Slammer Storage Controller
Pilot Policy Controller
Pillar Axiom Storage System

The Pillar Axiom® Slammer and Pilot controllers are high-availability subsystems within the Axiom 600 storage system, providing connectivity between internal storage resources with embedded RAID controllers and external application hosts and management interfaces. These components are tightly integrated with Pillar's AxiomONE™ software suite, enabling intuitive storage management, configuration and monitoring.

Benefits:

- Modular design for flexible system growth.
- Uses redundant hardware and the AxiomONE software suite to ensure reliability, availability, and ease-of-use.
- Designed to be deployed, provisioned, managed and maintained easily – with no special training required.
- Allows you to consolidate your storage on a single system while maintaining performance levels based on application needs.

Pilot Policy Controller

Pilot Policy Controllers provide the management interface for Pillar Axiom storage systems. Each Pilot uses redundant hardware and Axiom Storage Manager software to ensure reliability, availability, security, and ease-of-use.

Axiom Pilot Advantages:

- Ensure continuous availability of storage management with two independent control units that operate in active/passive mode.
- Manage all storage management and data protection features using a single, policy-based framework through a Web-based GUI.
- Allocate hardware assets where they are needed most with policy-based management via Quality of Service (QoS) metrics.
- Ensure confidence in change management with guided maintenance.

Slammer Storage Controller

Slammer Storage Controllers are the high-performance, high-reliability data movers and Quality of Service (QoS) managers for Pillar Axiom storage systems. The Axiom 600 supports multiple Slammer configurations to meet application performance needs: the Slammer Series 1 has dual-core processors and 24GB cache while the Axiom 600 Slammer Series 2 has quad-core processors and 48GB cache, providing increased IOPS and throughput. The Axiom's flexible architecture allows you to mix and match Slammer Series 1 and Series 2 within the same system for optimal application performance.

Slammer Advantages:

- SAN and NAS functionality scales horizontally with dual active/active control units.
- Intelligent mirroring and striping of filesystems and LUNs for additional data protection.
- High availability with two control units that are identically configured, with the same interfaces and memory configurations.

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- Battery-backed write cache mirrored between control units to ensure data integrity in the unlikely event of control unit failure.
- Axiom performance is scalable: Add Slammers without additional software licensing fees.

Slammer Models:

Fibre Channel SAN Slammer. Offers high-performance, block-level storage connectivity with four external I/O connections supporting up to 4 Gigabits per second data rate. The Axiom 600 SAN Slammer can support multi-tiered application requirements, whether they are mission-critical, high-performance ERP, CRM, OLTP applications or low performance consolidated storage applications.

iSCSI SAN Slammer. The Axiom 600 iSCSI Slammer provides cost-effective SAN connectivity over an Ethernet network at full wire speed, providing customers the opportunity to leverage existing physical network resources and expertise. Axiom 600 iSCSI Slammers support all Axiom configuration and QoS features, as well as Internet Storage Name Server (iSNS) and iSCSI Network Boot Protocol (iNBP).

Fibre Channel/iSCSI Combo SAN Slammer. The Axiom 600 Slammer is available either as a Combo-Slammer supporting Four Fibre Channel (FC) ports and four iSCSI ports. An iSCSI Field Upgrade kit is also available to convert an existing SAN Slammer into a FC/iSCSI Combo-Slammer.

NAS Slammer. Provides multi-node file services with integrated high availability throughout. The Axiom 600 NAS Slammer supports the most popular host operating systems supporting CIFS and NFS file protocols, as well as value-added features such as Link Aggregation, Automatic Recovery Options, User authentication: NIS/NIS+, Windows PDC, Active Directory and native locking schemes, and cross-platform lock enforcement. Also available is SecureWORMfs that delivers cost-effective, scalable, non-erasable storage for fixed content by delivering industry-accepted Write Once, Read Many (WORM) technology.

AxiomONE Software Suite

The Pillar Axiom system manages storage resources with administrator-defined policies, which are the basis of the storage management system. Performance, utilization, and availability metrics are tailored to individual virtual LUNs (VLUNs). Policies are established through the Pillar Axiom interface, using a graphical user interface (GUI) or, alternatively, the command line interface (CLI).

AxiomONE Storage Services Manager. The AxiomONE Storage Services Manager is an easy-to-use GUI. It is organized into sections to help you configure and monitor your Pillar Axiom system. The GUI is organized into tabs that allow you to configure the system, manage and create LUNs / filesystems and create snapshots and clones of the system. The GUI also allows the entire Axiom system to be monitored and provides access to Guided Maintenance, which enables storage administrators to identify and replace failed components without requiring specialized technicians.

AxiomONE Dynamic Performance Manager. The Pillar Axiom manages system resources to simultaneously deliver multiple levels of service from a single storage pool. Dynamic Performance Manager will automatically configure data placement, spindle striping levels, mirroring, priority queues, network bandwidth and caching algorithms to deliver the appropriate level of application performance based on business requirements.

AxiomONE Capacity Planner. The AxiomONE Capacity Planner helps model simulations and create filesystems or LUNs based on those models. The Capacity Planner assists users in capacity planning by simulating the creation of one or more filesystems or LUNs with the QoS settings you select. The Capacity Planner allows you to save the selected configuration for later use and to create logical volumes using that QoS configuration.

AxiomONE Storage Services Manager Advantages:

- Simplify management with policy-based controls.
- Simplify provisioning and management with an easy-to-use graphical interface.
- Generate full copies of data with Axiom VolumeCopy, or utilize a rich set of data protection tools with write-only delta: SnapFS, CloneLUN, and CloneFS snapshots.
- Realize proactive administrative actions with automatic display and notification of critical status changes and events.
- Address potential problems before they occur with compilation and delivery of system health and performance statistics to Pillar Customer Service.
- Enable centralized management of storage infrastructure through integration with leading management framework software vendors.

Optional AxiomONE Software Features:

AxiomONE CloneFS. Provides a point-in-time, read-write partial block snapshot of a filesystem that points to the original data and can be mounted as a standalone filesystem for immediate use. This space-efficient writable clone retains all attributes of the source filesystem, including SnapFS snapshots. Use AxiomONE CloneFS to enhance your projects in application testing, data mining, parallel processing, online recovery, and more.

AxiomONE CloneLUN. Clone LUN is a partial block point-in-time copy of a LUN that can be mounted for immediate read-write use. CloneLUNs point to the original point-in-time (PIT) data and are created using the same QoS parameters as the source LUN.

AxiomONE Replication. Adding to Pillar's industry leading heterogeneous replication solutions, AxiomONE Replication brings native replication to the Axiom. With support for long-distance, asynchronous, high-performance replication, Pillar delivers affordable replication to protect your information from regional disasters.

AxiomONE Thin Provisioning. Pillar's Thin Provisioning allows over provisioning storage capacity within a unique storage Quality of Service (QoS) "band" and then tie it to an application's priority – Application-Aware Thin Provisioning. Pillar's Application-Aware Thin Provisioning is tuned to maximize the performance within a single Axiom while driving higher utilization rates. Thin Provisioning produces dramatic efficiency gains that cut storage costs, floor space requirements, and energy expenses as well as easing storage provisioning tasks.

AxiomONE SnapFS. SnapFS is a filesystem snapshot that serves primarily as a file recovery mechanism. A SnapFS preserves a read-only PIT view of the allowing users to access older versions of files within the primary filesystem. The AxiomONE Storage Services Manager (the GUI), allows you to build and manage snapshot (SnapFS) schedules.

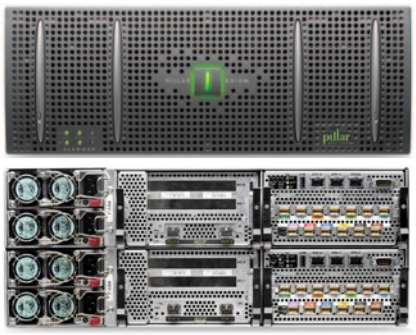
AxiomONE SecureWORMfs. Providing unalterable, disk-based data preservation, AxiomONE SecureWORMfs delivers cost-effective, scalable, non erasable, non-rewritable storage for compliant archive and unalterable fixed-content environments by delivering industry accepted Write Once, Read Many (WORM) technology within Pillar Axiom storage environments.

AxiomONE SecureWORMfs enables archiving solutions with auditing features to comply with good corporate governance requirements and with government regulations and compliance initiatives such as SEC 17a-4 in the United States, and the UK Data Protection Act.

AxiomONE Path Manager. Enabling a more robust, reliable SAN with dynamic multi-path load balancing and failover capabilities, AxiomONE Path Manager software delivers essential functionality for today's enterprise-class SANs where availability and performance is paramount. Additional features include simplified SAN management through automatic recognition of SAN hosts and client side log collection.

AxiomONE VolumeCopy. VolumeCopy is a point-in-time, read-write, block-for-block replication of the source volume (filesystem or LUN). The VolumeCopy is made to a new volume which can have its own QoS metrics so the primary volume can service application I/Os with minimal performance degradation from ancillary activities. Enables non-disruptive data migrations to new disk media, reducing TCO by allowing you to take advantage of newer, more cost-effective media.

Slammer Storage Controller



Pilot Policy Controller

Features and Specifications

External Interfaces

NAS Slammer:
Eight – 1 Gb Ethernet interfaces for client network connectivity
Optional FC card for tape connectivity

SAN Slammer: Four Fibre Channel (FC) interfaces, auto-ranging from 1 to 4 Gbps on each interface
iSCSI Slammer: Four Ethernet interfaces for iSCSI host attachments
iSCSI Combo-Slammer: Four Gb Ethernet interfaces plus four 4 Gbps Fibre Channel interfaces for host connectivity

Internal Interfaces
Six 10/100 Base-T Ethernet interfaces for Slammer/Pilot connectivity
26 – 2 Gb or 4 Gb FC interfaces for Brick/Slammer connectivity

Slammer Storage Controller Components (Redundant)

Series 1	Series 2
Dual-Core Processors	Quad-Core Processors
24GB Cache	48GB Cache

Redundant and Hot-Swappable Components
Two load-balancing power supplies and fans per control unit
Two active/active storage controllers per Slammer
Fibre Channel interface modules
Gb Ethernet interface modules
Motherboards

Supported NAS Protocols: NFS V2/V3 over UDP or TCP, CIFS, NDMP
Supported SAN Protocols: Fibre Channel Protocol (FCP) Fabric- attached and Direct-attached, iSCSI protocol Network-attached or Direct-attached

Interfaces
Four 10/100 Base-T Ethernet private management interfaces (PMI)
Two 10/100 Base-T Ethernet interfaces for management LAN connectivity

Pilot Policy Controller Components
Two policy controllers per Pilot with active/passive failover
Intel Celeron processor per storage controller
2GB RAM per control unit

Supported Protocols

SNMP	NTP
SSH	FTP
HTTP	SMTP
NDMP	

Dimensions

Enclosure Dimensions			Enclosure Dimensions		
Height	7 in	17.78 cm (4U)	**Height**	3.5 in	8.89 cm (2U)
Width	17.7 in	45 cm	**Width**	17.7 in	45 cm
Depth	26 in	66 cm	**Depth**	26 in (max)	66 cm
Weight	91 lbs	41 kg	**Weight**	40 lbs	18.2 kg

Power

Frequency		50 – 60 Hz	**Frequency**		50 – 60 Hz
AC Voltage		90 – 264 VAC	**AC Voltage**		90 – 264 VAC
Max Power Consumption		685 VA	**Max Power Consumption**		290 VA
Max Heat Dissipation		2,336 BTU/hr	**Max Heat Dissipation**		989 BTU/hr
AC Plug Type		IEC 320 C13 connections	**AC Plug Type**		IEC 320 C13 connections

Environmental

Operating		Operating	
Temperature	5 – 40 degrees C	**Temperature**	5 – 40 degrees C
Temperature Gradient	20 degrees C/hr	**Temperature Gradient**	20 degrees C/hr
Relative Humidity	10 – 85 percent non-condensing	**Relative Humidity**	10 – 85 percent non-condensing
Humidity Gradient	10 percent/hr non-condensing	**Humidity Gradient**	10 percent/hr non-condensing
Non-Operating		**Non-Operating**	
Temperature	-40 – 70 degrees C	**Temperature**	-40 – 70 degrees C
Temperature Gradient	30 degrees C/hr	**Temperature Gradient**	30 degrees C/hr
Relative Humidity	5 – 95 percent non-condensing	**Relative Humidity**	5 – 95 percent non-condensing
Humidity Gradient	10 percent/hr non-condensing	**Humidity Gradient**	10 percent/hr non-condensing

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