



Verde[®]



Testing Report: Spectra Logic Verde and Milestone Husky 500A

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Spectra Logic Verde and Milestone Husky 500A - Test Summary

The following is the test set up and results of Spectra's testing of a Milestone Husky 500A Recorder appliance with Spectra® Verde® Disk Solutions (enterprise and archive drives*) being leveraged as archive locations. It includes the setup and configuration information for both Verde and Milestone. Additional details can be gathered by viewing the configuration reports from Milestone and the Perfmon reports from the Husky system. Also included is the modified recorderconfig.xml from the Husky.

The Milestone Husky 500A Recorder appliance is guaranteed to provide 600Mbps of throughput. In our testing, we found that the system is fully capable of this value of throughput. It does need to be noted that the archive process uses system resources just like the recording process. In order to maintain stability in the system, when archiving processes are included, the recording throughput needs to be set at 50% of the system capabilities so that recording and archiving processes can complete over any 24-hour period.

Our archive setup was achieving an average of 48MB/sec, which is approximately 384Mb/sec. On the recording side, we had 50 cameras running at 1080p, 15fps and 25 cameras at 10fps, which totals 39MB/sec or 314Mb/sec. Adding the recording and archiving throughput, we get (384 +314=) 698Mb per second of aggregate throughput which well exceeds the 600 Mbps promised throughput and proves that the Milestone Husky 500A partnered with Spectra Verde (enterprise or archive drives) makes a solid, long-term storage solution for any Video Surveillance implementation requiring extended retention.

* (Enterprise=SAS drives and Archive=Shingled Magnetic Recording drives)

Basic System Configuration information:

Husky:

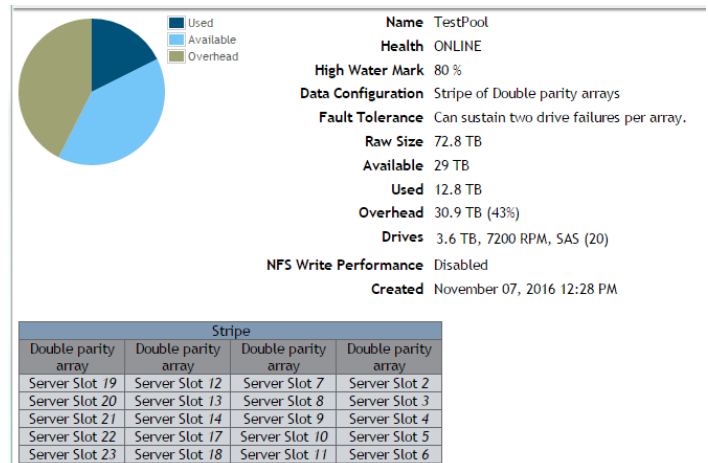
- Camera Counts Tested: 50 and 25
- Resolution: 1080P (using StableFPS file: 1920x1080_LPR_Motor2)
- Frame Rates Tested: 5 and 10 fps (respectively)
- Codec H.264Stream Size: ~840KB/sec or 6.7Mb/sec and ~1652.48KB/sec or 13.2Mb/sec (respectively)
- Milestone motion detection was turned off for all cameras

Verde (enterprise drives) Configuration:

10 Gig-E network connection

Disk configuration:

- Single pool
- 4 Arrays of 5 Drives
- Double Parity
- 72TB Raw
- TB Usable

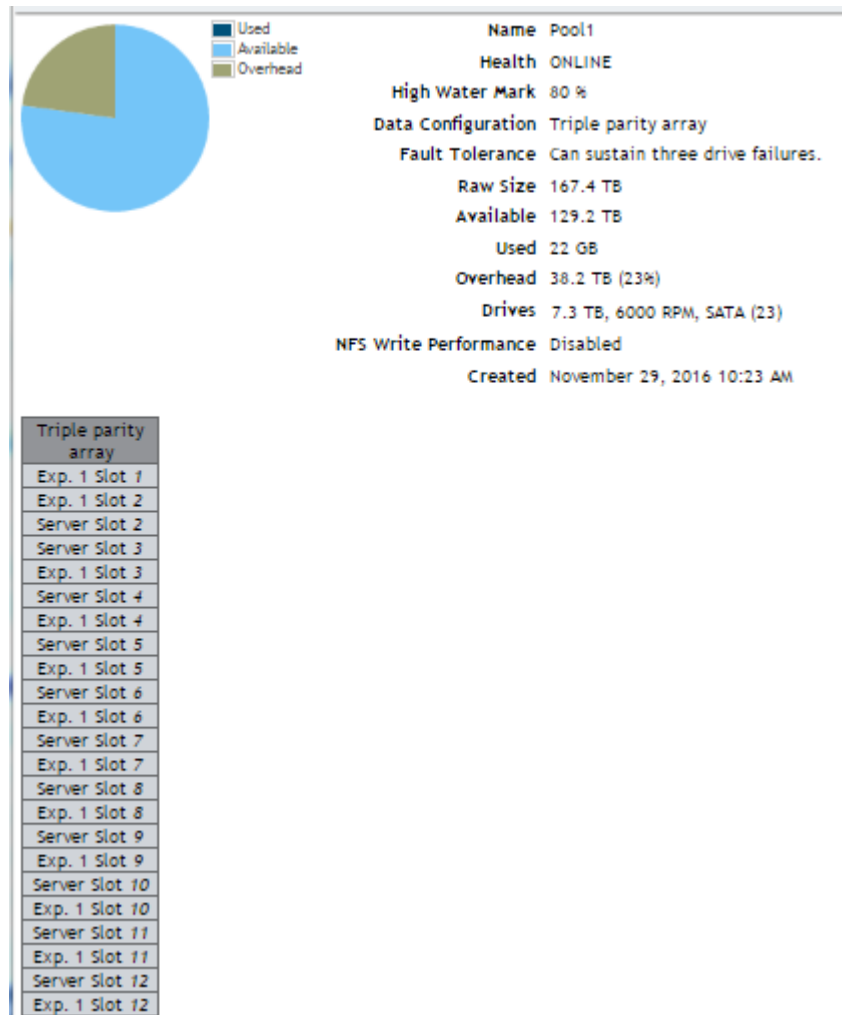


Verde (archive drives) Configuration:

10 Gig-E network connection

Disk configuration:

- Single pool
- Single Array of 23 Drives
- Triple Parity
- 167TB Raw
- 129TB Usable



Basic Performance Information Summary - Verde (enterprise and archive drives):

Archive performance for the Verde (enterprise and archive drives) were seen to be the same.

Archive rate per hour: 172 GB/hr

Average Archive Throughput: ~48 MB/sec

Anticipated Husky Count per Verde (enterprise and archive drives): 7

NOTES:

1. If read back and video searches are expected to be low, then the Verde (enterprise drives) could handle up to 10 Husky systems in the configurations we tested.
2. Throughput rates and Husky counts did not change based on the two camera counts (25 and 50) that were tested.

Two test sets were run to the Spectra Verde (enterprise and archive drives) with similar results. See the 4 perfmon session files for detailed info.

For 50 cameras at 5 fps, the VideoOSDriversTotal Converted to MB/sec. Average is 39.96 MB/sec. Raw bytes was 41,902,864.

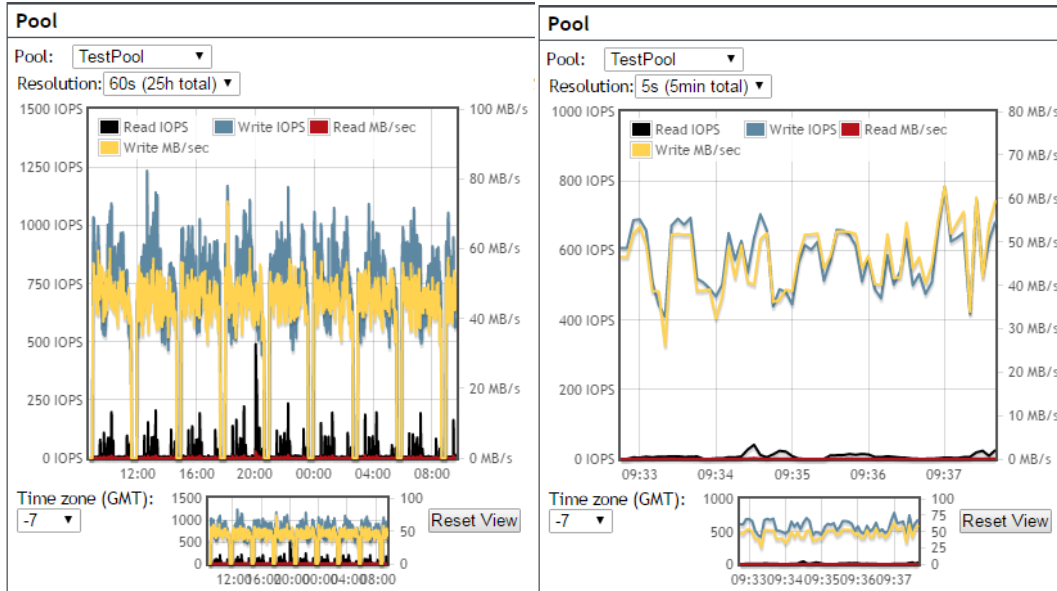
For 25 cameras at 10 fps, the VideoOSDriversTotal Converted to MB/sec. Average is 38.39 MB/sec. Raw bytes was 40,258,211.

Verde (enterprise drives) Performance Graphs:

50 cameras, 5fps, 1080P, H.264



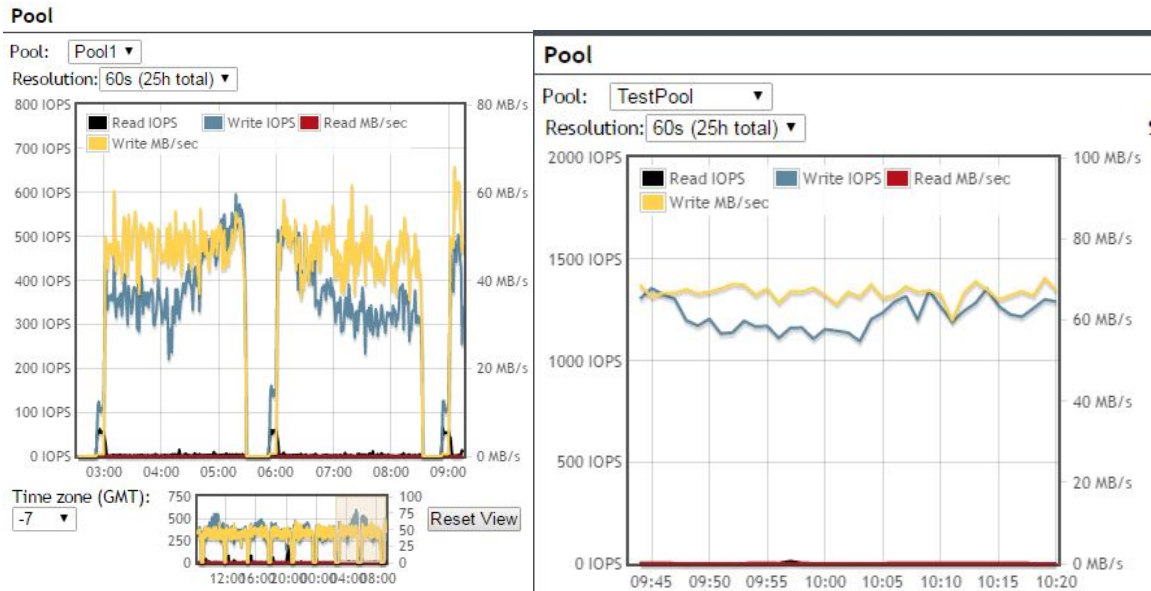
25 cameras, 10fps, 1080P, H.264



Verde (archive drives) Performance Graphs
 50 Cameras, 5fps, 1080P, H.264



25 Cameras, 10fps, 1080P, H.264



Associated Supplementary Documentation:

Perfmon reports from the Husky

HUSKYMILESTONE-25cameras-5fps SAS_20161129-000007.zip
HUSKYMILESTONE-25cameras-5fps DPE_20161129-000006.zip
HUSKYMILESTONE-50cameras-5fps_DPE_20161128-000005.zip
HUSKYMILESTONE-50cameras-5fps_SAS_20161130-000008.zip

Milestone configuration output documents

Configuration report 25 cameras 10fps DPE.pdf
Configuration report 25 cameras 10fps SAS.pdf
Configuration report 50 cameras 5fps DPE.pdf
Configuration report 50 cameras 5fps SAS.pdf
Modified Recorder config.xml file.

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