application resources dispensed more flexibly and automatically, served up to users on request, fewer administrators are needed to manage the operation. Instead of racking and stacking services, IT managers can focus on growing the business. It's a more empowered and strategic role.

The importance of a private cloud strategy

While there are an increasing number of products and services to facilitate private cloud deployment, success depends on having a solid cloud strategy and turning it into a roadmap for successful implementation. The challenge is to stage the adoption in a way that allows benefits to be accrued as rapidly as possible.

Companies that derive the greatest value from private cloud have been selectively implementing private clouds in the right situations to accomplish specific business objectives. Based on IBM's experience, most organizations look to private clouds to accomplish three objectives:

- Optimize their existing IT environment and improve operational efficiency
- Innovate new products and services to significantly enhance customer value and increase speed to market
- Disrupt current business models and industries by addressing previously unforeseen customer needs and gaining first-to-market advantage.

Understanding the relative importance of these objectives is central to developing a meaningful private cloud strategy. Furthermore, building that strategy obliges IT and business stakeholders to work together to discuss the organization's readiness for cloud—not just whether the infrastructure is sufficiently virtualized and automated for cloud, but also whether the organization is culturally ready for the changes that will be brought about by cloud. Stakeholders need to answer fundamental questions about cloud design, service levels and deployment, and come to agreement on the organization's strategic expectations of and requirements for cloud, including:

- Cloud computing's role in shaping business processes
- Workloads that benefit most from the cloud (development/testing, production, enterprise applications)
- Availability, performance and security requirements
- Computing, storage and bandwidth requirements
- Operating system (OS) and infrastructure ownership and management responsibility

- Integration with the organization's traditional server infrastructure
- Integration into broader enterprise IT and business strategy.

IBM offers services to help our clients determine their private cloud strategy. Tackling these issues upfront, especially in the context of the larger hybrid computing environment, enables you to make good decisions about private cloud—decisions that can help you dramatically improve your return. It can also help you determine whether your organization has the requisite financial and technical resources to design, build and manage a private cloud solution independently or whether external support will be necessary.

The IBM private cloud portfolio

Whether you are just beginning to assess your infrastructure and organizational readiness for private cloud, need help architecting and implementing a private cloud infrastructure, or you are looking to improve your current management capabilities for cloud, IBM can help. Our end-to-end portfolio of private cloud services and expertise runs the gamut from strategic planning and consulting to implementation and management, supporting every budget, cloud maturity level and stage in the deployment process.

IBM tempers the technological, operational and cultural upheaval often associated with cloud computing by offering multiple pathways to private cloud. Your company can choose the cloud solution that works best for you based on your current and planned technology investment, internal skill levels and how quickly you need to achieve a return. You can use our

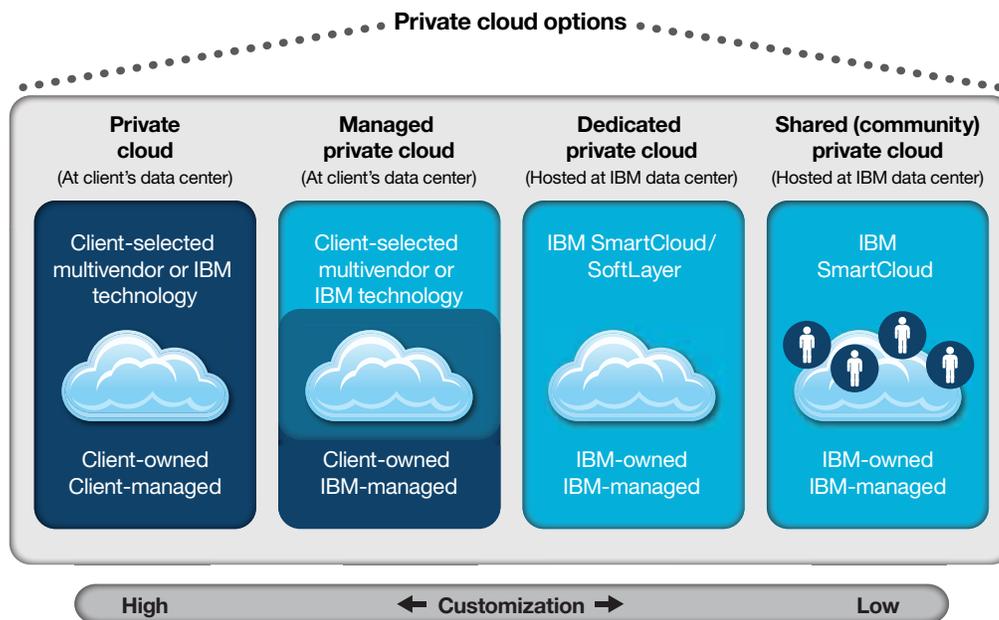


Figure 1. Flexible options for private cloud. IBM provides multiple options for deploying private clouds, allowing companies to offload as much of the cloud initiative as they want.

hardware or leverage your existing hardware investment—including both IBM and non-IBM products. You can retain management responsibility or offload that responsibility to IBM. You decide where your cloud will reside and who will own, operate and manage it (Figure 1).

If you are looking to get a rapid head start, IBM Private Modular Cloud is worth considering. This platform as a service (PaaS) private cloud can be deployed at your facility

with optional management services in just 10 weeks—and only 20 days onsite. You can also choose a fully managed infrastructure as a service (IaaS) private cloud solution from the IBM SmartCloud® portfolio. IBM has designed our private cloud services to help organizations capitalize on the value proposition of private cloud and leverage IBM services at every phase of the cloud transition.

Strategy and design services for private cloud

IBM strategy and design services help you develop a private cloud strategy and an actionable deployment roadmap aligned to your business goals.

Cloud infrastructure strategy and design

Your cloud computing strategy needs to be based on a thorough evaluation of your infrastructure and workloads, with the goal of understanding how they can be optimized using cloud computing. In this fundamental service, IBM works with you to understand your key business and IT priorities, challenges and requirements in a two-day workshop. IBM takes the information gained in the workshop, and over the next several weeks, uses rigorous qualitative and quantitative tools to analyze the existing infrastructure in the context of your values, making it possible to determine where and how best to implement cloud computing in your environment.

IBM consultants map the information collected to our cloud computing adoption framework, a standardized reference for cloud delivery models (public, private, hybrid) and services delivered (infrastructure, platform, application), to establish your strategic intent for cloud. We determine which types of services and delivery models are right for you, the target capabilities you can expect from the cloud, and the cloud options that will provide the quickest and most optimal return for your business.

The cloud computing adoption framework also identifies service management capabilities like metering and chargeback billing that need to be in place for a private cloud as well as

potential challenges that should be considered prior to cloud deployment, such as those associated with governance and integration. Our robust analytics, developed from IBM's internal and client experiences, enable cloud strategies to be developed up to 90 percent faster than traditional methods of analysis.⁵ The end result is an actionable transition plan and visual roadmap for private cloud deployment that can help facilitate workload selection and a cloud operation aligned to business goals.

Workload transformation analysis for cloud

IBM's unique cloud workload analysis service helps you determine the best candidates for private cloud using a tool and methodology developed by IBM Research. The tool's analytic algorithms and filters automate many of the manual tasks typically required in workload analysis, reducing analysis time by up to 66 percent.⁶

Data collected about your current environment, requirements and cloud strategy is fed into the tool, which analyzes each workload, assessing both business applications and infrastructure components to develop a preliminary list of targeted workloads for cloud. The list is refined by IBM consultants using knowledge aggregated from thousands of cloud implementations. The end result is a prioritized list of your workloads suitable for migration to private cloud. The associated migration difficulty and cost analysis is included for each workload. You can use this list to begin creating your business case and also to make educated decisions about what, where and how to implement cloud in your environment.

Cloud networking strategy and optimization

Before you deploy your private cloud, you need to understand the impact it could have on your network infrastructure and application performance. IBM's cloud networking strategy and optimization service helps with both. Two offerings—one for the network infrastructure and the other for applications—expose potential network and application risks, and identify opportunities for optimization. By identifying and addressing these issues upfront, you can minimize the chance of costly migration delays and problems during deployment.

The network infrastructure optimization service assesses architecture configurations and traffic flow and analyzes key

network attributes like security, availability and management. It zeros in on current vulnerabilities and identifies remediations that can help prepare the network to fully support private cloud. The resulting readiness report and scorecard prioritize the recommended enhancements you should make, balancing network functionality with cost and risk.

The network application optimization service examines interdependencies between applications, servers and networks and analyzes applications' suitability for cloud delivery. Its scorecard prioritizes applications that are best suited for migration to the cloud. It also recommends ways to optimize specific applications for better performance across the network.

Private cloud strategy and design services summary			
	Cloud infrastructure strategy and design	Workload transformation analysis for cloud	Cloud networking strategy and optimization
Your primary objective	Develop a private cloud strategy and high-level plan for implementation	Identify current workloads best suited for private cloud	Determine the impact of private cloud on network and application performance
Services provided	<ul style="list-style-type: none"> Two-day workshop to understand your objectives and requirements for cloud Analytic assessment of your existing infrastructure Determination of best-fit cloud services and delivery models 	<ul style="list-style-type: none"> Collection of data about your current environment, requirements and cloud strategy Analytic assessment of current workloads to determine potential targets 	<ul style="list-style-type: none"> Assessment of current network vulnerabilities and optimization potential Assessment of current applications' suitability for private cloud
Deliverables	Transition plan and visual roadmap for private cloud deployment	Prioritized list of workloads suitable for migration to private cloud, including associated migration difficulty and cost analysis	<ul style="list-style-type: none"> Network readiness report and scorecard Scorecard prioritizing applications for private cloud Recommendations for optimization
Service duration	4 weeks	6 weeks (on average)	6 to 12 weeks

Build services for private cloud

Increasingly, companies are looking to build private clouds on their own premises because it allows them to make better use of existing IT investments. They want the flexibility to customize a private cloud for their needs and shorten lengthy deployment times. They also want to speed provisioning for new workloads and simplify management of the virtualized cloud infrastructure. And they want to do all of these things without a significant capital or operational investment. IBM Private Modular Cloud answers these requirements.

Private Modular Cloud

IBM Private Modular Cloud is one of the fastest routes to private cloud available today.⁷ It speeds cloud creation using a standardized architecture, automation and a range of pre-configured services that provide choice while keeping costs low. Private Modular Cloud includes all the requisite technologies and service management software needed to deploy a private cloud environment on a client's premises. So instead of building a private cloud from scratch, which can take months or even years to accomplish, Private Modular Cloud enables you to be up and running in a matter of weeks—with onsite installation in as little as 20 days.

What's more, with its self-service portal and service catalog, your developers can provision hardware and platform resources on their own in minutes by selecting reusable "patterns" from a personalized pattern library. A pattern is defined as code for a specific OS, database, middleware or solution that enables automated provisioning and de-provisioning of each of those platform elements. Patterns encapsulate years of human expertise and best practices into code that can be deployed quickly, enabling developers to build their desired platform without a lengthy investment of time. As such, they help jumpstart application development and enable you to get new services to market sooner.

Private Modular Cloud feature summary

- Access PaaS private cloud capabilities and automation right out of the box
- Deploy in as little as 20 days onsite
- Leverage your existing infrastructure or one of IBM's optimized hardware configurations
- Customize your cloud and scale quickly by adding virtual machines and service modules as your needs change
- Dramatically simplify and speed system provisioning and skilled management

PaaS capabilities and automation. The majority of private clouds deployed to date have been infrastructure as a service (IaaS) clouds. While IaaS private clouds provide a well integrated, automated infrastructure and automated access to highly scalable server, storage and network resources, middleware is often provisioned and managed manually, limiting speed and agility. IaaS private clouds do not provide the critical platform services needed to facilitate cloud creation, deployment or management.

Private Modular Cloud is different because it extends automation to the platform layer, including middleware, operating systems and databases. It offers the expanded capabilities of a platform as a service (PaaS) private cloud—configured for PaaS right out of the box. It is an entire computing environment packaged with the standardized services, tools and templates needed to simplify the creation, deployment and ongoing management of private cloud at a client's site.

With this PaaS private cloud in place, you can leverage IBM's catalog of more than 200 industry-leading patterns for specific operating systems, databases, middleware and solutions.

Patterns are available for a wide range of vendor products: Apache, BEA, Oracle, Sun, IBM Lotus®, IBM WebSphere®, and IBM Tivoli® software, to name a few. They enable IBM to quickly build and deploy your cloud infrastructure and integrate the optional cloud management software stack to your specifications.

PaaS automation reduces reliance on system administrators, shifting control for many system functions to users. In addition to provisioning and de-provisioning their own development resources, users can initiate patches and upgrades of middleware and databases—all via a personalized self-service dashboard. Workload management, data management and other routine maintenance tasks are streamlined and drastically

simplified by eliminating the manual and skilled labor typically associated with them.

Modular flexibility and scalability. Private Modular Cloud offers a high degree of flexibility because of its modular framework. It is designed to be scalable, allowing you to expand the size and capabilities of your private cloud infrastructure by selecting desired service modules. You can start as small as 100 virtual machines (VMs), using your existing or newly purchased hardware and software, and scale up to as many as 10,000 VMs as your needs change. You can add customized OS, middleware and database patterns to your service catalog as well as automated management, security and data protection services specifically designed for Private Modular Cloud (Figure 2).

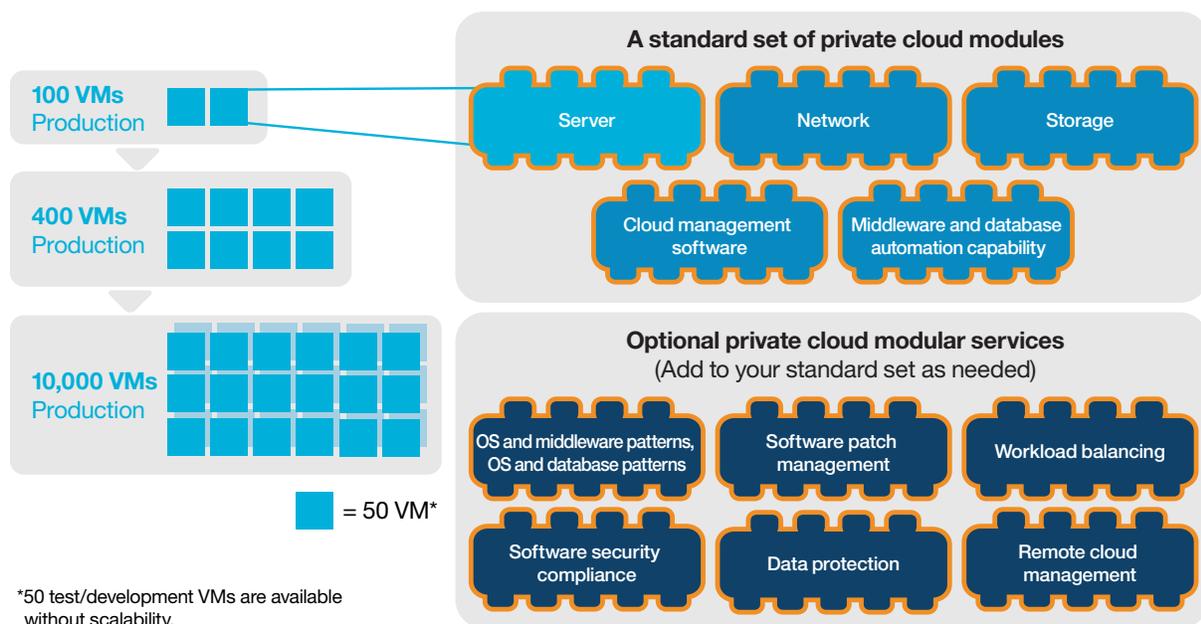


Figure 2. Modular design. The flexibility inherent in Private Modular Cloud derives from its modular capacity and service modules, which allow companies to expand their private cloud's size and capabilities easily and as often as needed.

By enabling you to plug in new hardware, software and middleware over time, Private Modular Cloud allows you to make necessary adjustments as cloud technologies and services evolve. Optional workload capacity controls and analytics can also be added to help ensure that the right amount of capacity is provisioned and that workloads are optimally placed and configured. By providing the management visibility to optimize cost and capacity across heterogeneous platforms, Private Modular Cloud facilitates that transition to a true hybrid computing model.

Rapid onsite deployment. IBM experts help design, set up and deploy the Private Modular Cloud on your premises. You can choose an IBM-supplied platform or leverage your own existing hardware. Selecting our standard architected solution (which includes hardware, middleware, storage and networking) offers the fastest deployment. IBM installs the necessary hardware and cloud management software using automation scripts. We build your service catalog, using the PaaS patterns you've selected from our content library, and your process automation workflows—all in as little as 20 business days. We can also integrate your cloud with existing systems and networks, perform solution testing and provide training for administrators and end users. Our build services are designed to reduce the costs, cycle times, complexity and risks of private cloud implementation.

The result is a scalable, flexible infrastructure capable of standing up to changing business demands and accelerating the return on your investment. It is due in large part to IBM's

automation technology and the IBM Cloud Computing Reference Architecture (CCRA), which provides a technical blueprint for constructing clouds and implementing cloud services. The CCRA combines the time-tested automation tools, service management methodologies and best practices to guide clients to a smoother implementation of private cloud, with higher degrees of reliability, scalability and control.

IBM-supplied private cloud platforms

In addition to IBM Private Modular Cloud, we also offer alternate private cloud configuration services. If you are looking to replace aging legacy systems or upgrade your operation with more powerful systems, an IBM-supplied private cloud platform is your best choice. It provides planning, installation, configuration, testing, and training that are optimized for each platform.

Supported IBM platforms include IBM Flex System™ and IBM PureFlex™ System, Linux on IBM System z/VM®, IBM Power Systems™, IBM System x® x86. We also support non-IBM hardware.

Compared with traditional server environments, our private cloud server environments have been shown to increase utilization to 70–90 percent, accelerate provisioning from weeks to minutes, and change management from months to days or hours. Payback is usually months compared to years for legacy server environments.⁸

Cloud network infrastructure integration services

For clouds to deliver on their full potential, they need to optimize the utilization of all available resources: processing power, memory, storage and the network. The network plays an essential role in how efficiently these IT resources are connected, utilized and secured. IBM's cloud network infrastructure integration services help you understand the requirements for these IT resources when designing the network to support a cloud computing environment.

Applying decades of experience in networked IT, IBM applies proven network methodologies and reference architectures to optimize the performance of the private cloud and avoid network bottlenecks. IBM's vendor-agnostic approach coupled with our partnerships with leading network technology providers help us select and implement the right network solutions for clients.

IBM's private cloud server environments increase utilization to 70–90 percent, accelerate provisioning from weeks to minutes, and change management from months to days or hours. Payback is usually months compared to years for legacy server environments.⁸

Managed services for private and shared private cloud

IBM offers several managed services options for private cloud. These include custom management solutions that can be built to your specifications for Private Modular Cloud or any private cloud infrastructure, irrespective of who owns, hosts and manages it.

In the case of Private Modular Cloud, standardized, pre-integrated IBM management services are offered as optional modules that can be added to the PaaS private cloud as needed. We can also unify the management of your private cloud and traditional IT infrastructures. Our integrated management solutions provide a single view to facilitate control.

In the case of IBM SmartCloud Enterprise+, SoftLayer private clouds and IBM SmartCloud for System z® (which are all described below), standardized IBM management services are fully integrated into an IaaS private cloud. These fully managed IaaS private clouds offer both multitenant and dedicated delivery, providing the cost benefits of a shared architecture without the security risks. They are owned, hosted and managed by IBM.

IBM SmartCloud Management Services

IBM SmartCloud Management Services provides managed services for private cloud. Its set of standardized managed services modules allow you to easily customize a management solution for a new or existing private cloud infrastructure. You simply select management services tailored to your needs. These services can be deployed in conjunction with Private Modular Cloud or any other IBM private cloud build service. They can be provided remotely, onsite at your data center, or a combination of both.

IBM SmartCloud Management Services can be structured to meet your most stringent availability and security requirements. You can include end-to-end monitoring of the virtualized infrastructure, plus data protection, patch management and troubleshooting. You can also include policy-driven capacity management and automation to optimize availability and workload performance. By providing automated, continuous monitoring and management, IBM's custom management solutions can help you reduce the cost and risks of running a private cloud while enabling your IT organization to focus on your core business.

IBM SmartCloud Enterprise+

IBM SmartCloud Enterprise+ (SCE+) delivers a fully managed, IBM-hosted production-ready IaaS shared private cloud. Flexible options and an intuitive online interface enable you to quickly configure your SCE+ managed shared private cloud to your desired workload and performance specifications—from servers to service levels—and then turn it over to IBM for management.

IBM SCE+ includes a first-of-a-kind network-enabled cloud. Built on the combined networking expertise and best practices of IBM and AT&T, IBM SCE+ with AT&T NetBond delivers highly secure, managed access to an enterprise-class cloud computing platform. It provides the security and performance benefits of a private cloud with the economics and flexibility of a public cloud.

SCE+ also provides complete governance, administration and management control aligned to desired business and usage requirements. The infrastructure is IT Infrastructure Library (ITIL) compliant with all of the management services necessary to support an enterprise-caliber production environment, including over 70 automated

tasks to help manage adherence to security, performance and reliability standards. SCE+ reduces your operational risk by providing complete coverage with services like patch management, database management and end-to-end monitoring of applications—all integrated into the service. SCE+ management services include the application layer with coverage for VM instances above the hypervisor level.

The SCE+ architecture is built from the ground up with high availability servers and transaction-ready storage. Its self-contained units of computing, storage and networking allow the private cloud infrastructure to be dedicated or shared safely using software partitioning. Either way, multiple security and isolation controls built into the virtual infrastructure and network keep your cloud environment private.

IBM SCE+ with AT&T NetBond offers a first-of-a-kind network-enabled cloud, providing the security and performance benefits of a private cloud and the economics and flexibility of a public cloud.

SoftLayer private cloud solutions

SoftLayer provides the industry's only seamlessly unified global cloud computing infrastructure. Combining virtual public cloud instances, powerful bare metal servers, turnkey private clouds and a broad range of storage, network and security devices and services, all connected via a global private network, SoftLayer goes far beyond the parameters of traditional IaaS

private clouds. Companies can deploy globally distributed private cloud and hybrid architectures in real time, marrying the security, privacy and reliability of private clouds with the economy and speed of a public cloud. SoftLayer solutions enable enterprises and small businesses alike to onboard quickly, using a credit card to procure cost-effective services, and then scale their deployment and usage based on their exact needs and workloads.

SoftLayer private cloud solutions also provide companies with the capability to manage all of their cloud components via a single control-and-command portal. The portal and an expansive set of application program interfaces (APIs)—more than 1,600 functions—enable users to securely mix and match shared and dedicated private and public cloud services with a broad array of configuration and customization options.

Managed private/shared private cloud services comparison

	IBM SmartCloud Management Services	IBM SmartCloud Enterprise+	IBM SmartCloud for System z	SoftLayer private cloud solutions
Solution type	Custom managed services for on-premises private clouds, delivered both onsite and remotely	Fully managed, production-ready IaaS solution, running on either IBM System p® or System x	Fully managed, production-ready IaaS solution	Production-ready IaaS private cloud capabilities via bare metal and/or virtualized infrastructures
Your primary requirements	<ul style="list-style-type: none"> Compatibility with heterogeneous, legacy private cloud infrastructures End-to-end infrastructure monitoring 	<ul style="list-style-type: none"> Enterprise-caliber management services, SLAs and security Flexible configuration options Same-day deployment 	<ul style="list-style-type: none"> Mainframe scalability and resiliency Access to new technologies Flexible configuration options 	<ul style="list-style-type: none"> Instant access to server and storage resources Predictable performance at a compelling price point
Infrastructure ownership and location	Client	IBM	IBM	IBM
Management responsibility	IBM, client or shared	IBM	IBM	IBM, client or shared
Implementation timeframe	2 weeks to 3 months (based on integration complexity)	Hours	6 months, on average	Minutes to hours

Options available with SoftLayer private cloud solutions include:

- High-performance bare metal servers capable of vertical scaling
- Virtualized servers in a private hosted configuration
- Citrix CloudPlatform, powered by Apache CloudStack, for cloud management.

IBM SmartCloud for System z

IBM SmartCloud for System z is the mainframe version of our fully managed, production-ready IaaS private cloud. The service provides shared, highly scalable IBM z/OS® mainframe capacity delivered in dedicated logical partitions (LPARs) within a continually refreshed, managed private cloud. It enables you to adjust computing resource capacity as business needs change. You can take advantage of standardized processes, flexible pricing, automation and our global delivery resources. SmartCloud for System z also reduces infrastructure costs—by as much as 20 percent over traditional System z computing.⁹

This service meets the industry's highest level of security certification, leveraging certified LPAR and z/OS subsystem isolation. Enterprise-class site security processes and tools protect your IT environment while supporting your compliance requirements. You can choose from multiple software stacks, disk and tape options, enabling you to configure the z/OS private cloud to your business needs. You can also select from a range of availability options to accommodate critical and noncritical applications cost-effectively.

Security services for private cloud

IBM's private cloud portfolio also includes security services to protect your private cloud environment while helping you satisfy rigorous business continuity and resiliency requirements. We understand the unique challenges posed by cloud and the importance of integrating cloud security strategy with enterprise IT security policies and procedures. Our security services for private cloud leverage our proven security portfolio. They cover the entire cloud lifecycle, from deployment to service consumption, and the range of security domains from identity and access management to virtualization security. We also offer a cloud-based managed backup solution for your critical business data and a fully managed recovery solution for virtualized server environments that leverage IBM's SmartCloud infrastructure.

Why IBM?

Private cloud deployments depend on a continuum of key services, from strategic design to implementation and management. You can't just layer cloud software on top of your existing infrastructure and call it a private cloud. Success hinges on preparing the infrastructure, developing an actionable private cloud strategy and having the requisite tools and capabilities to implement it. While many organizations cobble together private cloud services from multiple vendors, often at the expense of simplicity, interoperability and ease of use, IBM's holistic approach and portfolio of end-to-end services helps you avoid this patchwork approach. We offer multiple pathways to private cloud with all of the planning, implementation, management and security services to help you get there.

In its 2013 Worldwide Cloud Professional Services - Vendor Analysis, IDC named IBM a MarketScape Leader, citing among other things, IBM's "unique ability to bring together business consulting, industry and process knowledge, and a broad portfolio of cloud solutions, including its own software, hardware, and IBM Research innovations."¹⁰

With more than 5,000 private cloud engagements behind us, we bring deep expertise in strategic visioning and cloud migration, helping you make informed decisions about workload suitability and infrastructure readiness for private cloud and hybrid environments. Skilled IBM professionals help speed deployment, whether you choose our PaaS-based Private Modular Cloud, one of our turnkey, fully managed IaaS clouds or another IBM-supplied platform for private cloud. IBM's flexible, rapidly deployed configurations help you achieve desired scope, platform and service levels. Our management solutions are designed to provide complete control and visibility over private cloud resources and to scale proportionally with the infrastructure, allowing for business growth without performance degradation. Our automation tools drive operational efficiency, reducing the costs and risks of transition and knowledge transfer.

When you work with IBM, you take advantage of our real-world experience with private cloud. You have all the building blocks needed to create your private cloud and the know-how to capitalize on its transformative potential.

For more information

To learn how IBM is helping organizations succeed with private cloud, please contact your IBM representative or IBM Business Partner, or visit:

ibm.com/services/private-cloud

ibm.com/services/cloudservices

ibm.com/privatecloud



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¹ IBM, "The Essential CIO: Insights from the Global Chief Information Officer Study," May 2011.

² IBM, "Data center operational efficiency best practices: Enabling increased new project spending by improving data center efficiency," Findings from the IBM Global Data Center Study, May 2011.

³ CEB, "Cloud computing: Private cloud migration, Networking Call Notes," Arlington, VA, 2012.

⁴ IDC, "Worldwide private and public IT cloud infrastructure financing 2012-2015 forecast: An in-depth analysis of leasing and financing opportunity in the cloud, doc #232707," February 2012.

⁵ Based on a specific IBM client engagement. Individual results may vary.

⁶ Based on use in IBM's IT transformation project. Individual results may vary based on availability and extent of client data.

⁷ Based on IBM service analysis and experience.

⁸ Based on results from IBM's 2008 Technology Adoption Program. Individual results may vary.

⁹ Based on IBM client experiences. Individual results may vary.

¹⁰ IDC, "IDC MarketScape: Worldwide Cloud Professional Services 2013 Vendor Analysis, doc #242401, Volume:1," August 2013.