

Milestone Solution Partner IT Infrastructure Components Certification Summary

Spectra Logic Verde NAS Solution

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The Open Platform Company

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About Spectra Logic:

Spectra Logic designs video retention management solutions that utilize both digital disk and digital tape technologies for secure long term video retention. Our fully integrated solutions provide a no-compromise alternative to easily and cost effectively retain surveillance video for longer periods of time. Dedicated solely to digital storage innovation for more than 35 years, Spectra Logic's uncompromising product and customer focus is proven by the largest information users in multiple vertical markets globally. Visit www.spectralogic.com for more.

About Milestone Systems:

Milestone Systems is the world's leading provider of open platform IP video surveillance software. Milestone has provided easy-to-use, powerful video management software in more than 100,000 installations worldwide.

Milestone XProtect® products are designed with open architecture and are compatible with more IP cameras, encoders and digital video recorders than any other manufacturer. Because Milestone provides an open platform, you can integrate today's best business solutions and expand what's possible with future innovations. Visit www.milestonesys.com for more.

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Introduction:

This certification report presents the results of benchmark and load tests performed on the Spectra Logic Verde NAS storage solution. This product was used as the storage location for the long term video archive database of an XProtect surveillance system during this certification test. The test scenario included utilizing Verde as network attached storage. Certification of the Spectra Logic Verde NAS solution will ensure that any surveillance system built using this product in combination with the Milestone XProtect components will be able to record and archive an amount of video consistent with the recommendations of the Milestone Server and Storage Calculator.

Certified Products:

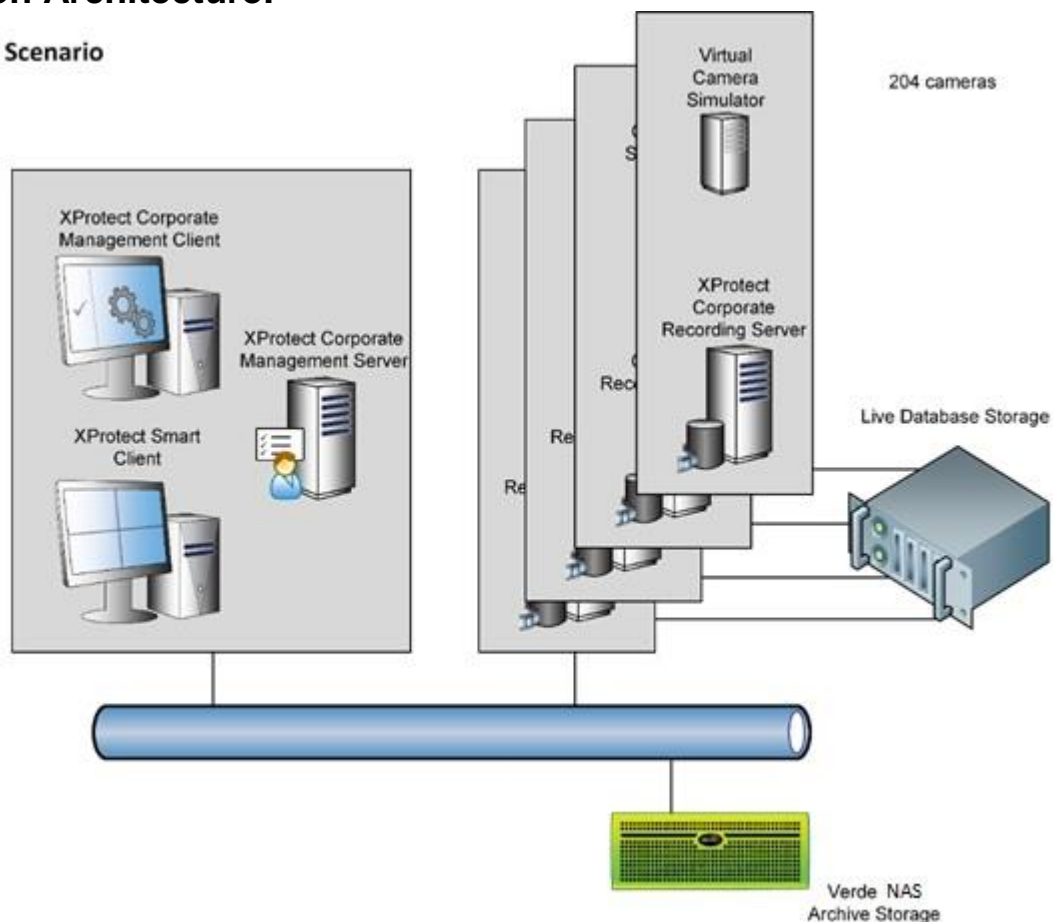
- Spectra Logic Verde NAS
- Milestone XProtect Corporate 2014 (7.0a)



Performance of the solution may vary if different XProtect products and/or system components not listed in the tests details are included.

Solution Architecture:

Test Scenario



The system topology for the test scenario involved four XProtect Recording servers and an additional server hosting the XProtect Corporate Management Server, Management Client and Smart Client. The Verde provided the archive video database in the test scenario, which was a network attached storage location with file based storage. The network and all of the NICs on the servers and the storage systems supported Gigabit Ethernet. The test topology is shown in the figure below:

Key considerations:

Milestone and Verde NAS systems work most efficiently with hourly “rest time.” For the Milestone XProtect tiered storage archiving policy, it is optimal to have time in between archive events to ensure all video is recorded. Similarly, Verde NAS which uses SMR drives, needs time to clean up any outstanding deletes or “Defragments” as the SMR drives are particular to being written to in large blocks with large deletes for best performance. Both systems seemed to maximize the rest time benefit with 10% rest time each hour. While Verde provides an extremely cost effective archive for video, customers should consider other options for creating a second or even an off-site copy to fulfill legal or policy requirements for video storage:

- 1) Verde NAS has the ability to self-replicate to another Verde system via standard network connection. Snapshot replications can be set up on a schedule to create a simple and cost effective second copy either within the same location or at an alternate site with enough dedicated bandwidth to handle the load.
- 2) Verde NAS (version 2.4 and above) includes an automatic tape-out capability when paired with Spectra’s BlackPearl system and a tape library. Scheduled backups of selected volumes can be automatically sent via S3 to a BlackPearl system which includes the ability to create local or eject tape copies that can be taken offsite for long term storage. Ejected tape copies can be as low as \$.03/GB

Conclusion:

The Spectra Logic Verde NAS solution provides a dense long term video archive storage solution for the Milestone XProtect VMS system at a level that is two times higher than the benchmark levels determined by the Milestone Server and Storage Calculator. The calculator indicates that the Verde should support approximately 20 cameras per recording server at the benchmark level, and it was able to support at least 40 cameras per server. The maximum performance of the Verde NAS is listed below, in each of these scenarios there were either two or four XProtect Recording Servers installed in the system which were recording video through to the local video databases and archiving the video to the Verde NAS storage array.

Recording Server	Cameras	Live Video Read Latency	Individual Video Stream Size	Maximum Archive Disk I/O Per Server	Archive Array Average Disk I/O
01	24 @ 1280 X 720, H.264, 30FPS	5ms	10.23 Mbps	90MBps	31.38 MBps
02	40 @ 1280 X 720, H.264, 15FPS	7ms	5.9 Mbps	62MBps	29.53 MBps
03	15 @ 2048 X 1536, H.264, 15FPS	7ms	14.92 Mbps	62MBps	27.97 MBps
04	75 @ 640 X 480, MPEG-4, 30FPS	10ms	4.66 Mbps	62MBps	43.3 MBps
05	40 @ 1280 X 720, MJPEG, 25FPS	7ms	18.94 Mbps	62MBps	18.89 MBps

06	10 @ 2048 X 1536, MJPEG, 15FPS	12ms	27.62 Mbps	62MBps	17.05 MBps
Total Archiving to Verde NAS	204 cameras on 6 servers			400MBps	168.12 MBps

Integrators and end users designing, installing and operating surveillance systems which incorporate this solution component can have confidence that the system will record and archive video reliably. Customers who wish to gain the maximum value and performance out of their surveillance system can also refer to the best practices and performance limitations outlined in this document to help design a system that exceeds the benchmark limitations for video recording which are followed by the Milestone Server and Storage Calculator.

The Spectra Logic Verde NAS solution is certified archive storage for use with Milestone XProtect VMS systems. This solution was able to reliably archive large amounts of video without impacting the performance of the Milestone system. The solution exceeds the benchmark values indicated by the Milestone server and storage calculator by at least a factor of two.