Milestone Solution Partner IT Infrastructure Components Certification Summary

Logic Supply MX1000 Rugged NVR

6-8-2015

The Open Platform Company

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About Logic Supply:

Logic Supply specializes in highly-reliable NVRs for challenging surveillance environments. Customers, including those in transportation, construction, energy, oil & gas, and law enforcement, rely on Logic Supply's rugged hardware to help monitor and secure their infrastructure. In addition to their surveillance and security products, Logic Supply offers branding and customization services for integrators who desire a one-stop approach. More than just a hardware company, Logic Supply is committed to offering ongoing fulfillment and support services for partners to help ensure project success every step of the way.

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.

Introduction:

This report highlights the performance results of certification tests performed on the MX1000 Rugged NVR. This is a wide-temperature, vibration resistant, solid-state device designed for in-vehicle deployment. The system relies on passive cooling and features an ultra-low power draw. The device was used as the storage location for both the live and archive database during this certification test, and the redundancy features of the solution were highlighted during the test. The Milestone Technology Partner (MTP) Certification program seeks to confirm that server, storage and network solutions provided by qualified MTP vendors meet the performance benchmarks required to support the Milestone XProtect VMS applications, and to measure the maximum performance available to Milestone customers if they choose to build a solution using certified MTP products.

Certified Products

- Logic Supply MX1000 Rugged NVR
- Milestone XProtect Enterprise 2014 (8.6d) and XProtect Corporate 2014 (7.0d)

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

Test Process:

After installation and configuration of all required system components, the first step in the test was to establish a benchmark performance level against which to measure the performance of the system under more data-intensive levels of video recording. Once the benchmark was established the test process calls for increasing the quantity of the video streams to add more data to each recording server and increase the overall load on system storage and processing.

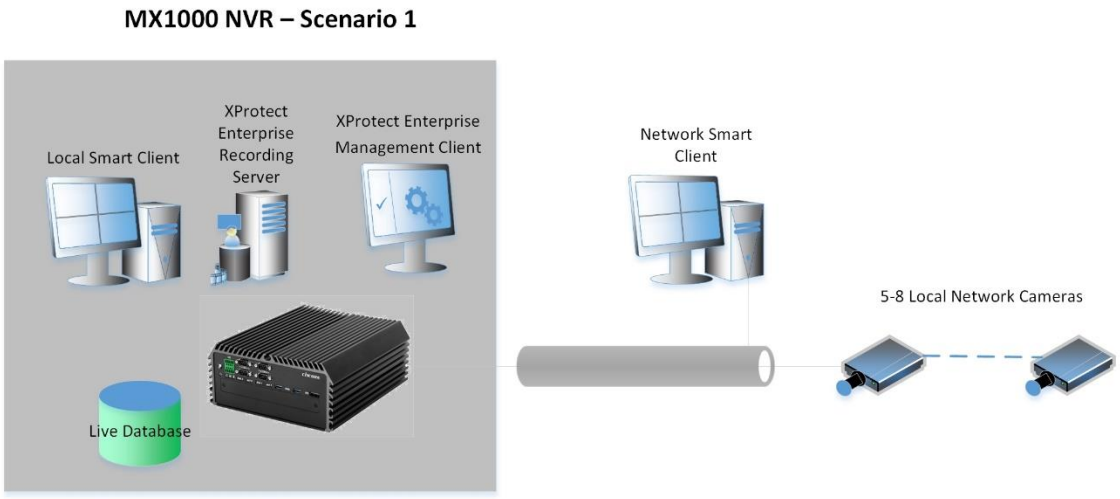
The process of increasing the parameters involved adding additional simulated cameras to the NVR. This process used 3 megapixel resolution streams, with compression of 60% and frame rate of 10-20 frames per second (FPS), using the H.264 video codec.

The performance of the array was monitored as the number of cameras was increased until an unacceptable level of write latency, CPU consumption, archive event duration, or video frame loss was noted. At that point the data load was reduced, and the performance was monitored again. If the system operates at the reduced level of data load within acceptable parameters, then a full data capture takes place and the maximum performance of the storage array is defined to be at the observed levels of data and video stream parameters.

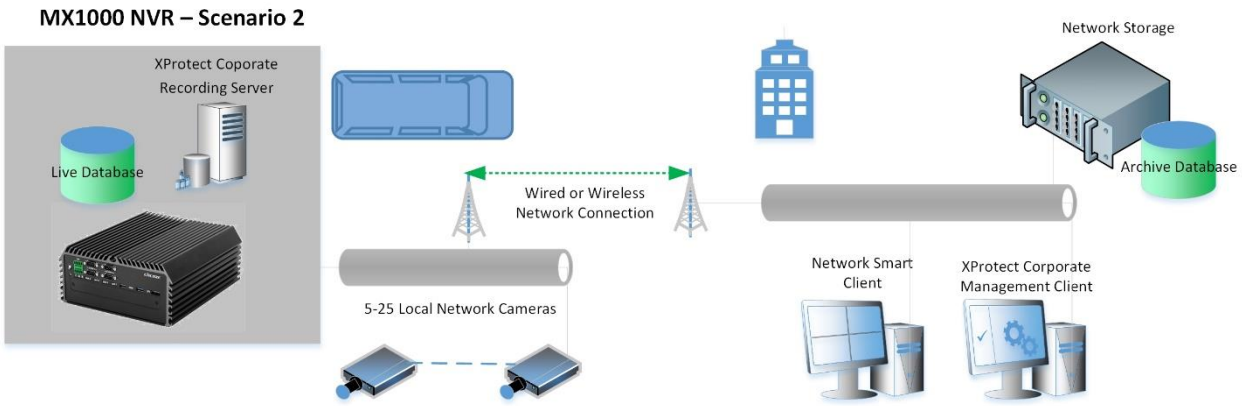
Topology

The system topology used for testing employed the MX1000 server running the Microsoft Windows 8.1 Industry Pro x64 operating system, hosting the Milestone XProtect Management Server, Management Client, and Smart Client used for administration and local video display. In some tests, an additional system running Microsoft Windows 7 Pro x64 hosting the XProtect Smart Client was used to display video instead of local output.

In the first test scenario XProtect Enterprise was used to create a self-contained NVR. All of the XProtect applications and services were installed on the MX1000, and connected to between five and eight cameras on a small local area network. This scenario is intended to simulate an installation in a small facility or vehicle. There was no archiving, or secondary tier of storage in this scenario, all video was stored on the MX1000. In the event that video would be needed for evidence purposes it could be exported in a secure format using the XProtect Smart Client.



The second test scenario used XProtect Corporate, with the MX1000 hosting a Recording Server which could be included as a part of a larger surveillance system. In this scenario the MX1000 provided the primary recording and viewing platform for the locally connected cameras in a mobile vehicle scenario. During hours of vehicle operation: 9:00 am to 6:30 pm, the cameras were recording locally to the MX1000. Once the vehicle returned to the facility, it was connected to the local network where there was a network storage server available which provided the secondary tier of storage. Once the connection was established and the cameras were turned off, a series of archive events were scheduled to transfer the .5 hours of video recordings to the secondary tier, thereby keeping the live tier of storage on the MX1000 ready for service the following day.



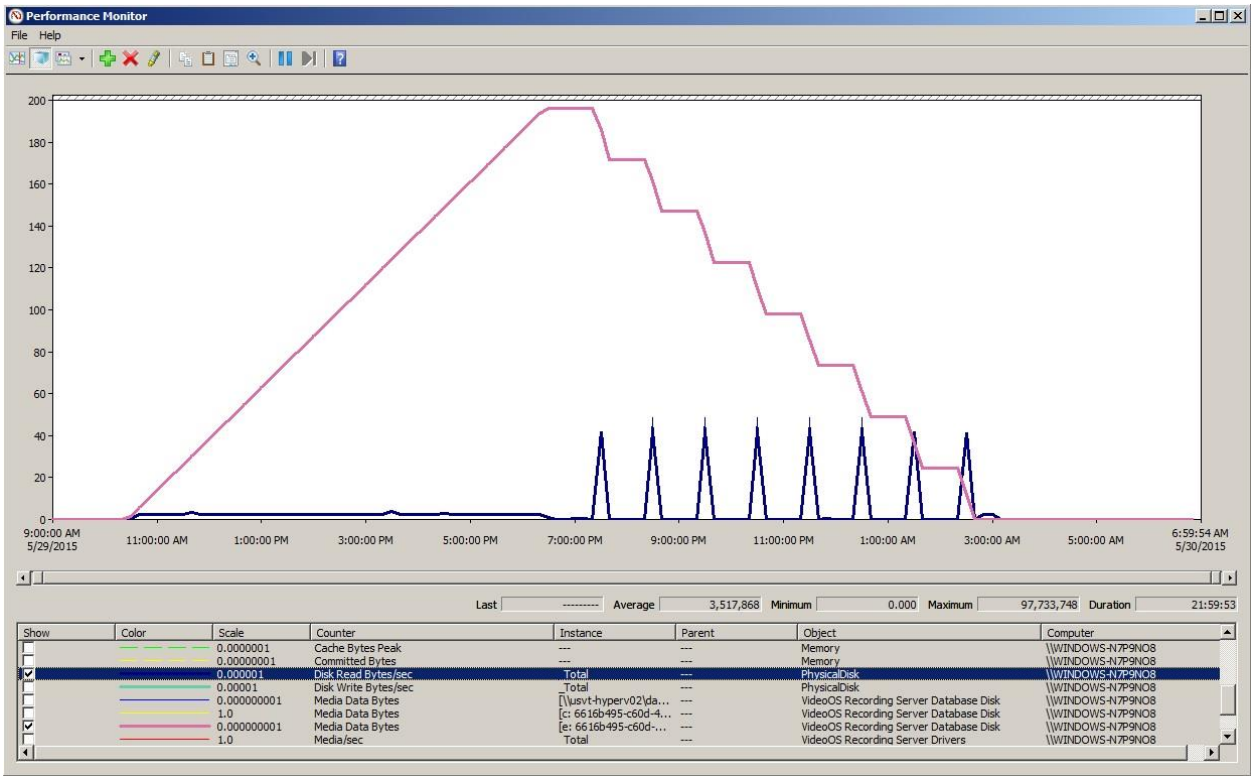
Key Findings:

In both of the tested scenarios the MX1000 easily passed the certification criteria. The benchmark for performance was supporting 5 cameras, considering the video stream parameters used in this test and the hard disk configuration of the MX1000. In the first test scenario there was no archive database

therefore the archive duration was not a required criteria for passing the tests. Maximum performance in the first scenario was 60% higher than the benchmark.

Test Scenario 1	Cameras	Write MBps	CPU%	Read Latency	Archive Time
Enterprise Benchmark HDD Local Client	5x - 3 megapixel (2048x1536), H.264, 20 FPS, 30% compression	11.98	67.25	15.55 milliseconds	N/A
Enterprise Benchmark SSD Local Client	5x - 3 mp, H.264, 20 FPS, 30%	11.98	62.64	0.74 ms	N/A
Enterprise Maximum SSD Network Client	8x – 3 mp, H.264, 10 FPS, 60%	5.65	60.55	0.12 ms	N/A

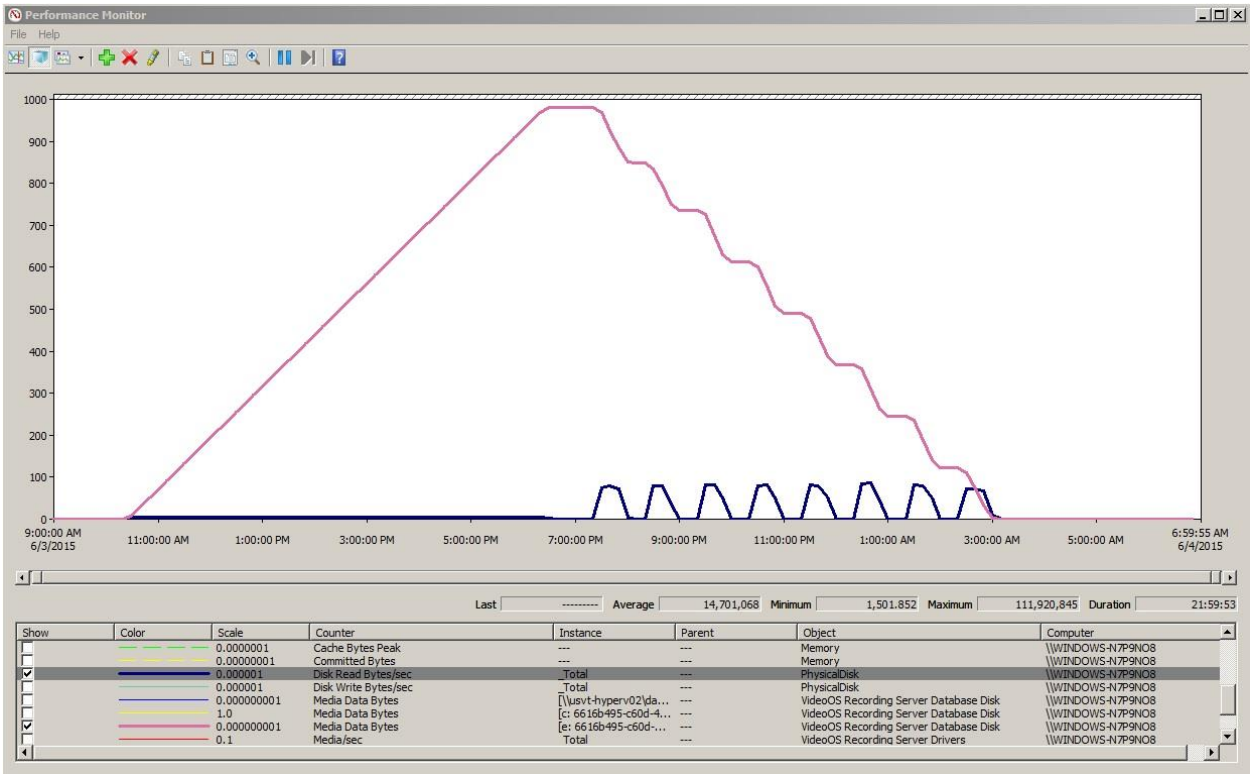
The second scenario included an archive database and the following graphs illustrate the archive events and the process of transferring video which took place. These graphs are taken from the benchmark scenario. The blue line in this graph represents the disk Read Bytes per second, the amount of video being read from the live database. The large spikes in blue each represent an archive event. The small amount of blue between 10 am and 6:30 PM is the Smart Client displaying video. The pink line represents the total amount of video stored in the Live Database. The total amount of video increases throughout the day, until the vehicle returns to the facility and is parked at 6:30 PM. At that point, each time an archive event occurs the video stored in the Live Database is reduced until at 3:00 AM there is no video remaining, and it has all been transferred to the network storage based archive database.



Maximum performance in the first scenario was 500% higher than the benchmark.

Test Scenario 2	Cameras	Write MBps	CPU%	Read Latency	Archive Time
Corporate Benchmark HDD Network Client	5x – 3 mp, H.264, 20 FPS 30%	5.77	5.83	1 ms	7.5 Hours
Corporate Maximum SSD Network Client	25x – 3 mp, H.264, 10 FPS, 60%	27.27	9.73	1 ms	7.5 Hours

The same graph for the maximum performance test scenario can be seen below, note that in the benchmark test the graph's vertical scale extends to 200, or 200 GB of total storage, in the maximum the scale extends to 1000 GB, or 1 TB, the maximum amount of storage available in the unit that was tested. In both tests it is obvious that there was plenty of time to transfer the recorded data to the network storage before the vehicle was needed for service again.



Conclusion:

The MX1000 performs as a video display, recording, and storage platform within the Milestone XProtect VMS system at a level that is two to three times higher than benchmark levels provided by the Milestone Server and Storage Calculator when displaying all cameras simultaneously. If the customer application does not require simultaneous display of all cameras, the number of simultaneous recordings can be increased significantly, to more than seven times higher than benchmark levels.

Integrators and end users designing, installing and operating surveillance systems which incorporate the Logic Supply MX1000 can be confident that the system will record and archive video reliably. The

MX1000 is Milestone certified and represents a rugged alternative to other digital recording hardware, offering advantages like an extended operating temperature range of -10°C to 60°C, a completely fanless and ventless chassis, and low power requirements. The result is a system able to lower capital expenditures, decrease maintenance needs and increase operational efficiency while allowing users to focus on their security needs, not the dependability of their monitoring hardware.