NSM5200 Series Network Storage Manager

250 MBPS RECORDING THROUGHPUT, UP TO 48 TB OF RAW CAPACITY, RAID 6

Product Features

- Recording Throughput up to 250 Mbps Meets Demanding Performance Requirements for Write-Intensive Applications
- Hardware Designed to Eliminate Single Points of Failure, Including Redundant Fans, Power Supplies, and RAID 6 Storage for Optimum Reliability
- Pooled Storage Management Provides Automatic Distributed Load Balancing and Active-Active Failover Within a Storage Pool to Ensure Continued Recording if Catastrophic Failure Occurs
- Hot Standby Failover Provides Redundancy in Installations Where Storage Pooling Cannot Be Utilized.
- Multicast Recording Support Allows for Recording of Multicast Data Streams for Restricted Bandwidth Scenarios
- Redundant Recording Ensures Duplication of Vital Data for Mission-Critical Applications
- Built-in EnduraStor™ Storage Management Increases Storage Efficiency by Grooming Recorded Streams Based on Age and Priority
- Ability to Serve 32 Simultaneous Playback Streams Per Storage Pool

- Performance Levels Maintained in Normal and RAID Error Conditions
- Built-in Diagnostic Monitoring Provides Preventative Maintenance and SNMP Monitoring
- Reduced Cost of Ownership and Increased Energy Efficiency Through Consolidation of Multiple Hardware Components into a Fully Integrated Chassis

The **NSM5200 Series** delivers industry leading performance and innovation for mission-critical storage needs. The combination of high performance, scalable hardware design and advanced software capabilities enables the **NSM5200** to meet the unique storage needs of physical security and surveillance applications.

Hardware Built for Performance, Reliability, and Scalability

The demands of surveillance applications place unique strains on storage subsystems. Storage systems require the bandwidth and capacity to keep up with incoming streams. They must also simultaneously manage all other common disk and RAID functions. In addition, physical security applications are almost always mission critical. Any downtime, degraded performance for routine maintenance, or loss of recorded footage is extremely disruptive to the organization's physical security mission.

The **NSM5200** has been engineered to meet these unique performance and reliability demands. Custom hardware components, to eliminate common performance choke points to a patented scheme for writing content to a disk drive, have been specifically designed to deliver sustained high throughput for recording and playback. The **NSM5200** is capable of a maximum of 250 Mbps of throughput for incoming streams while delivering 32 simultaneous playback streams per storage pool. This performance is maintained whether the system is operating under normal conditions, dealing with disk drive errors, or rebuilding the RAID array.

The **NSM5200** improves the total cost of ownership and energy efficiency by consolidating disparate components into a single chassis. The 250 Mbps throughput provides double the improvement over Pelco's first generation integrated recorder, allowing users to service far more data streams in one storage unit than previously possible. In addition, with the integration of the storage controller functionality into the storage chassis, cost and energy efficiency is optimized by eliminating the cost of additional servers and the associated heating, ventilation, and cooling costs. Finally, the use of lower power components and adaptive cooling inside the chassis manage power dissipation based on load requirements.

Reliability is enhanced through the use of redundancy at all common failure points. A CompactFlash card is used to host the operating system for higher reliability than traditional hard disk drives. To mitigate any downtime resulting from CompactFlash errors, the database is striped across the storage array. The RAID 6 storage configuration provides double parity protection of recorded data. The hard drive bay is cooled through the use of high capacity, redundant fans to ensure that the drives are kept at an optimum operating temperature. Finally, fully redundant power supplies guard against any power supply failure.

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As with any system, maintenance is an important and vital part of sustained operation. The **NSM5200** incorporates various innovations to make maintenance more efficient and to allow the system to continue operating at peak performance levels. Easy access to hard disk drives and the CompactFlash card is available from the front panel. A unique rail system allows access to a failed fan should it need to be replaced. Temperature sensors throughout the chassis detect possible air-flow obstruction or clogged intake filters. The use of enterprise-class SAS® technology provides advanced enclosure management and monitoring. Notifications of potential or actual issues are transmitted to the specified user interfaces for action.

Storage capacity is scaled using third-party storage arrays with an optional fibre channel interface.

Software Built for Flexibility, Reliability, Cost Optimization

In addition to unique strains placed on hardware components, surveillance applications also demand innovations in software. Recording software must accommodate automatic failover should a catastrophic failure occur. Recording software must deal with file fragmentation caused by overwrite, locking of video clips, and managing metadata associated with alarms and events. Finally, recording software must deal with the escalating cost of storage by finding innovative ways to manage recorded content. This ensures that the user extracts the most value from the cost of the storage subsystem.

The **NSM5200** supports the pooling of multiple recorders to provide for automatic retention balancing and failover. Up to six **NSM5200** nodes can be placed into the same storage pool. One of the **NSM5200s** in the pool acts as the master and manages the assignment of incoming streams, health monitoring, and redistribution of the recording load. Should a unit fail, the given streams are automatically redistributed to the remaining units in the storage pool. When the failed unit is brought back on line, the recording load is redistributed to balance the video retention period across the recording pool. This capability also allows users to dynamically add additional storage to a pool as their retention needs change. Single **NSM5200s** can be monitored by another **NSM5200** or an entire storage pool when the single **NSM5200** cannot be incorporated into a standard storage pool.

For mission-critical applications where business continuity is essential, the **NSM5200** supports redundant recording. Independent schedules can be created on both the primary and redundant storage pools to ensure that the most vital data is duplicated across physical boundaries.

The **NSM5200** incorporates an improved version of Pelco's patented EnduraStor™ storage optimization technology. EnduraStor was developed to manage the cost of storing high resolution, high-frame rate video by leveraging the fact that the value of recorded video is typically higher immediately following an incident. Organizations are capable of specifying a desired delay period during which all recorded video will be kept at 30 images per second (25 ips for PAL). As the age of video available on hard disk drives exceeds the delay period, it is automatically groomed to a lower frame rate, thus freeing up storage capacity for new data. The **NSM5200** incorporates advancements in the EnduraStor algorithm, which gives administrators the option of classifying the priority level of alarm or event video to retain the full frame rate.

The **NSM5200** is built upon the proven stability and robustness of its Linux®-based operating system. It utilizes an XFS file system and automated defragmentation routines to keep the database from becoming fragmented. XFS has been proven to be a superior file format for the rigors of surveillance recording applications than an NTFS file system, which is standard with Windows®-based recorders.

The **NSM5200** incorporates a number of diagnostic monitoring functions that serve vital roles in notifying operators of potential problems and failures. Integrated diagnostics utilize on-board LED indicators to display warnings and failures on the **NSM5200** and then it reports these failures to operators. The **NSM5200** monitors and provides warning messages for items such as retention time issues, accumulation of software errors, network errors that result in packet loss, and changes to network link speeds. It also monitors and reports hardware diagnostics such as temperatures approaching established thresholds, hard disk drive failures, fan failures, power supply failures, or when a stream or a **NSM5200** is off line. Finally, the **NSM5200** can communicate to an APC Smart-UPS® series uninterruptible power supply to provide battery status information and initiate a graceful shutdown if the available charge falls below its designated threshold.

TECHNICAL SPECIFICATIONS

MODELS

The following table describes the NSM5200 model numbers. For example, the model number for a 12 TB, no expansion unit with a United Kingdom power cord is NSM5200-12-UK.

Note: Models shipped to China do not include power cords. A CCC approved power cord must be used to power the equipment when used in China.

Model	Storage	Country Code
NSM5200 (no expansion) NSM5200F (fibre channel expansion)	12 TB	US = North America EU = Europe UK = United Kingdom CN = China AU = Australia AR = Argentina
	24 TB	
	36 TB	
	48 TB	

SUPPLIED ACCESSORIES

Power Cord	2 power cords (based on country designation) **Note:** Models shipped to China do not include power cords. A CCC approved power cord must be used to power the equipment when used in China.
Rack Mount Kit	Brackets, rails, and hardware

OPTIONAL ACCESSORIES

NSM5200-PS	Replacement power supply module
NSM5200-FAN	Replacement system fan (upper-middle)
NSM5200-FANB	Replacement rear-chassis (rear panel) fan
NSM5200-FC	Fibre channel expansion card
HD5200-2T-72K	Replacement 2 TB hard drive and carrier
HD5200-3000	Replacement 3 TB hard drive and carrier
DS-EN-4TB-HDD	Replacement 4 TB hard drive and carrier

SYSTEM

Operating System	Linux
RAID Level	RAID 6
Effective Capacity	
NSM5200-12	9.05 TB
NSM5200-24	17.75 TB
NSM5200-36	26.66 TB
NSM5200-48	35.50 TB
Drive Interface	SAS/SATA II

Recommended PC Requirements

Web Browser	Microsoft® Internet Explorer® 6.x (or later) with Adobe® Flash® Player 10 (or later)

NETWORK

Interface	2, 1 Gbps Ethernet RJ-45 ports (1000Base-T)
Auxiliary Interfaces	
USB 2.0	3 ports (2 rear, 1 front)

TECHNICAL SPECIFICATIONS

FRONT PANEL INDICATORS

Power	Blue Pelco badge
Software Status	Green, amber, red (based on diagnostics)
Ethernet Port 1	Green, red, off
Ethernet Port 2	Green, red, off
Unit Status	Green, amber, red
Hard Drive Status	Green, red

POWER

Power Input	100 to 240 VAC, 50/60 Hz, autoranging
Power Supply	Internal, dual-redundant, hot swappable
Power Consumption	Operating Average
100 VAC	262 W, 2.65 A, 895 BTU/H
115 VAC	263 W, 2.31 A, 895 BTU/H
220 VAC	254 W, 1.25 A, 868 BTU/H

ENVIRONMENTAL

Operating Temperature	10° to 35°C (50° to 95°F) at unit air intake
Storage Temperature	–40°to 65°C (–40° to 149°F)
Operating Humidity	20% to 80%, noncondensing
Max Humidity Gradient	10% per hour
Operating Altitude	–16 to 3,048 m (–50 to 10,000 ft)
Operating Vibration	0.25 G at 3 Hz to 200 Hz at a sweep rate of 0.5 octave/minute

Note: The temperature at the unit air intake, measured at the front of the bezel, can be significantly higher than room temperature. Temperature is affected by rack configuration, floor layout, air conditioning strategy, and other issues. To prevent hard disk drive failure and unit damage, make sure the temperature at the air intake of the unit is continuously within the operating temperature range.

PHYSICAL

Construction	Steel cabinet
Finish	
Front Panel	Gray metallic with black end caps
Chassis	Black matte finish
Dimensions (without rails)	61.8 x 43.2 x 13.2 cm (24.3" D x 17.0" W x 5.2" H)
Unit Weight	
Empty (without drives)	21 kg (46.4 lb)
Loaded (with drives)	30 kg (66.8 lb)
Shipping Weight	35 kg (77.0 lb)
Mounting Options	Rack, 3 RU per unit (rack rails and hardware are supplied)

CERTIFICATIONS/RATINGS

- CE, Class A; meets EN50130-4 standard requirements
- FCC, Class A
- UL/cUL Listed
- C-Tick
- S-Mark for Argentina
- CCC

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