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COLDSTORE
SURVEILLANCE STORAGE SYSTEM

The world's only storage system designed specifically for digital video surveillance

COLDSTORE's sequential recording system (SFS ™) uses hard disks like video tapes and offers extreme reliability even using low cost disk drives.

Massive 75TB capacity using only 60 watts in new 3U format

NAS System incorporating L.A.I.D. ™ technology for high disk reliability

No data loss on disk failure and no rebuild required

Uses any mix of SATA drive make, model and capacity

Simple and straightforward end-user disk management

Instant evidence seizure/transport by disk removal at any time

Individual disks playable on standard PC via USB (DISKPLAY option)

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COLDSTORE is a unique Network Attached Storage (NAS) array designed from the ground up for surveillance.

It has been specifically developed using a clean, back-to-basics approach to deliver a highly reliable surveillance storage system.

Reliability assured

Our Linear Array of Idle Disks (L.A.I.D ™) technology combined with a unique Sequential disk Filing System (S.F.S. ™) produces a powerfully simple system which can provide massive capacity at low cost. Whilst simple in concept, this delivers a highly reliable storage system even when using the lowest cost hard disks available.

Low power, low cost

COLDSTORE uses only one-tenth of the power of comparable systems, is resilient to disk failure, requires no disk rebuild process and dramatically reduces your running costs. It provides an easy way to instantly extract and transport critical evidential video data.

Disks are used sequentially, with all disks not in use being switched off, saving power and thus dramatically reducing temperature, vibration and wear – the three primary disk killers. The system uses a unique mirrored overlapping-pair writing pattern to provide full data redundancy during the critical writing process, but does not require twice the number of drives of fully-mirrored RAID1 systems.

COLDSTORE exploits the fact that only 3% of video data is ever replayed, and so every disk is off, (on average) for 87% of the time. SFS ™ controls the disk read/write heads, moving them across the disk very much like a vinyl record player, virtually removing disk vibration.

Combining LAID ™ and SFS ™ together with a custom-designed low-power main CPU board results in a disk array which hardly needs any cooling at all, and uses as little as 60 watts even with a fully populated 75TB array.

Stay Cool

As there are also times when it may be necessary to run all of the drives simultaneously for an extended period (e.g. during a mass search, archive and replay process), COLDSTORE is designed to handle this with ease, incorporating a well-specified power supply (with dual hot-swappable PSU option) and temperature-controlled chassis cooling fans.
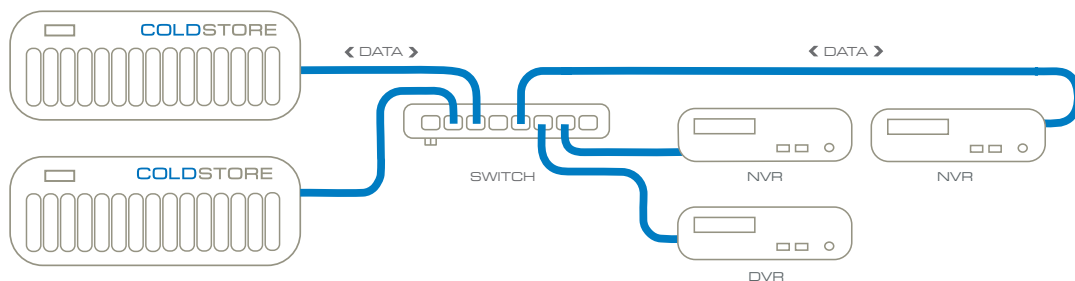
Diagram 1. DVRs and NVRs write to COLDSTORE across the network. Multiple recorders can write to a single COLDSTORE, or one recorder can write to multiple COLDSTOREs if required. In principle, individual video streams can be routed to any COLDSTORE on the network as required under the control of the third-party recording system.

IMAGINATION INNOVATION INTEGRATION

Low power and high capacity make COLDSTORE an ideal system for long retention of 30 - 180 days or more

Removable drives containing specific time-spans enables rapid extraction of critical evidential data for law enforcement purposes

Simple Disk Management

COLDSTORE can use any model and capacity of 3.5" SATA disk and indeed any mix of disks. Disks may be added "on the fly" and will automatically be incorporated into the array. Disks may also be extracted at any time, and due to the strictly sequential writing pattern, the recorded time-span of any disk may be displayed on the front panel. See the time-span display example below.

This allows simple physical location (and extraction) of any particular recording for evidential purposes. Such simple, yet powerful features allow the disks in the array to be easily managed by the end users themselves.

In addition to the mirrored overlapping-pair mode, COLDSTORE can also operate in single sequential disk mode and sequential full mirrored-pair mode as required. These modes of operation still benefit from the power-saving, low temperature, low vibration and low wear features of LAID and SFS, including simple disk management and instantaneous extraction of evidence.

Integration

Veracity provides a simple SDK for DVR and NVR manufacturers who wish to provide their users with the many benefits of COLDSTORE. The API provides direct control of COLDSTORE via a specific network protocol as an alternative to the SDK.

Complete Control

COLDSTORE is supplied with a PC client application for configuration and array management.

Alternatively, array management may be done directly via front-panel controls. The front panel is also used to show the disk array status, disk capacities, disk time span and IP address.

Veracity works with many (VMS) Video Management System companies world wide to ensure COLDSTORE integration support.

Please check our website for the latest information and for a list of the currently supported partners.

Example 2. Front Panel Menu - Disk 3 Timespan Display.

| D | | | 0 | 8 | : | 4 | 5 | | 1 | 5 | F | E | B | 1 | 4 |
| 0 | 3 | | 1 | 9 | : | 2 | 1 | | 1 | 9 | F | E | B | 1 | 4 |

Removable Disks?

For an instant way to view footage on an extracted disk use DISKPLAY.

DISKPLAY is a custom-designed USB disk docking station which allows playback of any extracted COLDSTORE disks without removing them from their special disk tray.

Rear view (above) showing dual Gig-E ports, alarm/relay connections and the dual hot-swap PSU option. Note that the two cooling fans are software controlled and are normally switched off.

TECHNICAL SPECIFICATION] COLDSTORE™

GENERAL

Storage array type :	Custom NAS server running L.A.I.D.™ with S.F.S.™ disk filing system
Interface	Dual Gigabit Ethernet
Data throughput	400Mbit/sec (unlimited scalability with multiple COLDSTORE units)

SYSTEM

O.S.	Embedded Linux on solid state memory.
System integration	Direct from 3rd party client application (SDK & network protocols available).
Configuration	Over LAN via Veracity client application or 3rd party client application.
Management	By front panel, or over LAN via Veracity client app. or 3rd party client app.
Compatibility	All COLDSTORE supported VMS systems (see website for current list).
	Directly compatible with the Veracity TRINITY system architecture.
	Also available with embedded Milestone Arcus (see part codes).

CAPACITY

Drive bays	15 x 3.5" (lockable drive trays included)
Maximum capacity	Raw — 75TB
(with 5TB disks)	Effective — 70TB (Normal COLDSTORE mode)
	Effective — 35TB (Sequential full mirrored-pair mode) (14 disks)

ALARMS

Alarm relays	4 software configurable e.g. disk fail, disk inserted, disk extracted, PSU fail, etc.
Alarm inputs	4 software configurable e.g. UPS active, power down, start fans, etc.

POWER

Power consumption	Dual hot-swap PSU : 60 watts typical
Power supply rating	320W (See actual power consumption above)
Time synchronization	via NTP (recommended)

PHYSICAL/ENVIRONMENTAL

Dimensions	19" rack width, 3U high, D 440mm
Weight	22kg (without disks)
Operating temperature	5ºC to 50ºC (14ºF to 122ºF)
Relative humidity	Up to 85%, non-condensing.
Compliance	CE, FCC, RoHS.

PRODUCT CODES

CSTORE15-3U-D	COLDSTORE 15-Bay 3U - dual hot-swap power supply.
CSTORE15-3U-D-ARC	COLDSTORE 15-Bay 3U - dual hot-swap power supply - embedded Arcus.
CS-DP	DISKPLAY USB docking station for COLDSTORE disks.

COLDSTORE Compact is also available with 8 x 2.5" drives offering up to 16TB storage capacity - using only 16W.

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