

PILLAR AXIOM 600 SOFTWARE

MANAGE STORAGE RESOURCES FOR
MAXIMUM PERFORMANCE,
UTILIZATION, AND AVAILABILITY

KEY FEATURES

- QoS software architecture that reserves critical resources throughout the system
- Easy-to-use graphical user interface for managing Pillar Axiom 600 systems
- Capacity planning feature that creates file systems or LUNs based on model simulations
- Thin provisioning feature that allows for advanced storage provisioning, tying capacity to an application's priority
- Storage domain feature that enables you to custom-tailor QoS settings for multiple environments
- Data protection features that enable customers to create multiple types of physical and virtual copies of data
- Remote replication features for SAN and NAS environments

KEY BENEFITS

- Optimized multitenant design enables performance to be aligned with application business value under any load condition
- Reduces CAPEX: enables you to purchase capacity only as needed
- Reduces OPEX: enables you to do quick and accurate provisioning with simple overall management
- Enables rapid, consistent application recovery from data loss, corruption, and/or environmental disasters
- Optimizes the Pillar Axiom for any application's I/O needs on-the-fly

Oracle's Pillar Axiom system has a patented quality of service (QoS)-based architecture that works with administrator-defined policies to create a robust, efficient, and easy-to-manage enterprise storage system. Performance, utilization, and availability metrics are tailored by application to individual virtual logical unit numbers (VLUNs) through the Pillar Axiom graphical user interface (GUI) or command-line interface (CLI). Replication, data services, copy services, capacity planning, and a host of other enterprise features provide a complete, powerful software environment for enterprise network storage deployments.

Pillar Axiom Core Software Features

The Pillar Axiom 600 offers a rich set of core software features that enable it to provide enterprise-class SAN storage with enhanced performance, efficiency, and management capabilities. Its QoS architecture enables I/O requests to be assigned priorities and resources that are reserved throughout the Pillar Axiom 600, ensuring dependable levels of performance and making it the ideal platform for storage consolidation. The Pillar Axiom 600 supports both Fibre Channel (FC) and iSCSI protocols for the Pillar Axiom SAN Slammers and NFS and CIFS protocols for the Pillar Axiom NAS Slammer.

Pillar Axiom MaxMan

Pillar Axiom MaxMan is an easy-to-use, Java-based GUI for managing an environment with multiple Pillar Axiom 600 systems located anywhere in the world. It is organized into sections to help configure and monitor your storage resources. The GUI is divided into tabs that enable you to configure the system, manage and create LUNs/file systems, and create snapshots and clones of the system. Pillar Axiom MaxMan is capable of running both the integrated software features and the optional software features that are licensed separately.

Pillar Axiom MaxMan simplifies provisioning and management with policy-based control and an easy-to-use GUI. It enables you to take proactive administrative actions with automatic display and notification of critical status changes and events and also enables you to address potential problems before they occur by compiling system health and performance statistics and delivering them to Oracle Support.

Pillar Axiom MaxMan enables you to easily access powerful data protection capabilities that generate full copies of data with volume copy and backup features. You can also use a rich set of space-efficient data protection tools with copy-on-write clone functionality for SAN as well as NAS environments. It also enables centralized management of storage infrastructure by integrating with leading management framework software such as Oracle Enterprise Manager.

Pillar Axiom Software Path Management

Enterprise-class storage environments require robust, reliable access with dynamic multipath, load-balancing, and failover capabilities. Pillar Axiom Software Path Management delivers

essential functionality for environments in which availability and performance are paramount. Additional features include simplified SAN management through automatic recognition of SAN hosts and client-side log collection.

Thin Provisioning

The Pillar Axiom 600 supports thin provisioning, which allows for overprovisioning of storage capacity and then ties it to an application's priority with QoS. It is tuned to maximize the performance within a single Pillar Axiom 600 while driving higher utilization rates. The thin provisioning feature produces dramatic efficiency gains that cut storage costs, floor space requirements, and energy expenses, and it also eases storage provisioning tasks.

Pillar Axiom Storage Domains

With Pillar Axiom Storage Domains, customers can create multiple, virtual storage systems within a single Pillar Axiom 600 using the same storage pool to provide further extensions of Oracle's patented QoS technology. Storage administrators can group any combination of Pillar Axiom Bricks into individual storage domains. These storage domains can have assigned LUNs and file systems that are isolated from other storage domains to provide the highest level of independence in multi-tenancy environments. Pillar Axiom Storage Domains allows you to custom-tailor QoS settings for multiple unique environments, while still residing on a single physical Pillar Axiom 600 storage system for reduced power, cooling, and management. In addition, Pillar Axiom Storage Domains also enable non-stop data access during on-line maintenance and upgrades by migrating virtual LUNs off of specific Pillar Axiom Bricks before servicing and migrating them back afterwards.

Capacity Planning

The capacity planning feature in the Pillar Axiom 600 collects data from existing usage, creates usage models, and simulates the creation of new file systems or LUNs based on those models. By simulating the creation of one or more file systems or LUNs based on the QoS settings you select, the capacity planning feature can extrapolate the performance impact of newly added capacity or I/O load on existing applications. This feature helps ensure that no unexpected performance problems appear when new applications are added to the system.

Pillar Axiom Multiple System Management Software Features

The Pillar Axiom software environment increases storage administrator productivity with an easy-to-use GUI and powerful command-line interface (CLI) environment that assigns specific QoS levels and performance capabilities throughout the system. These capabilities enable you to manage multiple Pillar Axiom 600 storage systems from a single user interface and set up critical data protection capabilities.

Pillar Axiom Data Protection Software Features

Value-added features and components with simple, easy-to-use interfaces address your need for data protection, remote replication, and advanced storage provisioning. These features include support for the Network Data Management Protocol (NDMP) on the Pillar Axiom NAS Slammer for tape backups and advanced features that enable you to realize greater benefits from the single scalable, modular Pillar Axiom 600 hardware platform.

Pillar Axiom Copy Services Bundle

Pillar Axiom Copy Services Bundle is a suite of data protection offerings that enables customers to create multiple types of physical and virtual copies of data. The components are

- **CloneLUN and CloneFS.** The CloneLUN and CloneFS features provide a space-efficient

read/write virtual copy of a SAN LUN or NAS file system, respectively. CloneLUN and CloneFS use copy-on-write technology to facilitate frequent low-impact, user-recoverable backups of files, directory hierarchies, LUNs, and/or application data. These features vastly improve the frequency and reliability of backups, in that they incur minimal performance overhead and can be safely created on a running system. With the CloneFS and CloneLUN features, you get near-instantaneous, secure user-managed restores.

- **Volume copy.** The volume copy feature is a point-in-time read/write, block-for-block copy of the source volume (either file system or LUN). The volume copy is made to a new volume with its own QoS metrics that enables the primary volume to service application I/Os with minimal performance degradation from ancillary activities. It enables nondisruptive data migrations to new storage media and reduces the total cost of ownership by enabling you to take advantage of newer, more cost-effective technology.
- **File System Snapshot.** This feature provides easy-to-use file system snapshots for data protection and file recovery. It preserves a read-only point-in-time view, enabling users to access older versions of files within the primary file system. Pillar Axiom MaxMan enables you to build and manage File System Snapshot schedules.
- **SnapDelta File System.** This feature identifies net change deltas between snapshots for file systems with a SnapDelta File System feature. It provides a listing of any files that have changed between successive snapshots, for efficient backups, data protection, and compliance auditing.

Pillar Axiom Data Protection Manager

Pillar Axiom Data Protection Manager provides application-consistent snapshots for key applications such as Microsoft Exchange and Microsoft SQL Server. Pillar Axiom Data Protection Manager provides consistency groups for recovering data spread across multiple LUNs and creating application snapshots with the CloneLUN feature. Pillar Axiom Data Protection Manager can be used to reduce backup windows on Windows hosts and reduce the recovery time objective (RTO) during restores. Finally, these snapshots can be used by third-party applications to perform granular recovery operations such as e-mail discovery.

Pillar Axiom SecureWORMfs

Pillar Axiom SecureWORMfs delivers cost-effective, scalable, nonerasable, nonrewritable storage for compliant archive and unalterable fixed-content environments. It delivers industry-accepted write once, read many (WORM) technology within Pillar Axiom 600 storage environments. The feature enables archiving solutions with auditing features to comply with corporate governance requirements, government regulations, and compliance initiatives.

Pillar Axiom MaxRep Replication for SAN

Oracle's block-mode (SAN) data replication solution is a full-function, feature-rich data protection and mobility suite that supports metro-area synchronous replication, long-distance asynchronous replication with bandwidth throttling, compression, and encryption as well as multihop, semisynchronous, one-to-many and many-to-one topologies. Application consistency protection is provided for popular applications such as Oracle Database, Microsoft SQL, and Microsoft Exchange. It provides frequent data-consistency rollback points to deliver customer-specified recovery-point objective (RPO) and RTO times. A unique architecture offloads all compute-intensive replication functions from the Pillar Axiom storage system. Pillar Axiom MaxRep Replication for SAN has no impact on array performance, even under heavy replication loads.

Pillar Axiom MaxRep Replication for NAS

NAS replication natively supports asynchronous file replication employing Oracle's integrated fine-grained ability to efficiently replicate only changed data blocks, regardless of file size. This reduces the need for expensive, high-bandwidth WAN connections.

Pillar Axiom 600 Features ¹	
Included Features	Details
Pillar Axiom Quality of Service	Prioritization of I/Os via multiple queues to align performance with an application's business value
Pillar Axiom MaxMan	Management of multiple Pillar Axiom systems via a single pane of glass
Oracle Axiom Storage Connect	"Phone home" capability with automatic case creation, configurable alerts
Pillar Axiom Distributed RAID	Dual redundant RAID controllers embedded in every disk enclosure (Pillar Axiom Brick) to scale IOPS linearly, based on capacity, and deliver fast rebuilds
Oracle Hybrid Columnar Compression	Supported with Oracle Database hybrid columnar compression, a combination of both row and columnar methods for storing data
Pillar Axiom CLI	Scriptable interface to allow for automation of common functions
Pillar Axiom Software Path Management	Multipath host support with failover; supported platforms: Windows, Linux, Oracle Solaris, HP-UX, AIX
Pillar Axiom SMI Provider	Oracle's implementation of the Storage Management Initiative Specification (SMI-S)
Pillar Axiom Data Protection Manager	Leveraging of Microsoft Volume Shadow Copy Service to enable automatic creation of application-consistent snapshots
File-level protocol	NFS v2/v3 for UDP and TCP, CIFS over TCP
Block-level protocol	iSCSI, FC
Remote management	SSH, SNMP v1/v2c, SMTP
Network services	NTP, DHCP, SMTP
Backup	NDMP v3/v4
Optional Features (Licensed Separately)	Details
Pillar Axiom Copy Services Bundle	CloneLUN, CloneFS, volume copy, File System Snapshot, and SnapDelta File System features
Pillar Axiom SecureWORMfs	Write once, read many for secure, compliant archiving solutions
Pillar Axiom Storage Domains	Ability to create multiple virtual storage environments from the same pool
Pillar Axiom MaxRep Replication for SAN	Synchronous and asynchronous replication, with or without application protection
Pillar Axiom MaxRep Replication for NAS	Asynchronous replication

¹ All storage resource management software is compatible with the currently shipping hardware platform: the Pillar Axiom 600 release 4.3 and 5.0.

Contact Us

For more information about Oracle's Pillar Axiom 600 software, visit oracle.com or call +1.800.ORACLE1 to speak to an Oracle representative.

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Hardware and Software, Engineered to Work Together