

Private cloud, simplified

Simplify the design and deployment of powerful private cloud environments with IBM Storage Solutions for IBM Cloud Private

Highlights

- Offers tested, validated solutions for flexible, reliable private clouds
 - Provides the basis for full-stack on-premises cloud environments
 - Enables simple container utilization with Docker and Kubernetes
 - Offers market-leading virtualization, data reduction and copy management
 - Includes Blueprints for a wide range of environments, x86 to mainframe
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“Data-driven” enterprises are those organizations seeking to gain more and more value from their information assets in order to capture and keep competitive advantage. Cloud computing has emerged as one of the most powerful and popular new engines for deriving greater value from data. In fact, IBM research confirms that today, more than three-quarters of enterprises have deployed some type of cloud computing capabilities.¹

Well-constructed on-premises or private cloud environments are becoming especially attractive, because they offer the benefits of a public cloud, including rapid deployment and scalability, plus ease of use and elasticity. Private clouds can also offer greater control, increased performance over traditional infrastructure, predictable costs, tighter security and flexible management options. Perhaps most importantly, private clouds can be customized to your unique needs and security requirements.

IBM Storage Solutions for IBM Cloud Private bring together all the elements needed for building powerful and agile private cloud environments. Each IBM private cloud solution combines IBM storage systems; IBM Cloud Private software; and a pre-tested, low-risk, easily deployed and customized IBM Spectrum Access Blueprint. IBM Storage Solutions for IBM Cloud Private are designed to help enterprises leverage the benefits and advantages of private cloud deployments with minimal complexity, risk and cost.

IBM Cloud Private

Not all application workloads are suitable for the public cloud. In these cases, a private cloud may offer great benefit. There are many reasons to choose private cloud solutions:

- Some enterprises can't tolerate the business disruption of the lengthy refactoring often needed to move applications off-premises.
- Many systems of record (traditional database and transactional applications) may have performance characteristics—such as less dynamic resource requirements—that will not benefit as much from cloud economics as will systems of engagement and insight (mobile, social and analytics applications). Often these systems have residency, compliance or performance needs that require them to run in dedicated on-premises infrastructure.
- While cloud economics help save money with very dynamic applications, applications with steady-state demand may actually end up costing more when running in public clouds.

For these and many other application workloads that operate best on-premises, IBM Cloud Private offers a leading-edge private cloud platform for developing and running workloads locally. It is an integrated environment that enables you to design, develop, deploy and manage on-premises, containerized cloud applications behind your firewall. It accelerates the work of enterprise developers by providing access to valuable data and applications behind the firewall through a flexible container-based architecture and application programming interface (API)-based catalog of services, and includes a private image repository, a management console and monitoring frameworks.

IBM Cloud Private provides control of how and where applications consume cloud services. It uses industry-standard open-source technologies such as Kubernetes, Docker, Helm, Terraform, Cloud Foundry and more than 40 others. It provides integrated operational management and developer services such as IBM MQ messaging for applications in distributed systems, a microservices framework builder, IBM Db2 Developer Edition, an IBM WebSphere Application Server runtime environment and more. Leveraging these services, enterprises can optimize legacy applications with cloud and containers for use with DevOps or analytics, create new cloud-native applications, and open their data centers to work with cloud services.

IBM Cloud Private integrates a variety of microservices (such as IBM Watson APIs) and middleware capabilities to help form a robust and responsive infrastructure. These capabilities can improve the overall integration and continued deployment of applications, while minimizing risks associated with performance bottlenecks and unpredictable scalability.

IBM Cloud Private helps drive enterprise transformation by providing developers with a choice of languages, frameworks, runtimes and services to build cloud-native applications and microservices so that they can create their own cloud services. It accelerates innovation by facilitating utilization of services such as Blockchain tracking and machine learning that

developers can infuse into existing or new applications.

IBM Cloud Private solutions come with IBM Multi-cloud Manager, a management solution purpose-built to address the policy, compliance and application management challenges of multiple clusters. IBM Multi-cloud Manager works across clouds, providing integrated views and application-centric management. Clusters can span geographic locations, technologies, business purposes (such as development, test and production) and cloud types. With the IBM Multi-cloud Manager toolset, enterprises deploying IBM Cloud Private can gain greater visibility, improve governance and integrate automation across an entire multicluster environment.

IBM Spectrum Access Blueprints

Cloud compute solutions often bring increased complexity due to the volume of objects and components that make up the environments. Managing thousands of individual containers can be challenging. Inefficient storage allocation along with a lack of overall performance poses a real threat to scalability.

IBM Spectrum Access Blueprints help solve these cloud solution challenges by providing pre-tested and validated reference architectures designed to facilitate implementation of IBM Storage Solutions for IBM Cloud Private. Everything from best-practice designs to detailed configuration documentation is available to make IBM Storage Solutions for IBM Cloud Private easier and faster to deploy. Blueprints are available for IBM Power, IBM Z and commodity x86 environments, as well as IBM storage solutions such as the new IBM FlashSystem 9100 and VersaStack converged infrastructure solutions from IBM and Cisco that can utilize IBM FlashSystem, IBM Storwize and IBM SAN Volume Controller (SVC) systems. New Blueprints are continually being designed, tested and added. IBM Spectrum Access Blueprints pool compute, network and storage resources, and provide the architecture guidance needed to deploy private cloud solutions designed to deliver the economics and simplicity of the cloud with the accessibility, virtualization, security and performance of an on-premises implementation.

IBM Spectrum Access Blueprints help reduce risk and guesswork by providing architects' and administrators' guidebooks for implementation of IBM Cloud Private-based solutions. Think of the Blueprints as private cloud cookbooks, where IBM has already worked out the best ingredients, the proper measurements, and the perfect balance of each. By following the guidelines in these Blueprints, you can create a complete IBM solution that helps protect against compromise while delivering a simplified, standardized and trusted approach for the deployment, use and management of shared infrastructure resources and cloud environment. Build the strongest multicloud environment. Delegate capacity provisioning securely via predefined storage classes and quotas, enabling teams to self-provision storage without being storage experts. Build microservices in hours or minutes, not days or weeks. The options are only limited by your creativity and imagination.

IBM Storage Solutions for IBM Cloud Private

IBM Spectrum Access Blueprints are the recipe and IBM Cloud Private provides the private cloud-specific ingredients for building IBM Storage Solutions for IBM Cloud Private. These solutions incorporate the latest enterprise software-defined data center technology, including network and storage virtualization and container integration. In fact, the solutions simplify containerized environments, scaling to more containers with automated provisioning of supporting volumes that's faster than traditional manual container scripting.

As expected from cloud deployments, IBM Storage Solutions for IBM Cloud Private are designed to expand and shrink depending on the application necessity—scaling up or down is a simple and easy procedure that can be done without impact. The solutions enable the movement from technology silos to a cloud model that transforms data center infrastructure into pools of resources that can be easily allocated and repurposed. Applications can run more efficiently within, between and beyond data center boundaries—and IT departments can evolve into IT-as-a-service (ITaaS) centers to accelerate service delivery and increase business revenue.

IBM Storage Solutions for IBM Cloud Private abstract the complexity of individual devices, hypervisors and virtual machines into a simplified model that makes them easy to manipulate and incorporate into automated processes. Users simply request the resources they need through an easy-to-use, secure self-service portal, and the system provisions the underlying infrastructure resources. Cloud infrastructure layers are synchronized and optimized, helping ensure that IT resources are available on demand. Because this intelligent system knows how objects fit together and can apply service profiles in a consistent manner, you can have confidence that the right equipment is quickly and easily provisioned for the workload that you need it to support.

IBM Storage Solutions for IBM Cloud Private can utilize Non-Volatile Memory Express (NVMe)-optimized IBM FlashSystem 9100 all-flash storage arrays, as well as Storwize systems to create virtualized storage solutions that provide efficient storage infrastructure for private cloud environments. These systems include technologies that enhance cloud advantages, with built-in capabilities such as data virtualization and comprehensive data reduction. Embedded within IBM FlashSystem 9100 and Storwize arrays is IBM Spectrum Virtualize, the industry-leading storage virtualization software that can extend data services such as copy management, encryption and high availability to heterogeneous external third-party storage systems. Leveraging the power of IBM Spectrum Virtualize, you can centrally manage storage volumes from a single point, migrate data from existing arrays without disruption to applications, and avoid downtime for backup, maintenance and upgrade operations.

IBM Storage Solutions for IBM Cloud Private also include IBM Z and IBM DS8000 Blueprints to build mainframe-based private clouds that leverage the security, performance and resiliency

only available in mainframe processing environments.

Among the many advantages and benefits offered by IBM Storage Solutions for IBM Cloud Private, enterprises can:

- **Modernize and optimize existing applications.** For years, businesses have invested heavily in middleware that provides the foundation on which many business-critical applications are built. With new containerized versions of IBM middleware available through IBM Cloud Private, you can now optimize these existing investments and modernize their applications to accelerate business innovation.
- **Enable data centers to work with cloud services.** There are security and regulatory constraints preventing organizations from leveraging innovative capabilities normally delivered through the public cloud. With API consistency across both its public and private cloud solutions, IBM enables you to securely integrate capabilities from the public cloud with applications developed on-premises, opening up potential new revenue and profit streams.
- **Modernize or refactor applications.** IBM private cloud solutions accelerate modernization via architecture guidance available from tools such as Cloud Garage, Transformation Advisor (which provides assessment and planning guidance), and Cloud Automation Manager (which enables multicloud provisioning and management).
- **Address large capacity requirements.** IBM Storage Solutions for IBM Cloud Private provide highly scalable storage systems designed to start small and grow as business needs grow. The powerful data reduction, nondisruptive upgradeability and high-capacity IBM FlashCore technology provided by these solutions are ideal for cloud-native workloads.
- **Solve artificial intelligence (AI) problems in real time.** The solutions offer self-service that increases efficiency and agility for data scientists and business analysts. Training models for AI/deep learning can be built faster with more iterations in less time.
- **Increase container security.** Secure Service Containers allow deployment of highly secure containers with automatic encryption and no code-at-rest, in-flight, host, or operating system interaction.
- **Accelerate cloud integration.** The solutions can leverage IBM Spectrum Connect, a centralized integration solution that helps consolidate storage provisioning and configuration abstractions to speed up cloud-based application deployments. DevOps teams can self-provision predefined storage classes that comply with business and application service level agreements.
- **Simplify multicloud deployments.** The solutions facilitate Docker and Kubernetes environments that transform on-premises storage with cloud efficiency and flexibility. You can automate storage provisioning and data protection and reuse data copies for DevOps, analytics and reporting.

Simply private

Private clouds are the right choice for application workloads where performance or compliance are significant issues. But private clouds bring plenty of added complexity, risk and uncertainty—unless you deploy them using IBM Storage Solutions for IBM Cloud Private. These private cloud solutions provide validated blueprints, cutting-edge technologies and market-leading tools that reduce complexity, lower risks and accelerate business innovation. If your organization has concerns about the public cloud, choose IBM to provide the tools and expertise to keep things private, simply.

¹ “Growing up hybrid: Accelerating digital transformation,” *IBM Corp.*, February 2016.
<https://www-935.ibm.com/services/us/en/it-services/pdf/GMW14087USEN.PDF>

Why IBM?

IBM delivers best-of-breed, enterprise-class storage solutions incorporating both hardware and software, for reliable and cost-effective data protection and access, whether on-premises, in the cloud, or in a hybrid cloud environment. With decades of enterprise-level storage experience and powerful data management tools, IBM helps IT operations efficiently use their storage resources, and helps enable interoperability with a wide range of storage technologies. IBM solutions give business managers the ability to keep operational costs under control and within budget.

For more information

To learn more about IBM Storage Solutions for IBM Cloud Private, please contact your IBM representative or IBM Business Partner, or visit: ibm.com/common/ssi/cgi-bin/ssialias?htmlfid=TSW03569USEN&

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