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## Highlights

- Reduce reliance on specific brands and storage tiers by consolidating storage monitoring, automation and analytics
  - Consolidate file, object, block and software-defined storage management with one integrated console
  - Choose from on-premises and cloud-based solutions with a range of licensing plans
  - Simplify administration with optimized interfaces for storage specialists, VMware vCenter users and IBM® Cloud Orchestrator environments
  - Simplify data replication for copy management and disaster recovery
  - Improve consistency and control for basic configuration and operations of storage systems, devices and storage-area network (SAN) fabrics
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# IBM Spectrum Control

*Monitoring, automation and analytics for data and storage infrastructure optimization*

IBM Spectrum Control™ is a comprehensive solution that can significantly improve monitoring, automation and analytics capabilities in multi-vendor storage environments. IBM Spectrum Control helps manage storage systems, software-defined storage, devices and SAN fabrics. Storage can be seen from multiple perspectives, including departmental, application and server views. IBM Spectrum Control helps simplify provisioning, tier optimization, performance management and data replication processes.

## The mission: Simplify data and storage management

While storage environments continue to grow in capacity and complexity, many organizations are scaling back on dedicated storage experts. It is, therefore, imperative that storage becomes more manageable by IT administrators who are also responsible for servers, networks and applications.

Organizations tend to acquire collections of multi-vendor storage systems, due to application requirements, multiple buyers, mergers, staff turnover and other factors. Adoption of cloud and software-defined storage creates more to manage. Each brand of storage system has its own administration interface, which can increase complexity and opportunities for error.



In addition, user expectations are increasing. Businesses collect, store, process and use more information than ever before. At the same time, there is low tolerance for downtime, unpredictable performance or provisioning delays. To satisfy these increased demands, organizations need more comprehensive monitoring, automation and analytics capabilities—so they can proactively resolve issues before users are impacted.

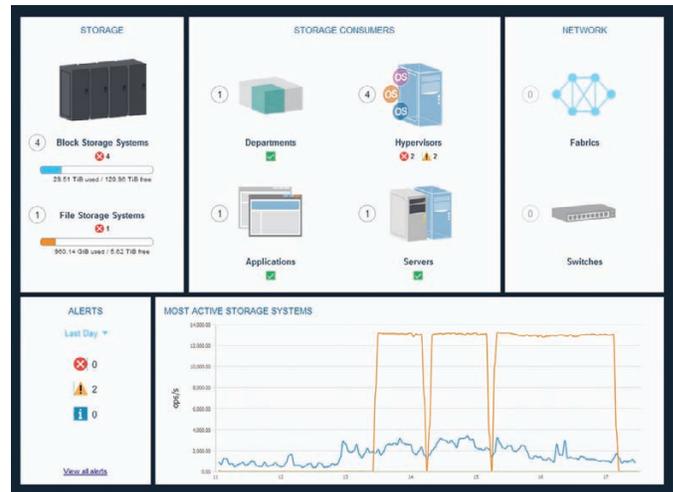
### The solution: IBM Spectrum Control

IBM Spectrum Control is a comprehensive, end-to-end data and storage management solution that monitors, automates and analyzes multi-vendor storage environments.

IBM Spectrum Control provides a single point of control that helps administrators manage every aspect of the storage infrastructure—between the hosts, through the fabric, and down to the physical disks—across multi-site storage environments. IBM Spectrum Control helps consolidate management of file, object, SAN, server-based and software-defined storage.

In fact, IBM Spectrum Control helps you see storage as others see it—with application, departmental and server views of storage. IBM storage administrators can use IBM Spectrum Control for their everyday tasks, leveraging a consistent dashboard for managing the broader storage environment.

IBM Spectrum Control enables you to manage storage your way. Optimized interfaces are included for storage specialists, VMware vCenter users, and remote management using open application programming interfaces (APIs) such as OpenStack, Representational State Transfer (REST) and IBM Cloud Orchestrator.

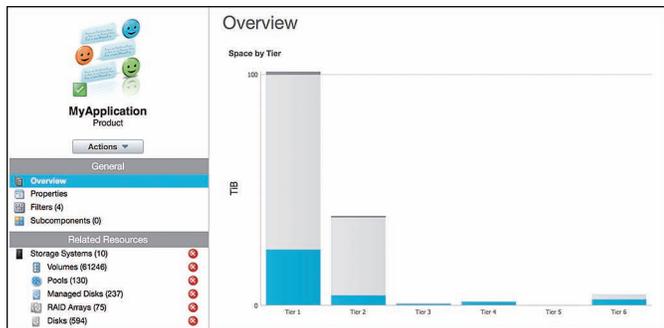


IBM Spectrum Control features a fully-integrated, web-based user interface.

IBM Spectrum Control is available as on-premises software or an easy-to-deploy cloud service.<sup>1</sup> A range of licensing plan options are available to fit environments of all sizes.

### See your storage like you've never seen it before

IBM Spectrum Control enables comprehensive monitoring of the entire data path—including storage systems, software-defined storage, devices and SAN fabric components from multiple vendors—providing a more complete view of the storage infrastructure. Views of applications, departments or other collections are easy to create, so data owners can see customized views of their domains.



An application-oriented view of storage.

## Heterogeneous storage systems, ports and switches

IBM Spectrum Control provides device-level, integrated storage infrastructure management capabilities for managing both IBM and non-IBM storage systems. Agent and agentless options are available. Heterogeneous storage support is offered via the Storage Networking Industry Association (SNIA) Storage Management Initiative Specification (SMI-S) v1.0.2, v1.1 and v1.5 or later. Management capabilities include operational control and provisioning of heterogeneous storage platforms, including storage systems from EMC, NetApp, Hitachi, Oracle Solaris and HP. IBM Spectrum Control also enables performance management at the port and switch levels for platforms from Brocade Communications and Cisco Systems.

In addition, it includes advanced monitoring and performance reporting for IBM storage systems, including IBM DS8000®, IBM Storwize® family systems, and IBM XIV® Storage System; as well as software-defined storage offerings, including IBM Spectrum Virtualize™, IBM Spectrum Accelerate™ and IBM Spectrum Scale™.

## Device management

IBM Spectrum Control helps monitor and manage performance and measure service levels by storing received performance statistics into database tables for future use. IBM Spectrum Control sets performance thresholds for devices based on selected performance metrics, generating alerts when those thresholds are exceeded. These capabilities help the solution simplify the complex monitoring of multiple SAN-attached storage devices.

IBM Spectrum Control device management capabilities include:

- Proactive performance management from a single, integrated console for monitoring storage devices
- The monitoring of metrics, such as I/O rates and cache utilization, and support for storage optimization through the identification of the best logical unit numbers (LUNs) across multiple storage subsystems
- The measuring and tracking of service levels by storing historical performance statistics for analysis and report generation
- Generation of timely alerts that enable event action by setting performance thresholds based on business policies

## SAN fabric management

IBM Spectrum Control supports multi-vendor SANs and includes automatic resource and topology discovery, monitoring and alerts, zone control, and SAN error-prediction capabilities. IBM Spectrum Control diagnostic capabilities show which resources are impacted by an availability or performance issue in the SAN.



IBM Spectrum Control SAN fabric monitoring capabilities include:

- Automated device discovery, topology rendering and zone control for SANs
- Multiple SAN views, including physical, logical and zone
- Diagnostic capabilities that pinpoint resources impacted by an availability or performance issue
- Performance monitoring at the port and switch level
- Enterprise scalability that enables upgrading from SAN islands to enterprise SANs

## Automate data and storage management tasks

IBM Spectrum Control solutions help automate storage provisioning, event processing and copy services tasks.

### Storage provisioning

IBM Spectrum Control includes optimized interfaces for storage specialists, VMware vCenter users, IBM Cloud Orchestrator environments and open APIs such as Storage Management API for Cloud (SMAC). It can help simplify and standardize storage provisioning, so users can quickly get the storage they need to do their jobs.

### Complex event processing

Complex event processing in IBM Spectrum Control can help administrators identify and resolve problems fast. Policy-based automation enables automated responses, based on business policies. Event processing can reduce the complexity of managing alerts in large storage environments.

### Scalable copy services management

IBM Spectrum Control includes copy services management capabilities that help simplify the data replication process. It can automate complex replication tasks without scripts, and can scale to support hundreds of replication sessions across thousands of volumes.

IBM Spectrum Control supports the following session types: IBM FlashCopy®, IBM XIV snapshots, IBM Basic HyperSwap®, Metro Mirror, Global Mirror, Metro/Global Mirror and Global Copy.

For copy services management, IBM Spectrum Control can use IBM DS8000, XIV, IBM SAN Volume Controller (SVC), IBM Storwize V7000 Unified, IBM Storwize V7000, IBM Storwize V3700 and IBM Storwize V3500.<sup>2</sup>

IBM Spectrum Control integrates with IBM Tivoli® System Automation to enable a single point of control for both multi-tiered business applications and the corresponding copy services between two sites. This integration offers the following capabilities:

- Integrated monitoring and control of storage hardware replication sessions
- Automatic start, stop and move of tiered applications
- Lower-priority business application shut down in order to keep higher-priority business applications running
- End-to-end application recovery

### **Optimize storage with advanced analytics**

IBM Spectrum Control uses advanced analytics to help optimize tiered storage, predict errors and analyze performance.

### **Tiered storage analysis and optimization**

IBM Spectrum Control Tiered Storage Optimizer helps organizations optimize price and performance without manual tuning. Tiered Storage Optimizer uses proprietary analytics

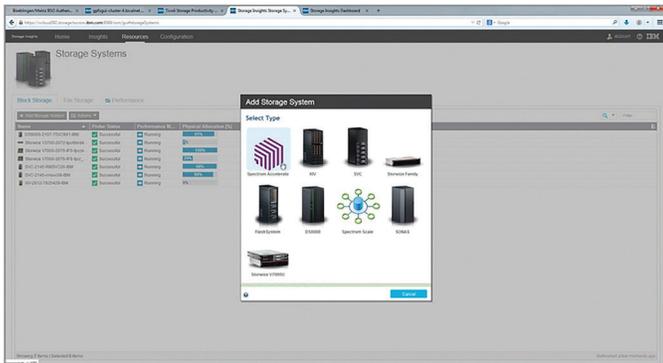
from IBM Research that can help keep data on the right storage tier over time. Storage tier decisions are based on data usage patterns, rather than on initial projections or guesswork. Tiered Storage Optimizer moves data volumes between storage pools and systems. Tier optimization capabilities in IBM Spectrum Control can help large enterprises reduce the total cost of storage by up to 73 percent over five years.<sup>3</sup>

### **SAN Error Predictor**

SAN Error Predictor is an autonomic computing capability designed to help predict SAN network outages before they occur. This functionality incorporates predictive failure analysis into the storage network environment that allows administrators to be more proactive in ensuring SAN availability. SAN Error Predictor enables network errors to be resolved before they impact data and application availability.

### **Performance analysis and management**

IBM Spectrum Control integrates built-in, context-sensitive performance management that is accessible to any administrator. Performance management is server-centric, so administrators can more easily visualize storage performance problems from the end-user perspective. Administrators can quickly generate performance graphs from several perspectives and align them with a simple mouse click. Performance scenarios can be cloned, so administrators can look back in order to better understand how problems first developed.



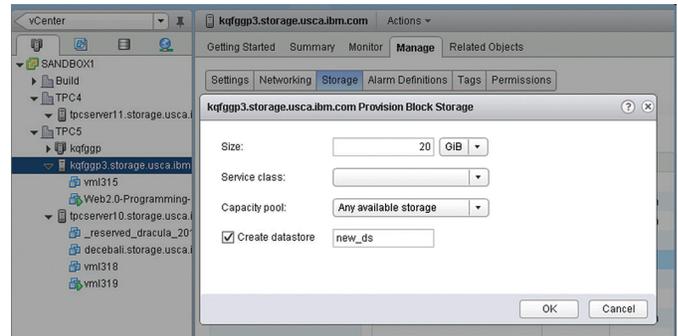
The IBM Spectrum Control GUI simplifies storage provisioning.

### Choose from on-premises and cloud solutions

IBM Spectrum Control is available in a range of options to fit practically any size environment and budget. For example, IBM Spectrum Control Storage Insights is a cloud-based solution that deploys in minutes and includes advanced analytics for storage tier optimization.

On-premises solutions include standard and advanced editions, available in capacity or per-enclosure license options.

IBM Virtual Storage Center bundles IBM Spectrum Control Advanced Edition with multi-brand storage virtualization and snapshot management. IBM Spectrum Control Base consolidates VMware integration for IBM storage systems into a single download.



IBM Spectrum Control and VMware integration simplifies storage management for server and VMware administrators.

IBM Spectrum Control Standard Edition includes:

- Capacity visualization and management
- Performance troubleshooting
- Health and performance alerting
- End-to-end topology mapping with context-sensitive drill-down views
- Application modeling
- Full integration with VMware

IBM Spectrum Control Advanced Edition includes all of the features of IBM Spectrum Control Standard Edition, plus:

- Tiered storage optimization with intelligent analytics
- A service catalog with policy-based provisioning
- Self-service provisioning with restricted use logins
- Application-aware, hardware-assisted snapshot management from IBM Spectrum Protect™ Snapshot

**IBM data and storage management solutions at a glance:**

IBM storage product	Key capabilities
<a href="#">IBM Spectrum Control Base</a>	No-cost download; enables VMware APIs for IBM storage systems
IBM Spectrum Control Advanced Edition	Monitoring, automation and analytics for storage environments; tiered capacity license
IBM Spectrum Control Advanced Select Edition	Monitoring, automation and analytics for storage environments; per-enclosure license
IBM Spectrum Control Standard Edition	Monitoring and automation for storage environments; tiered capacity license
IBM Spectrum Control Standard Select Edition	Monitoring and automation for storage environments; per-enclosure license
<a href="#">IBM Spectrum Control Storage Insights</a>	Cloud-based monitoring and analytics for IBM and IBM virtualized storage; subscription license
<a href="#">IBM Virtual Storage Center</a>	Solution bundle includes IBM Spectrum Control Advanced Edition and <a href="#">IBM Spectrum Virtualize</a> ; tiered capacity license
IBM Virtual Storage Center Entry	IBM Virtual Storage Center for sites under 500 TB usable capacity and four I/O groups; capacity license
IBM Virtual Storage Center for Storwize Family	IBM Virtual Storage Center for IBM Storwize environments; per-enclosure license

Supported environments	Supported storage systems
<a href="#">IBM disk storage systems</a>	DS8000, XIV, Storwize family
<a href="#">IBM flash storage systems</a>	IBM FlashSystem®, all models
<a href="#">Multi-brand virtualized SAN storage</a>	Over 250 makes and models, including EMC, NetApp, Hitachi, Oracle Solaris and HP; using IBM Spectrum Virtualize, SVC or Storwize systems with external virtualization
File and object storage	NetApp, Storwize V7000 Unified, IBM Spectrum Scale, IBM General Parallel File System (GPFS™), IBM Elastic Storage™ Server
<a href="#">Software-defined storage</a>	IBM Spectrum Virtualize virtualized SAN storage, IBM Spectrum Scale file and object storage, IBM Spectrum Accelerate server storage

For details, please see the IBM Spectrum Control [Interoperability Matrix](#) on the IBM Support Portal.

## Why IBM?

IBM Spectrum Control provides monitoring, automation and analytics to help simply and effectively manage complex storage environments. In addition, IBM Spectrum Control helps organizations classify storage, manage storage service levels and reduce storage costs.

## For more information

To learn more about IBM Spectrum Control, please contact your IBM representative or IBM Business Partner, or visit:

[ibm.com/systems/storage/spectrum/control/](http://ibm.com/systems/storage/spectrum/control/)

Additionally, IBM Global Financing can help you acquire the software capabilities that your business needs in the most cost-effective and strategic way possible. For credit-qualified clients we can customize a financing solution to suit your business and development requirements, enable effective cash management, and improve your total cost of ownership. Fund your critical IT investment and propel your business forward with IBM Global Financing. For more information, visit: [ibm.com/financing](http://ibm.com/financing)



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Actual available storage capacity may be reported for both uncompressed and compressed data and will vary and may be less than stated.

<sup>1</sup> Not all capabilities are available in all IBM Spectrum Control products. See website for details.

<sup>2</sup> Not all session types are supported on all storage systems. See product documentation for a table of replication services supported for each storage system.

<sup>3</sup> ITG Management Report: Cost/Benefit Analysis of IBM Spectrum Storage Compared to EMC Storage Virtualization and Management Solutions, 2015



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