

## EdgeWare MSS Specifications:

**Form Factor:** 1U, 2U, 3U 19" Rackmount

**Capacities:** RAID storage and expansion storage chassis. Each Cutting Edge NAS/iSCSI control head can support up to 72TB (SAS) and 240TB (SATA) respectively. 1 Cutting Edge NAS/iSCSI control head minimum with each configuration

**Processor:** 2 to 8 Core

**Memory:** DDRII RAM: Up to 2GB at 800 MHz for Single or Twin CPU; Up to 64GB for Quad CPU

**Power:** N+1 Hot Swap Redundant up to 750W; Single up to 750W for 1U

**Network Connectivity:** 2 & 3GbE standard. Upgradeable to 43GbE equivalent

**Network Support:** TCP/IP, TCP/IP Offload, iSCSI Target, IPsec, UPD/IP, AppleTalk

**Storage Connectivity:** SAS-to-SAS/SATAII or FC-to-SAS/SATAII storage connectivity. 4Gb/s FC from host to RAID array or 3Gb/s SAS from host to RAID array . 3Gb/s SAS from RAID array to expansion chassis

**RAID Levels:** 0, 1, 5, 6, 50, Hot Spare, Hot Swap, JBOD

**Fault Tolerance:** Dual host and/or Dual RAID array to provide Active-Active\* or Active-Passive IP Failover redundancies

**Temperature:** 32°F - 104°F / 0°C - 40°C

**Humidity:** 10% - 85% Non-Condensing

**Client Support:** Windows, Linux, UNIX, Mac OS and FTP

**Security:** Share/File Level Permissions, Kerberos v5, ADS, NT/W2K ACL's, SSL Support, LDAP, Unix NIS

**Data Integrity:** IP Failover, Remote Replication, Remote Mirroring, Snapshots, Disk-to-Disk, Disk-to-Tape and Disk-to-USB Backup, Hot Spare Drives, and Anti-Virus Support

**Management:** Web based: IE, Firefox, and Safari. SNMP MIB II, SNMP Trap, Log Review/Download, Web-Based Updates, Flash Boot

**Maintenance:** Audible and E-mail Alerts, Storage Monitoring, Enclosure Monitoring, and Factory Default Reset

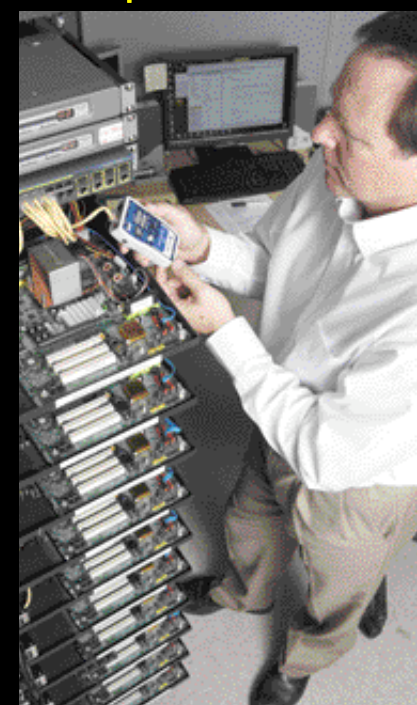
## MSS Configurations

NAS Head Size	Processor	RAM (GB)	Network Gigabit Interface Connectivity	Host-to-Disk Array Interface	Disk Array	Supported Storage Capacity
Space-Saver 1U	2 Cores	2 to 8	2 to 6 GbE	SAS-to-SAS/SATA II or FC-to-SAS/SATAII	Up to 80 Bays Up to 60 Bays	Up to 24TB SAS or Up to 80TB SATAII Up to 18TB SAS or Up to 60TB SATAII Up to 1PB using FC switch
Power Space-Saver 1U	2 to 8 Cores	2 to 32	2 to 24 GbE	SAS-to-SAS/SATA II or FC-to-SAS/SATAII	Up to 80 Bays Up to 60 Bays	Up to 72TB SAS or Up to 240TB SATAII Up to 72TB SAS or Up to 240TB SATAII Up to 1PB using FC switch
2U	2 to 8 Cores	2 to 32	2 to 42 GbE	SAS-to-SAS/SATA II or FC-to-SAS/SATAII	Up to 240 Bays SAS or SATA II	Up to 72TB SAS or Up to 240TB SATAII Up to 1PB using FC switch
3U	8 Cores	8 to 64	3 to 43 GbE	FC-to-SAS/SATAII	Up to 240 Bays SAS or SATA II	Up to 72TB SAS or Up to 240TB SATAII Up to 1PB using FC switch

## Commitment to excellence and customer satisfaction

A commitment to excellence and customer satisfaction are key attributes that drive every facet of our culture – from developing superior products to training to service programs. At Cutting Edge, our staff is attuned to your every need to ensure an outstanding customer experience.

## Enterprise-level service



Cutting Edge service programs offer a range of options such as 24x7x365 service for hardware replacement and around-the-clock telephone technical support. To ensure your installation success, Cutting Edge Professional Services offers phone support or optional on-site assistance with storage planning, system installation, data migration, and best-practices implementation. You can select from pre-packaged service and support engagements or design your own to get the exact level of service you require.

## MODULAR STORAGE SOLUTIONS MSS SERIES NAS AND ISCSI SAN PRODUCT FAMILY



CUTTING  
EDGE  
NETWORKED  
STORAGE

## MODULAR STORAGE SOLUTIONS MSS SERIES NAS AND ISCSI SAN PRODUCT FAMILY



High Performance  
Enterprise Features  
Easily Scalable  
Utmost Reliability and Flexibility  
NAS & iSCSI Functionality  
High Availability with No Single Point of Failure

The Modular Storage Solution (MSS) Series from Cutting Edge Networked Storage Solutions is ideal for your critical data applications that require highly available, expandable network attached storage (NAS) or IP SAN (IP storage area network) solutions that offer extremely easy setup, flexible file management, modular capacity expansion, sustained high-speed operation, utmost availability and reliability.



Cutting Edge Networked Storage  
1825 Gillespie Way, Suite 100  
El Cajon, CA 92020  
Ph: 619.258.7800  
F: 619.258.7806  
www.culleedge.com



## MODULAR STORAGE SOLUTIONS MSS SERIES NAS AND ISCSI SAN PRODUCT FAMILY

**CUTTING  
EDGE  
NETWORKED  
STORAGE**

### MSS with EdgeWare Benefits:

Easy-to-Setup. Easy-to-Manage and Support. Superior Operability. Expansion and Reliability. No Single Point of Failure.

## MODULAR STORAGE SOLUTIONS MSS SERIES NAS AND ISCSI SAN PRODUCT FAMILY



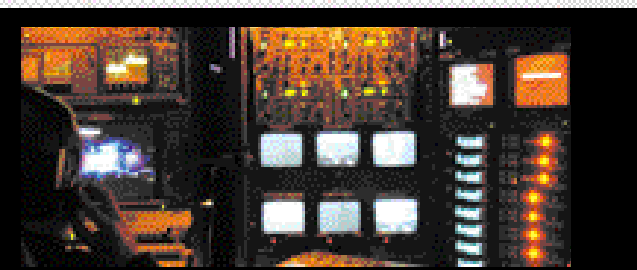
- High Performance
- Enterprise Features
- Easily Scalable
- Utmost Reliability and Flexibility
- NAS & iSCSI Functionality
- High Availability with No Single Point of Failure

The Modular Storage Solution (MSS) Series from Cutting Edge Networked Storage Solutions is ideal for your critical data applications that require highly available, expandable network attached storage (NAS) or IP SAN (IP storage area network) solutions that offer extremely easy setup, flexible file management, modular capacity expansion, sustained high-speed operation, utmost availability and reliability. Built for mission critical applications like RAID protected centralized multi-protocol storage, applications utilizing MS Exchange databases, storage area networks, remote replication and mirroring and data repositories, MSS speeds data access and integrates block and file level operations with a modular storage solution, providing the best in scalable performance and capacity expansion available today. MSS gives

you the option of mixing and matching low-cost SATA drives and high performance 10k/15k RPM SAS drives to achieve the right balance of performance and cost. Additionally, for the utmost in high availability and data security, MSS combines fully fault tolerant operation with Active-Active\* or Active-Passive IP Failover modes, with no single point of failure.

### EdgeWare 64-Bit NAS/iSCSI OS

The MSS Series is powered by Cutting Edge's 3rd generation field proven EdgeWare™, a fully integrated IP 64-bit storage operating system that provides a storage centric, easy-to-use and easy-to-support, heterogeneous network file system. EdgeWare offers complete NAS and iSCSI functionality and same time use in a unified storage solution, coupled with best-in-class performance, versatility and security for SAN, LAN and WAN applications. EdgeWare's rich feature set includes built-in remote replication for disk-to-disk/-to-tape/-to-USB backup, mirroring, multiple snapshot capability, iSCSI target, IP failover, web-based management, RAID 6 support and built-in security features that make it a strong alternative to expensive Fibre Channel connectivity, with comparable features and performance. EdgeWare affords almost limitless volume sizes, extremely high performance, increased data reliability, greater security and increased scalability. iSCSI target efficiency is also improved by supporting multiple iSCSI initiators on different volumes, without sacrificing NAS, CIFS and NFS performance.



### MSS Applications

MSS with EdgeWare NAS and iSCSI functionality provides a cost-effective storage system for deployment in the following applications:

- Data Protection – Disk-to-disk, disk-to-tape and disk-to-USB backup.
- Server and Storage Consolidation - Link multiple storage systems to servers to achieve better storage utilization. Reduce the number of direct attached storage (DAS) RAID arrays. Connect multiple server configurations to one manageable storage server.
- Data Center Storage Networks - Compatible with applications such as Exchange, Oracle, Sequel, web serving, e-mail or audio and video storage.
- Expansion into Metro and WANs - Centralize corporate data resources in one location for remote backup and replication as data repositories.

### MSS Series with EdgeWare

The Cutting Edge MSS delivers optimal performance based on a true 64-bit hardware and software architecture. To accommodate users with minimal or ever growing storage requirements, the MSS Series comes with our NAS/iSCSI OS using EdgeWare™ and utilizes the latest in disk drive technologies, including the high performance 10k/15k SAS drives, 750GB SATA II 3 Gb/s RAID edition disk drive and soon to be available 1TB SATA II 3GB/s RAID edition disk drives. Form factors range from 1U up to 3U with capacities up to 72TB using SAS (3U), 240TB using SATAII (3U), and can scale to 1Petabyte via a FC switch. The MSS can also be configured as an all purpose NAS storage server with iSCSI functionality, using EdgeWare, delivering enterprise-class functionality, scalable performance and capacity using either single, dual or quad processors.

## MSS Series Features and Benefits

### Easy Installation and Operation

- File sharing across a variety of servers & clients
- Multiple network & interface support, including UPnP/WSDL
- Easy system management with EdgeWare OS
- Exceptional system monitoring and alerts

### Guaranteed Performance & Scalability

- Enterprise level performance with 64-bit OS
- NAS/iSCSI combo for increased functionality and efficiency
- Single, Dual or Quad CPUs with dedicated memory for high speed access
- 2 & 3GbE standard. Upgradable to 43GbE interface
- SAS-to-SAS/cc SA SAS-to-SAS/SATAII or FC-to-SAS/SATAII storage connectivity
- MSS can scale up to 72TB using SAS (3U), 240TB using SATAII (3U) and up to 1 Petabyte using a FC switch

### Reliability and Availability

- RAID 0, 1, 5, 6 and 50 with hot spare and hot swap
- Automated system integrity checks
- Single or Dual redundant power supplies, hot spare drives with anti-virus support
- Active-Active\* or Active-Passive IP Failover with mirrored systems
- Hardware RAID with battery backup with cached write protection and secondary power loss support

### Absolute Security

- Error recovery levels 1 & 2
- IPsec for increased internet security, LDAP Client and Access Control List
- Block level storage for increased security and transfer rate
- Multiple Root Control Services for conditional access
- Extensive monitoring and alerts with email notification

### Easy Backup & Recovery

- Multiple snapshots for fast backup and data retrieval
- Remote replication directly to disk for improved business continuance
- Remote mirroring for improved network failover and redundancy
- Disk-to-disk, disk-to-tape and disk-to-USB backup modes

### Easy Installation and Operation

MSS with EdgeWare is easy-to-install, easy-to-manage and easy-to-support. Custom MSS hardware and EdgeWare's powerful 64-bit OS integrates NAS and iSCSI functionality that affords file sharing across a variety of servers and clients, multi-network interface and protocol support, and outstanding system management - consolidating storage easily and securely has never been easier.

#### UPnP/WSDL Server

MSS uses Simple Object Access Control (SOAP) to leverage standard management formats (XML) and protocols (HTTPS) to configure multiple servers.

#### LDAP Client

MSS permits user and group authentication to an LDAP server for all network services and even the web-based administration. This allows other EdgeWare enabled MSS servers to coexist in an existing LDAP management scheme.

#### Network Access Gateway

With remote management, the EdgeWare OS can manage multiple NAS systems - providing accessibility to manage large terabyte volumes of data stored in Enterprise networks.

### Guaranteed Performance

Each MSS system integrates true 64-bit OS capability with the highest performing storage connectivity hardware and SATA/SAS disk components available, guaranteeing extreme performance even under heavy load conditions.

#### Storage Connectivity

Each MSS system offers SAS-to-SAS/SATAII or FC-to-SAS/SATAII storage connectivity, bringing the perfect balance between performance and capacity.



#### iSCSI Target

Each MSS with EdgeWare solution has the ability to transport data across networks using the iSCSI protocol. The EdgeWare enhanced MSS can act as an iSCSI target using the same hardware platform - allowing MSS systems to be a target for remote replication and mirroring operations.

#### NIC Bonding

With NIC bonding, the bandwidth of two NIC cards can be aggregated and converted into one, increasing the data transfer capacity and speed.

### Reliability and Availability

MSS systems are built to last. Robust and field proven chassis, hardware or software RAID, dual redundant power supplies (except some 1U models), fans and hot spare drives with anti-virus support coupled with automated system integrity checks are fully integrated and tested in each system before shipment - guaranteeing the pinnacle in reliability and uptime. Multiple MSS units can be paired via a switch to offer the utmost in high availability with Active-Active\* and Active-Passive IP failover functionality - ensuring no single point of failure.

#### Hardware & Software RAID Support

The EdgeWare based MSS offers integrated support for leading manufacturer's RAID controllers as well as driver support for most other hardware RAID controllers that support SATA, SAS, SCSI and Fibre HDD's. In addition, our EdgeWare MSS OS provides software RAID 0, 1, 10, 5, 6, bringing the best balance between performance and data security.

Hardware RAID controllers have up to 72 hour battery backup support and up to 256MB of cached memory, along with secondary power loss support that safeguards data against on-site power interrupts and during routine system power up - ensuring the utmost in system reliability and data availability.

#### IP Failover (Active-Passive or Active-Active\* failover)

All MSS solutions offer IP Failover between two mirrored systems - ensuring no single point of failure. For maximum availability, two EdgeWare based servers can share the same virtual IP address over the network. If one server goes offline, then the other server can pick up network activity without causing interruption.

#### Fault Tolerance

The EdgeWare MSS storage systems offer Dual Host and/or Dual RAID Array to provide Active-Active\* or Active-Passive IP failover for maximum data protection that created no single point of failure.

### Absolute Security

#### System Monitoring & Alerts

The advanced monitoring system notifies network administrators on health disk status, system temperature, RAID status, and spare drives on their systems. EdgeWare OS also generates logs that record monitoring activity on a timely basis.

#### Access Control List

The Access Control List (ACL) allows administrators to restrict user rights and access policies through the network. The ACL feature is convenient for file share administration and remote network management.

#### Error Recovery Levels 1 & 2

**EdgeWare Error Recovery Level 1 (ER1)** monitors information packets that are sent over the network from the iSCSI initiator to the iSCSI target. Error Level Recovery 1 also supervises network communication and recovers lost data during transmissions.

**EdgeWare Error Recovery Level 2 (ER2)** is used when there are multiple network connections. Error Recovery Level 2 inspects the vitality of the network connection and if a connection goes offline, then the EdgeWare OS searches for an operational connection and redirects all network traffic.



#### Journaling System

EdgeWare enabled MSS storage systems give users the choice of 3 journaling systems that are optimized for customer applications and provide data reliability and redundancy.

#### Log and System Function

The log functionality of the EdgeWare enabled MSS tracks user activity by groups, individual users, and by level of administration and it can also track module activities. EdgeWare MSS systems offer tracking logs by time line which includes events generated for one day and between specified times. System logs can be viewed and configured through the user interface or by remote log setup. Logs can be assigned to multiple volumes and can be copied immediately, hourly, or daily. These logs provide a wealth of information for intruder detection, security audits and technical support.

### Easy Backup and Recovery

#### Snapshots

The EdgeWare snapshot feature captures data from a single point-in-time with the capability to aggregate multiple snapshots in sequence which can be used for backup or data retrieval purposes.

#### Snapshot Scheduling

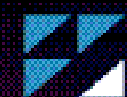
The EdgeWare OS scheduling snapshot feature, gives users the ability to capture data from a point-in-time and has the functionality to aggregate multiple snapshots sequentially which can be used for backup or data retrieval purposes.

#### Remote Mirroring

With Remote Mirroring, each EdgeWare enabled MSS allows real time block device replication of logical volumes. This allows network failover between two systems, where two volumes are mirrored to provide some of the best redundancy possible.

#### Remote Replication

With the EdgeWare enabled MSS Remote Replication feature, organizations can improve their business continuation model by backing up directly to disk. This shortens their backup window while vastly improving TCO. This allows both public and private organizations that comply with federal regulations to eliminate the traditional form of backup; transferring data into tape, which is time consuming, generates multiple tape copies, and often leaves sensitive information exposed.



Cutting Edge Networked Storage

1625 Gillespie Way, Suite 100

El Cajon, CA 92020

Ph: 619.258.7800

Fx: 619.258.7806

www.culleedge.com