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## Highlights

- Deliver a robust, highly efficient solution to support sophisticated applications for real-time communication
  - Boost performance while reducing costs with built-in automated tiering
  - Flexibly configure systems to meet existing requirements now and easily add more capacity later
  - Simplify storage management through an intuitive graphical user interface (GUI)
  - Deliver exceptional throughput for critical applications and support additional workloads
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# Maximizing VoIP application performance with IBM Storwize V7000

*Sophisticated enterprise-class storage for BroadSoft communications applications*

As demand for data-intensive, real-time communication continues to surge, communications service providers (CSPs) increasingly rely on sophisticated voice over IP (VoIP) software. This powerful software can deliver even greater benefits when coupled with IBM Smarter Storage, an intelligent approach to storage that is efficient by design, self-optimizing and cloud agile. Using IBM Smarter Storage solutions, organizations like CSPs can optimize storage, improve service levels, meet today's performance requirements and prepare for the challenges ahead.

IBM Smarter Storage solutions, and IBM® Storwize® V7000 in particular, deliver high-performance storage capabilities to support VoIP software—including integrating the Storwize V7000 with VoIP solutions from BroadSoft, a leading global provider of software that enables mobile, fixed-line and cable service providers to deliver real-time communication over IP networks. IBM has extensively tested the IBM Storwize V7000 storage system with the BroadSoft BroadWorks application platform, demonstrating how innovative IBM Smarter Storage technologies can help achieve peak software performance.

The Storwize V7000 is a virtualized storage system that complements existing IT environments and enables CSPs and other businesses to virtualize new and existing external disk storage systems. This IBM Smarter Storage system offers enterprise-class storage capabilities, including innovative IBM technologies such as thin provisioning, automated tiering,



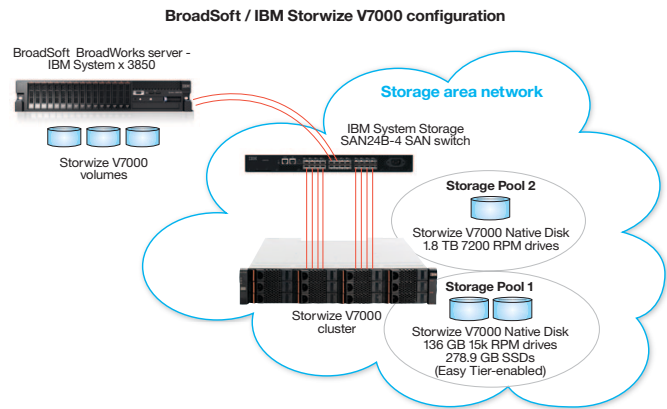
internal and external virtualization, data compression, clustering, replication, multi-protocol support and a next-generation GUI. When combined with VoIP software solutions like BroadSoft BroadWorks, the Storwize V7000 can help maximize performance and address ever-growing data requirements.

## Optimum storage support for VoIP software applications

The Storwize V7000 incorporates IBM technologies typically found only in enterprise-class storage systems into a midrange solution, delivering a highly efficient solution with storage performance that exceeds the requirements of demanding VoIP implementations.

### Automated tiering with SSD optimization

Storwize V7000 uses built-in self-optimizing technology to analyze data access patterns and automatically adapt to balance performance and cost. IBM System Storage® Easy Tier® automatically and dynamically moves appropriate data—such as data that is frequently accessed—to fast, high-performing solid-state drives (SSDs), based on ongoing performance monitoring. Data that does not require such high performance remains on lower-cost hard disk drives (HDDs). Storwize V7000 detects when demand increases for data that has not previously been accessed often, checks for decreased activity for frequently accessed data and migrates the data accordingly. As a result, CSPs can realize the performance benefits of SSDs while retaining the cost advantages of HDDs for certain data. CSPs can also gain these benefits without spending administrative time manually creating and managing storage tier policies.



This figure provides a visual representation of the configured Storwize V7000 with multiple tiers of storage and with Easy Tier enabled in support of BroadSoft testing.

## Efficient by design

For many organizations, data growth has demanded a constant pursuit of increased storage efficiency. But widespread use of efficient technology has been hampered by complex deployments, inconsistencies across products, tradeoffs in performance and other drawbacks. Truly efficient storage should have advanced features pre-installed and ready to deploy to help shrink capacity needs and improve productivity. IBM Smarter Storage includes technologies built into storage products to deliver effortless efficiency, including:

- **Storwize V7000 Unified**—A powerful, easy-to use GUI is included with the Storwize V7000 Unified. It provides administrators with intuitive system control to reduce complexity and improve productivity. A study by the Edison Group demonstrated the effectiveness of the Storwize V7000 system's GUI, finding that tasks are 47 percent less time-consuming and 31 percent less complex than managing a competitor's system with other interfaces.<sup>1</sup>
- **IBM Real-time Compression**—Integrated in the Storwize V7000, IBM Real-time Compression is designed to improve efficiency by storing up to five times as much active primary data in the same physical disk space, which can help to reduce storage requirements, improve efficiency to reduce storage costs, or achieve a combination of greater capacity and reduced cost.
- **Thin provisioning**—Using thin provisioning, applications consume only the space they are actually using, not the total space that has been allocated to them. Designed to keep business overhead low, thin provisioning optimizes efficiency by allocating disk storage space in a flexible manner among multiple users, based on the minimum space required by each user at any given time.

## **BroadSoft BroadWorks integration with IBM systems**

BroadSoft is helping to advance the convergence of voice, video and data. The company's flagship BroadWorks technology empowers CSPs to deliver next-generation voice and multimedia applications, including enhanced and personalized communications and entertainment services. BroadSoft and IBM have worked together to integrate BroadWorks solutions with IBM server and storage systems. Both companies benefit

from a shared approach to investigating new IBM technologies, including through participation in testing at IBM benchmark sites and through in-place validation of selected technologies.

### **Combined solution**

IBM tested the performance of a solution combining Storwize V7000 and BroadSoft BroadWorks Enhanced Call Log, a data-intensive application that stores vast quantities of call-log information. Performance data collected during the testing led to the following conclusions:

- The Storwize V7000 exceeded the stated read requirement of 1,000 disk reads per second by achieving 1,181 reads per second. Similarly, the Storwize V7000 exceeded write and I/O response-time requirements for a large installation of the BroadSoft product.
- The IBM solution is capable of supporting additional workloads, such as additional BroadSoft database deployments.
- The simple interface, flexible storage configuration options and Easy Tier automatic storage tiering capabilities of the Storwize V7000 make it an attractive storage system solution for large BroadSoft implementations. Test data revealed that Easy Tier significantly improved performance by automatically reallocating extents from standard high density managed disks (Mdisks) to solid state Mdisks, thereby achieving higher reads and improved response times.

Mdisk 0, 3, 5	278.9 GB SSD	Reads 170 MBps approximate	Response time 3 ms
Mdisk 1, 2	136 GB 15K	Reads 10 MBps	Response time 8 ms

## Why IBM?

With decades of experience in the telecommunication industry, IBM offers a diverse range of products to address a multitude of CSP challenges. IBM continually invests in tests such as those conducted for a solution integrating the Storwize V7000 storage system with BroadSoft BroadWorks Enhanced Call Log. This type of testing investment not only validates ongoing product integration, but also protects customer investments in IBM systems as well as in software from independent software vendors (ISVs) such as BroadSoft.

## For more information

To learn more about IBM Storwize V7000, please contact your IBM representative or IBM Business Partner, or visit: [ibm.com/storage/storwizev7000](http://ibm.com/storage/storwizev7000)

For a list of high quality solutions with our partner ISVs, including access to solution briefs and white papers, visit: [ibm.com/systems/storage/solutions/isv](http://ibm.com/systems/storage/solutions/isv)

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Systems and Technology Group  
Route 100  
Somers, NY 10589

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<sup>1</sup> Cooper, John and Michael Jacobs, "Broadsoft BroadWorks Enhanced Call Log with IBM Storwize V7000, a solution overview," *IBM Corporation*, 2011.



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