



# Veritas InfoScale™ Enterprise for Sybase® ASE CE

Improved manageability, availability, and high performance for Sybase ASE CE.

## OVERVIEW

Veritas InfoScale™ Enterprise for Sybase® ASE CE offers a proven solution to help customers deliver and manage highly available Sybase ASE CE databases. The solution leverages Veritas Cluster File System and Veritas Cluster Server technologies, and has been tightly integrated with Sybase ASE CE to provide a reliable, easy-to-use storage and cluster management solution. InfoScale Enterprise for Sybase ASE CE enables IT organizations to select the most appropriate operating system and storage hardware for their environments, without compromising management capabilities. InfoScale Enterprise for Sybase ASE CE provides a single management view for all database-related storage management tasks, enabling IT organizations to install, configure, manage, and perform tasks centrally, independent of hardware platform. Moreover, it increases flexibility, reduces system downtime, and increases scalability by performing tasks dynamically, and eliminates I/O bottlenecks through Veritas™ Dynamic Multi-Pathing.

## HIGHLIGHTS

- **Simplified Sybase ASE CE management**—Centralizes multinode management and makes Cluster Edition as easy to manage as a single-node database.
- **High availability**—Protects against interconnect failures, node hangs, and other failure mechanisms, and protects the database from logical errors by providing point-in-time copies.
- **Data integrity**—Eliminates the risk of data corruption in the event of a “split brain” condition, with I/O fencing.
- **Reduced storage footprint**—Reduces primary storage footprint through the use of compression.
- **Virtual Business Services**—Provides faster recovery and minimal downtime for applications composed of multiple components running on different physical and virtual tiers.
- **Scalable database performance**—Utilizes database accelerators and multiple physical paths to disks for supported storage devices.

## SIMPLIFIED MANAGEMENT

While most application cluster implementations are intended to increase application availability, Sybase ASE CE also attempts to improve application scalability by using multiple servers for the same workload. However, this scale-out approach to clustering introduces management complexity to server, database, and storage administration. InfoScale Enterprise for Sybase ASE CE minimizes this complexity by enhancing the native capabilities of Sybase ASE CE with a highly available, scalable, non-disruptive storage and server management solution that is independent of operating system and storage hardware. The centralized management capability of InfoScale Enterprise for Sybase ASE CE enables users to add and remove nodes and storage capacity without impacting application availability. InfoScale Enterprise for Sybase ASE CE reduces user errors that can arise from the lack of visibility with raw partitions. It enables Sybase ASE CE tablespaces to grow online without the need to preallocate storage capacity. A single cluster file system and volume management tool facilitates creation of a shared Sybase home that simplifies ongoing maintenance and patch management.

## HIGH AVAILABILITY

InfoScale Enterprise for Sybase ASE CE provides a comprehensive application failover solution that minimizes both planned and unplanned downtime across all nodes in the cluster. In the event of an application or node failure, which is detected using a Sybase agent built into InfoScale Enterprise for Sybase ASE CE, the application is dynamically migrated to an available node in the cluster without application or business interruption. Furthermore, cluster ownership is dynamically redirected in the event of the primary node failure. An additional benefit to a cluster file system architecture is that, as all nodes in the cluster have visibility into a shared storage pool, there is no need to manually mount storage to unique nodes in the event of application or node failures—minimizing application downtime, both planned and unplanned.

Storage Checkpoint technology, which is a part of InfoScale Enterprise for Sybase ASE CE, enables efficient backup and recovery of Sybase ASE CE databases. Storage Checkpoint is a disk- and I/O-efficient snapshot technology for creating a “clone” of a currently mounted file system (the primary file system). Unlike a full file-system copy that uses separate disk space, all Storage Checkpoints share the same free space pool where the primary file system resides, greatly reducing the need for extra storage. A direct application of the Storage Checkpoint facility is Storage Rollback. Because each Storage Checkpoint is a consistent, point-in-time image of a file system, Storage Rollback is the restore facility for these on-disk backups. Storage Rollback simply rolls back blocks contained in a Storage Checkpoint into the primary file system for very fast database recovery.

## DATA INTEGRITY

When multiple systems and nodes have access to data via shared storage, the integrity of the data depends on internode communication ensuring that each node is aware when other nodes are writing data. When the coordination between the nodes fails, it results in a “split brain” condition—a situation in which two servers try independently to control the storage, potentially resulting in application failure or even corruption of critical data, which can then require days to recover...if recovery is even possible.

I/O fencing ensures the integrity of critical information by preventing data corruption. InfoScale Enterprise for Sybase ASE CE has implemented I/O fencing using the industrystandard SCSI-3 persistent group reservation technology, as well as alternate non SCSI-3 fencing technology, allowing a set of systems to have temporary registrations with the disk and coordinate a write-exclusive reservation with the disk containing the data. With I/O fencing, InfoScale Enterprise ensures that errant nodes are “fenced” and do not have access to the shared storage, while the eligible node(s) continue to have access to the data, virtually eliminating the risk of data corruption.

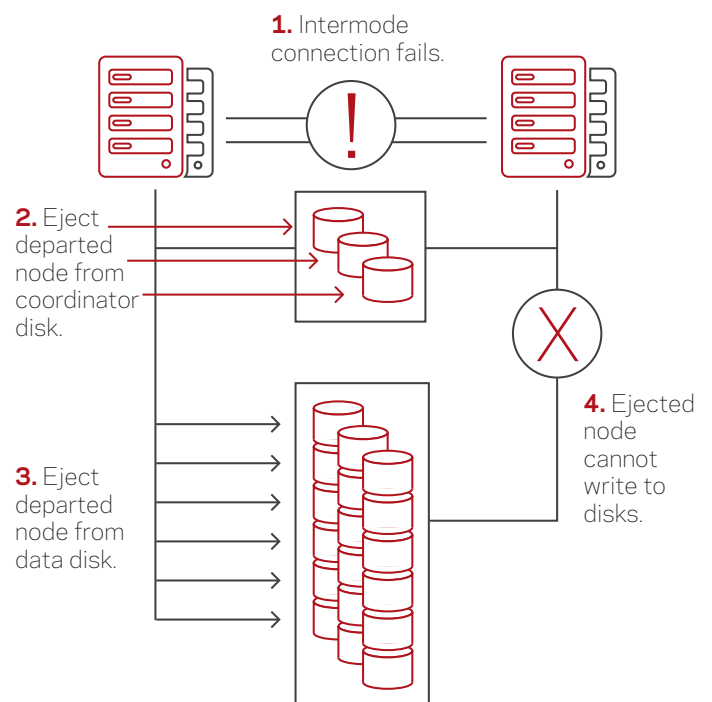


Figure 1. Implementing I/O fencing

## REDUCED STORAGE FOOTPRINT

InfoScale Enterprise for Sybase ASE CE enables organizations to reduce their storage footprint across heterogeneous operating systems by bringing the benefits of compression to the file system. This technology uses smart algorithms to analyze patterns within the data to realize space savings. InfoScale Enterprise for Sybase ASE CE compresses data by analyzing data patterns and using the information to optimize storage. File system compression is especially effective for read-intensive data such as infrequently accessed archival data. Compression can also improve storage performance in bandwidth constraint instances between the server and the SAN. InfoScale Enterprise allows users the flexibility to choose which data to compress, helping users make optimal decisions based on their usage patterns.

## VIRTUAL BUSINESS SERVICES

To accommodate evolving business needs, today's data centers consist of multiple layers of physical and virtual environments, each with its own administrative tools and authorization requirements. This creates an end-to-end management challenge with applications or entire business services composed of multiple components that interact with each other despite running on different operating systems and virtualization technologies. With the introduction of Virtual Business Services, IT administrators now have visibility across multi-tiered applications and can automatically recover them.

Recovering a single failed component of the business service does not guarantee business continuity. Not only does the failed component need to be recovered, but it must also be reintegrated into the complete business service to keep downtime to a minimum. Virtual Business Services, included with InfoScale Enterprise and managed through Veritas InfoScale™ Operations Manager, is aware of the complete business service and can take action in the event of a failure. When an individual component of the service fails, InfoScale Enterprise will not only recover the failed application, but in conjunction with InfoScale Operations Manager, will also automatically orchestrate the connection to other computing resources needed to keep the business service available. The end result is faster recovery and minimal downtime—all with no manual intervention.

## SCALABLE DATABASE PERFORMANCE

There is a strong movement toward the consolidation of multiple disparate database systems onto even larger Sybase ASE CE clusters. The major concern in any consolidation effort is

maintaining respectable performance and meeting committed performance service-level agreements (SLAs). InfoScale Enterprise for Sybase ASE CE improves the overall performance of database environments by providing extensions to database accelerator, enabling online transaction processing (OLTP) performance equal to raw disk partitions, but with the manageability benefits of a file system. Moreover, with the Dynamic Multi-Pathing feature of InfoScale Enterprise for Sybase ASE CE, performance is maximized by load-balancing I/O activity across all available paths, from the server to all major hardware RAID array products. With this feature, there is no need for third-party multipathing software, reducing the total cost of ownership.

## OTHER PRODUCT HIGHLIGHTS

- **Storage capacity planning**—Enables administrators to simulate various Storage Checkpoint creation and retention models in a production environment.
- **Hot relocation**—Automatically detects a failed disk and replaces the disk from the available free disk pool.
- **Intelligent workload management**—Increases automation of cluster administration, maximizes application uptime, and improves utilization of server resources.
- **Cluster membership integration**—Provides a seamless interface between Sybase ASE CE clusters and InfoScale Enterprise for Sybase ASE CE clusters.
- **Clusterwide logical device naming**—Simplifies management of SAN-based storage.

## SUPPORTED OPERATING SYSTEMS

- Oracle® Solaris™ (SPARC)
- Novell® SLES (64-bit)

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## ABOUT VERITAS TECHNOLOGIES LLC

Veritas Technologies empowers businesses of all sizes to discover the truth in information—their most important digital asset. Using the Veritas platform, customers can accelerate their digital transformation and solve pressing IT and business challenges including multicloud data management, data protection, storage optimization, compliance readiness and workload portability—with no cloud vendor lock-in. Eighty-six percent of Fortune 500 companies rely on Veritas today to reveal data insights that drive competitive advantage. Learn more at [www.veritas.com](http://www.veritas.com) or follow us on Twitter at [@veritastechllc](https://twitter.com/veritastechllc).

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