

**EMC Tiered Storage
for Physical Security**

**Enabled by EMC Unified Storage
and Verint Nextiva**

Reference Architecture

EMC Global Solutions



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Reference architecture overview

Document purpose

This document provides an architectural overview of the EMC Tiered Storage for Physical Security solution, enabled by EMC® VNX™, EMC VNXe™, EMC CLARiiON® and Verint Nextiva.

This document also includes configuration guidelines and resource specifications for the solution components and storage arrays. For detailed information regarding installation and implementation, please consult the Proven Solution Guide for Physical Security with Verint Nextiva.

Solution purpose

The purpose of this solution is to present a reference architecture that provides a general purpose platform for integrating legacy and state-of-the-art physical security and surveillance infrastructures.

Using the EMC and Verint integrated solution, a security team can view realtime video while also receiving policy-based and anomaly-based alerts generated from sophisticated software analysis of the data from remote locations and historical archives.

This solution is a core reference architecture upon which other physical security solutions can be built, including:

- Virtualized infrastructure for physical security using VMware vCenter and vSphere
 - Tiered storage for physical security using Verint's Enterprise Storage Manager (ESM) and EMC's DiskXtender®
 - Business continuity for physical security, providing high availability with EMC AutoStart™
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The business challenge

Private businesses and public entities alike have responded to rising concerns about theft, fraud, and terrorism by sharpening their focus on physical security and surveillance systems. These organizations all need to manage and protect their ever-growing volume of physical security information.

The ability to access the right data at the right time from anywhere is crucial to supporting physical security and surveillance needs. However, comprehensive solutions may be hindered by:

- Proprietary software
- Closed hardware platforms
- Lack of manageable archival capabilities
- Data retrieval wait times
- Lost data
- Content authenticity
- Information management limitations

These limitations are amplified by the high expansion costs of legacy video surveillance systems based on CCTV, digital video recorders (DVRs), or networked video recorder (NVR) technologies, and non-integrated IT and physical security systems.

Once the information is captured—and throughout the initial response, detection, legal, judicial submission, and the data disposal processes—information management, availability, security, and protection are the core capabilities needed for tamper-proof evidence collection, increased conviction rates, and asset protection.

The types of organizations that can benefit from a comprehensive physical security solution include:

- Retailers
 - Casinos
 - Financial institutions
 - Higher education institutions
 - Transportation companies
 - Law enforcement
 - School systems
 - Prison systems
 - Government agencies
-

The technology solution

The EMC Physical Security solution provides the ability to control video surveillance and analyze security incidents in real time from anywhere, while monitoring and collecting evidence faster through realtime data and active archiving capabilities. This solution integrates EMC and Verint technology to help meet the challenges of video surveillance information convergence and management. This enterprise-class solution provides data management in each phase of its lifecycle, including:

- Capturing and monitoring
- Analyzing
- Protecting and securing
- Archiving
- Evidence authentication

Verint Nextiva software aggregates physical security content from multiple sources, integrating IP networking and a full range of physical security systems, including:

- Video surveillance cameras
- Access control devices and intrusion detection systems
- Information security applications
- Visitor management and identity recognition
- Asset management
- Sensors and alarms
- RFID, biometrics, plus future enhancements and analytics

Verint's Review application is compatible with RSA's SecurID Windows Authentication agent, providing multiple layers of secure access to the physical security infrastructure and authenticated tamper-proof video data for increased conviction rates.

The core storage architecture is based on enterprise-class EMC VNX and CLARiiON storage systems to cost-effectively scale the solution as security requirements grow with industry-leading reliability, availability, scalability, and storage-based functionality.

Additional reference architectures are available for:

- **Tiered storage** including evidence vaulting provided by the EMC Centera® storage platform in conjunction with the Centera Universal Adapter (CUA). Security users can bookmark events of interest to be saved in a separate archive that uses the EMC Centera/CUA configuration. This configuration provides a compliance and authenticity feature that is often a requirement of physical security systems. EMC DiskXtender and Verint's Enterprise Storage Manager provide methods for using a second tier of storage when long-term retention is required. EMC VNX and VNXe with unified storage or EMC Isilon scale-out NAS storage are excellent options for tiered storage.
- **Business continuity**, including automated failover protection for the Nextiva master and recorder servers. This is provided by EMC AutoStart, which guards against non-responsive server application services and catastrophic loss of hardware. Alternately, EMC MirrorView™ can provide full-site failover for disaster recovery of the Nextiva server and video data, as well as event data.
- **Virtual infrastructure**, including VMware ESX 3.5 and 4.0, which provides an environmentally-friendly way to reduce the number of physical servers needed.

Solution architecture and configuration

Solution architecture

The physical security components are typically comprised of legacy analog monitoring capabilities, analog cameras, and IP cameras.

Nextiva encoders convert standard NTSC/PAL video from analog cameras to a digital video stream over TCP/IP. Nextiva IP cameras or customer-furnished IP cameras can also be deployed. Each camera is capable of producing a digital video stream over TCP/IP.

EMC storage platforms are used to provide single- or multi-tiered storage architectures for centralized or decentralized enterprise requirements. EMC PowerPath® software provides channel failover on all Nextiva application servers for both fiber and iSCSI connectivity options.

Digital video streams

Digital video streams over TCP/IP are captured by the Nextiva recorder server application and written to EMC VNX storage.

Note: Only the EMC E-Lab™ Interoperability Navigator SAN and DAS configurations are supported with the Nextiva recorder application.

Master server

The Nextiva master server application provides access to the video captured by the Nextiva recorders as well as user authorization and event management.

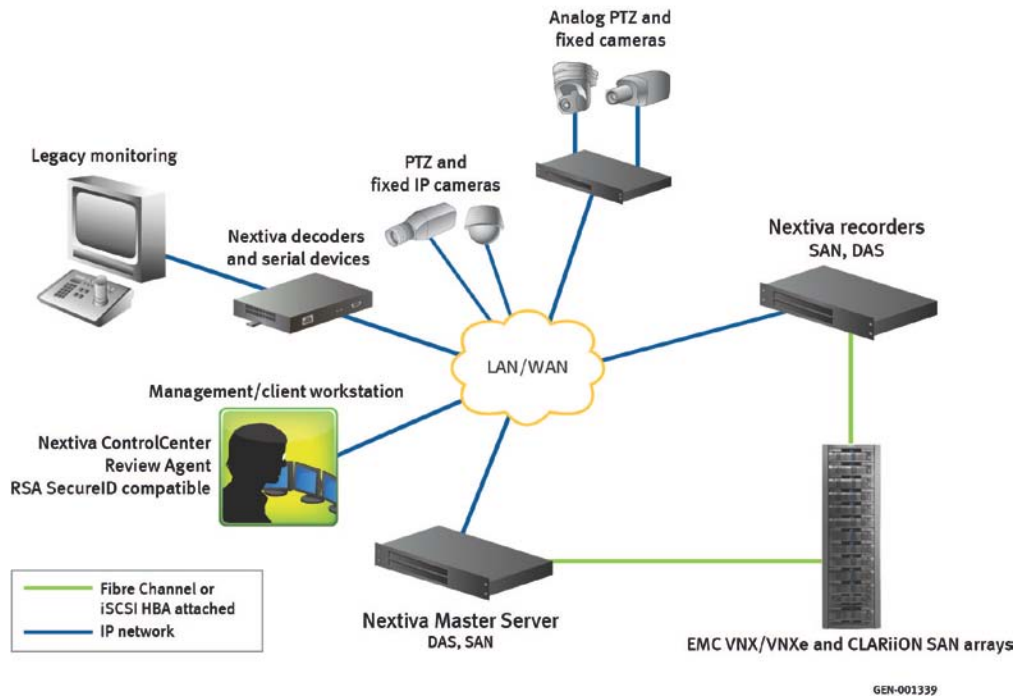
The master and recorder server applications can be installed on a single server if required. This configuration is considered a master recorder server.

Recorder server

The Nextiva recorder server application captures live video streams to storage volumes for archiving. The recorder application keeps a separate index for all video captured and acts as the source for video playback and review requests.

Physical architecture diagram

The following illustration shows the overall physical architecture of the physical security solution.



**EMC VNX,
VNXe, and
CLARiiON
configuration**

The following table lists the EMC VNX, VNXe, and CLARiiON block storage configuration guidelines for the solution.

Parameter	Value
RAID type	5 and 6
Size (no. of disks)	4-9 per RAID group
Disk types	320 GB, 5400 rpm 500 GB, 7200 rpm SATA 750 GB, 7200 rpm SATA 1 TB, 7200 rpm SATA 1 TB, 5400 rpm SATA (additional cache may be required) 2 TB, 7200 rpm SATA (additional cache may be required) 2 TB, 7200 rpm SAS (additional cache may be required)
RAID group configuration	Multi-Disk Array Expansion (DAE) LUNs (bus-spanning) and single DAE RAID groups are acceptable
LUN configuration	Single LUN RAID groups and multi-LUN RAID groups are supported. MetaLUNs are not recommended. <i>See CLARiiON Configuration Guidelines for Verint's Nextiva Technical Note for additional details (restricted to employees only)</i>
Bandwidth per LUN	<i>See CLARiiON Configuration Guidelines for Verint's Nextiva Technical Note</i>
Bandwidth per array	<i>See CLARiiON Configuration Guidelines for Verint's Nextiva Technical Note</i>
Cache/memory settings	<i>See CLARiiON Configuration Guidelines for Verint's Nextiva Technical Note</i>

Environment profile

Environment profile parameters

The table below provides the environment profile parameters for this solution.

Parameter	Value
Nextiva application software	Nextiva 6.0 and 6.1 Windows Server 2003 SP2/R2 on local server disk or boot from CLARiiON Nextiva 6.1 – Windows Server 2008 x32 and x64 (Not 2008 R2)
Storage topology	SAN, DAS, iSCSI
Qualified for boot from CLARiiON	Nextiva master server Nextiva recorder server Nextiva master recorder server
Number of recorder servers per master recorder	22 with 6.0 and 6.1 Window Server 2003 75 with 6.1 and 6.2 with a four-core, 4 GB system running on Windows 2008 x64 (Verint tested)
Number of cameras per recorder server	96

Hardware and software resources

Hardware resources

The following table lists the hardware resources used in the validated solution.

Equipment	Quantity	Configuration
Any 1U, 2U, or blade server on Verint and EMC's supported hardware listing	1	Per master server application Per recorder server application Per Enterprise Storage Manager application
AX4-5/5i, CX3-XX, CX4-XXX, NX, NS, VNX, and VNXe	Based on solution requirements	See <i>CLARiiON Configuration Guidelines for Verint's Nextiva Technical Note</i> for additional information (restricted to employees only)
Nextiva Review and Nextiva Control Center workstations	Minimum of 1; Maximum – Unlimited	Specified in Verint's Nextiva documentation

Software resources

The following table lists the software resources used in the validated solution.

Software	Version	Configuration
Windows Server 2003	SP2/R2	Operating system for Nextiva servers and workstation(s)
Nextiva master server	6.0 R1 & 6.1	6.0 - Windows Server 2003 R2; Windows Server 2008 6.1/6.2 – Windows 2008 x32 and x64, not R2 (Verint tested) Local disk drive installation for all non-boot from SAN configurations. Minimum drive specs: C: 35 to 45 GB; D: 10 GB; E: 70 GB
Nextiva recorder server	6.0 R1 & 6.1	Drive specs: C: 35 to 45 GB; D: 10 GB; E: 70 GB
Nextiva Control Center	6.0 R1 & 6.1	Administrator interface
Nextiva Review	6.0 R1 & 6.1	User interface
EMC PowerPath	Latest GA version	Installed on Nextiva servers
EMC Naviagent	Latest GA version	Installed on Nextiva servers

Conclusion

Conclusion

Summary

The EMC Tiered Storage for Physical Security Solution enabled by Verint's Nextiva products represents an ideal solution for surveillance management and IT infrastructure. The solution provides a flexible and highly scalable infrastructure that can meet a broad range of today's demanding physical security requirements. By leveraging the best-in-breed surveillance management software from Verint and advanced IT infrastructure components from EMC, customers can maximize the return on their investment in these crucial platforms.

In addition, EMC storage technology also allows customers to nondisruptively back up their primary servers while the system remains online and available to users. As requirements change and become more sophisticated, customers can be assured that the EMC Physical Security Solution's flexibility and modular architecture can be designed to meet their needs.

Learn more

To learn more about this and other solutions, contact an EMC representative or visit www.EMC.com/solutions/business-need/information-security/physical-security.htm.
