



NetApp for Video Surveillance

Critical Infrastructure Storage

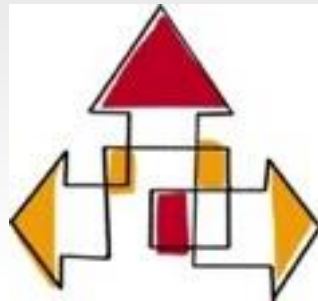
E-Series for Video Surveillance Block I/O

Why is the E-Series better?



Big Bandwidth Support

- Industry leader in write performance
- **72Gb/s*** disk writes in 24RU in a single rack



Dense, Flexible Design

- Most capacity per rack: **3.6PB**
- Modular solution
- Scale bandwidth and capacity independently



Extreme Reliability

- Over 830,000 systems deployed
- Large R&D team
- 32+ years experience
- Full system redundancy

Optimized for Demanding Workloads

* E5660 raw performance based on RAID 6, 7200 RPM drives

Typical Resolutions: Data / Storage for 1 Month **per camera**...



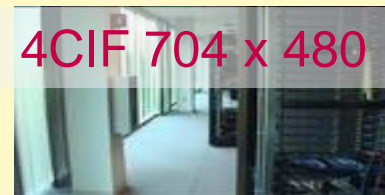
3 Mbps - ~1 TB



2.7 Mbps - 901 GB



1.3 Mbps - 432 GB



1 Mbps - 300 GB

H.264
50% quality
30 frames per second
31 days retention

Proven Reliability, Availability, Integrity

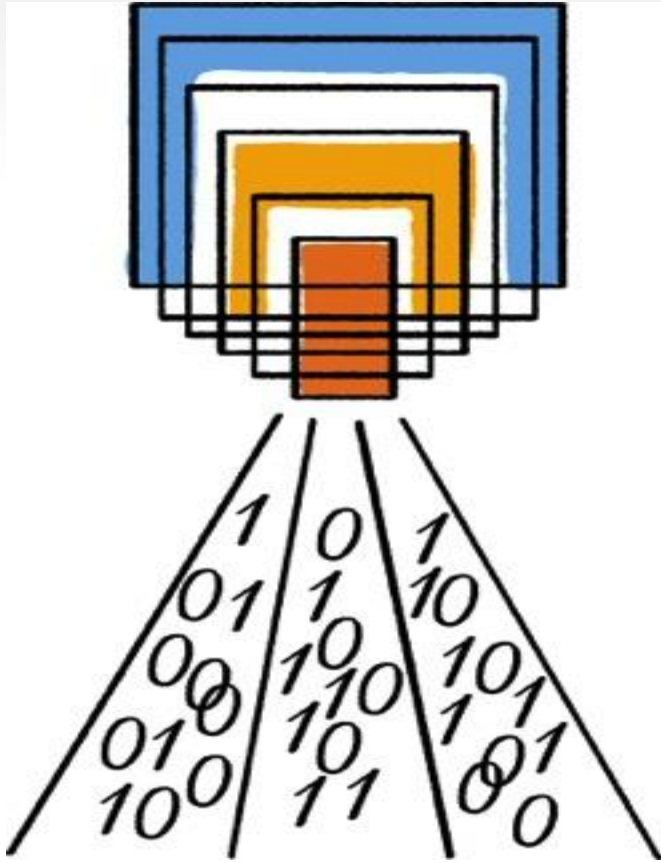
- Architected to provide the highest reliability, availability and serviceability (RAS)
 - 32+ years of experience, continuous engineering refinement & optimization
 - Over **780,000+** systems installed with more than 450,000 installed in last 3 years
- Field-proven technology designed for availability, with over **2.3 Trillion** hours of power-on **99.999% RAS**
- Comprehensive data integrity & safety with Dynamic Disk Pools (DDP) and enhanced security with Self Encrypting Drive (SED) technology

Key RAS Features

- Proactive drive and I/O monitoring and automated repair
- Embedded system health check
- Media scan with automatic parity check & optional correction
- Extensive diagnostic data capture and statistics collection
- Optional RAID parity verification
- Enhanced drive recovery
- **Self-encrypting drives (SED)**
- Cache destage to flash
- Redundancy checks during RAID group configuration

Lawrence Livermore National Lab

Sequoia – announced at ISC 2012 as the fastest supercomputer and storage combination and still the fastest storage system on the planet at:



- Supercomputer with 1,966,080 CPU Cores in 120 Racks = twenty thousand trillion arithmetic operations per second (20+ PetaFlops)
- E-series storage with access speeds exceeding to **2.34 TBytes/second at 99.9999% availability**
- 132PB+ of storage (44,120+ Disk drives) with 736+ controllers supporting 660+ systems
- Computational modeling & Simulations for:
 - Nuclear weapons viability
 - Counter Terrorism
 - Understanding Climate Change
 - Advanced Research

Press Release: <http://www.netapp.com/us/company/news/news-rel-20110928-990734.html>



Surveillance Use Cases Samples



Reduce Shrinkage with E-Series-based VSS

Retail

Customer challenge:

This customer was looking for a highly scalable, better performing video surveillance solution versus their legacy tape solution for all of their **200+ stores**. They wanted both a robust performance and scalability option for growth versus their current storage vendor.

Solution implemented:

Initial POC comprised of (2) E2600s coupled with select VSS software implemented by OST, the reseller. 50 stores were upgraded by end of 2013 with remaining 150 stores following in early 2014.

Reasons why customer chose NetApp:

- NetApp's E2600 had much better performance capabilities and scalability vs. incumbent
- The Customer also preferred the proven E-Series technology over the incumbent
- Partner, OST's support capabilities with NetApp E-Series-based solution

Benefits to customer:

- Reduction in shrinkage of inventory via shoplifting
- Ability to react quicker and more accurately by providing a more efficient manner of evidence management for court cases
- Ease of integration and implementation by Partner, OST
- Scalable and flexible solution for growth in future years

Genetec

Public Sector Customer

US Public
Sector

- Customer wanted to leverage NetApp storage for all applications including IP surveillance
- Customer was looking for high density and high performing storage to support growing number of high resolution cameras
- Application was for consolidated storage to support up to 2,100 standard and high definition surveillance cameras
- NetApp E-Series E5460s with over 1.5PB of storage



Global Oil & Gas Company

Oil & Gas

- New corporate campus with 1,000 HDTV cameras
- Customer was looking for SAN enterprise storage with superior price & performance
- Application was a legacy choice to support outdoor and indoor surveillance cameras on new campus
- Lenel Video Management software
- NetApp E-Series E5460 with 840TB of usable storage



European City Metro

Public Transportation

- European metropolitan transportation system with over 5,000 cameras
- Customer was looking for enterprise storage virtualized recording servers with superior reliability and price for performance
- Milestone Video Management Software
- Centralized NetApp E-Series E5460s with 620TB of storage using a combination of 3TB NL-SAS (captures) and 600GB SSD drives (event database)



The Open Platform Company

US Public Sector / Security

Public Security

- City-wide surveillance network with 5,000+ HDTV cameras
- This customer was looking for SAN enterprise storage with superior reliability and price per performance
- Supporting outdoor, mobile and indoor surveillance cameras
- Video Management Software is from several vendors
- Centralized NetApp E-Series E5560s with 1PB of usable storage



Middle-East Financial Institution

Financial
Institution

- Middle-East Central bank with 5,000+ Bosch SD & HD cameras
- Customer was looking for reliable, high density storage
- Application was for consolidated storage to support all 11 branches
- Video Management Software is from Bosch
- NetApp E-Series providing over 5PB of storage



Global Cloud Service Provider

IT Industry
Cloud Provider

- 58 data center facilities with 85 to 160 cameras each
- Customer was looking for very high-availability 99.999% enterprise storage with superior price per performance
- Application was for standardized storage to support outdoor and indoor surveillance cameras
- Milestone Video Management Software
- Distributed NetApp E-Series E2712s providing 1.2PB+ overall



The Open Platform Company

Defense VSaaS Cloud Service Provider

VSaaS Cloud
Service Provider

- Large Multi-service base complex
- Customer was looking for scalability, high-availability, high density storage for multi-tenant storage as a service
- Application to support outdoor and indoor surveillance cameras as a service offering through the base complex
- Video Management Software is from Milestone
- NetApp E-Series E5500s totaling 2.1PB of video capacity



The Open Platform Company

European Sport Facility

Public Sport Facility

- Multi-use facility arena with 500+ Axis Cameras
- Customer was looking for flexible scalability, highly reliable and high density storage
- Genetec Video Management Software
- NetApp E-Series Storage providing 500TB of recording storage



Middle-East Government Public Administration

Government Public
Administration

- Multiple facilities with **5,000+ cameras**
- This customer was looking for very high-availability 99.999% enterprise storage
- Application was for consolidated storage to support outdoor and indoor surveillance cameras
- Milestone Video Management software
- NetApp FAS & E-Series with over 4.5PB of usable storage



milestone

The Open Platform Company

BOSCH



North American International Airport

- 800+ Cameras streaming to 11 virtualized servers
- Customer was looking for easy to manage, scalable and reliable storage
- Video Management Software is from Milestone
- NetApp E-series Storage 1PB



Gaming Facilities

Gambling Industry

- 19 facilities with 45 to 2,300+ cameras each
- This customer was looking for very high-availability 99.999% enterprise storage with superior price per performance ratio
- Application was for standardized storage to support all surveillance cameras, including gaming regulated cameras
- Milestone, Nice, ipConfigure Video Management softwares
- Distributed NetApp E-Series E2700 & 5500s with 20 to 1,800TB of usable storage for an overall total of 3PB+ of recording storage



The Open Platform Company



Generic Drug Manufacturer

BioPharma
Industry

- Customer wanted to leverage NetApp high density and high performing storage for IP surveillance to replace aging & underperforming storage systems
- Application was for consolidated storage at two locations to support over 600 standard and high definition surveillance cameras
- E5460 with (2) expansion shelves, 510TB
- Customer's major concern was storage growth along with long-term (**1 Year by regulation**) expandability & serviceability



- Requirements
 - 250 Cameras IP network growing to 450
 - 250TB of capacity scaling to over 400
 - Cisco VSOM software support
 - ISCSI or FCP Technology
- Solution
 - Cisco UCS running 10 RHEL
 - Cisco VSM software
 - E5460 with (1) Expansion DE6600



County Government - USPS

Government Public
Administration

- Customer was using attached storage but was quickly running out of space to support transition over to HD
- Customer was looking for high density and high performing storage to support
 - increase from 30 to 90 days of storage
 - transition from standard to high definition cameras
 - centralized management was important
- Application was for consolidated storage to support 400 surveillance cameras across 8 virtual servers
- E5460 with 1 expansion shelf, capability to hot-add capacity as needed

SONY



SuperMax Prison - Mexico

Corrections Facility

- Customer building brand new facility with 991 4CIF full frame rate cameras
- Customer was looking for **reliable**, high density storage
- Application was for consolidated storage to support 991 outdoor and indoor surveillance cameras across 11 servers for 30 to 90 days
- (2) E5460 with (4) expansion shelves each (total 10 shelves) to support 1.5PB usable



EMEA International Airport

Public
Transportation
Facility

- International hub airport with 5,000+ Bosch cameras
- Customer was looking for very reliable and high density storage
- Genetec & Bosch Video Management softwares
- NetApp E-Series providing 5PB of storage



EMEA International Airports - Two

Public
Transportation
Facility

- Each International airport with 1,000+ Bosch cameras
- Customers were looking for highly reliable and high density storage
- Bosch Video Management software
- NetApp E-Series providing 1PB of recording storage

