Technical Report

NetApp E-Series and Genetec video management software

Certification report

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Abstract

This report details the execution of and subsequent results obtained from gold-level storage certification of Genetec Security Center Video Management Software (VMS) on the NetApp® E2800 Series and NetApp E5700 Series product lines. This Genetec certification identifies top-tier enterprise storage solutions that are compatible with Genetec Security Center software. The results show that NetApp E-Series is an optimal storage solution that works with Genetec Security Center.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Test setup

The test system was built in a NetApp lab. The test setup consisted of one NetApp E2860 dual-controller storage array, two Microsoft Windows 2016-based Intel Xeon servers running Genetec Security Center software, and one Microsoft Windows 10-based Intel Xeon server running Genetec camera simulation software. Additional Microsoft Windows 10 virtual machines (VMs) were used to achieve 180-camera playback. All the systems were connected through a 10 Gigabit Ethernet (10GbE) by using the iSCSI protocol, as shown in Figure 1. Identical testing was then done using one NetApp E5760 dual-controller storage array.

Figure 1) Network setup.
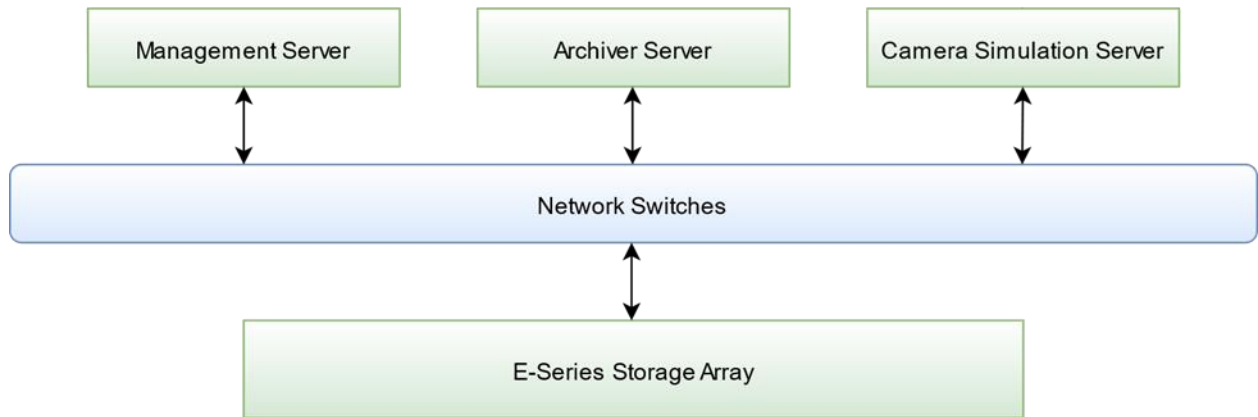
Because of the limited number of cameras that were allowed per archiver, the storage array was configured to provide three 5TB volumes that were provisioned from a 30-drive Dynamic Disk Pool (DDP). Each of those volumes was assigned to a separate archiver, which was allotted 1.5TB of space. When drive space was assigned to an archiver, it was designated from Windows drive space (in this case, an E-Series LUN) that had already been allocated. Therefore, even though the LUN was actually a Windows 5TB volume, the Video Management Software (VMS) was assigned only a portion of it (1.5TB) to use. The VMS was allowed to allocate as much or as little space as necessary from the physical volume. Figure 2 shows the volume setup.

Figure 2) Volume setup.
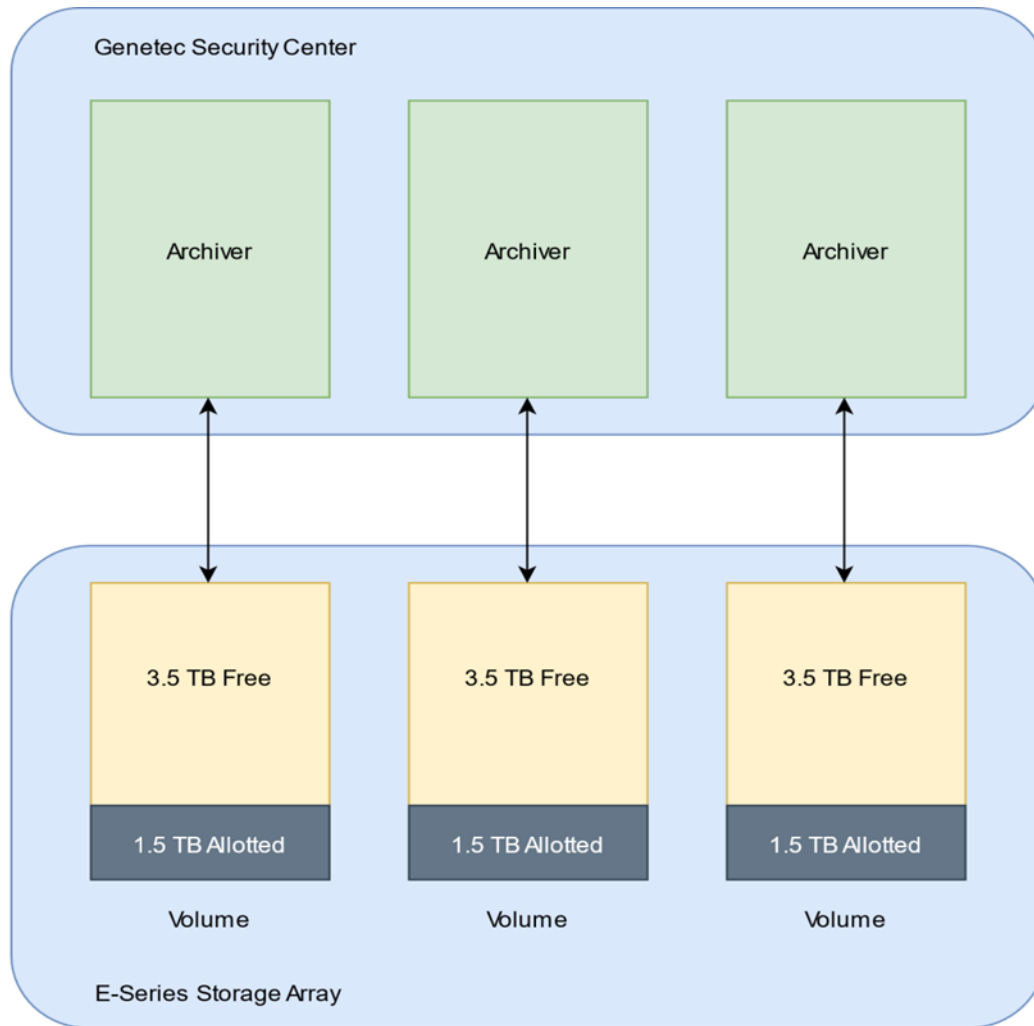
Test procedure

The certification consisted of four required test cases:

- 900 cameras streaming 1Mbps each (with motion detection disabled)
- 450 cameras streaming 1Mbps each (with motion detection enabled)
- 180 cameras streaming 5Mbps each (with motion detection disabled)
- 180 cameras streaming 5Mbps each (with motion detection enabled)

For each test case, the video archiver ran until the allotted storage space (1.5TB per archiver) was full. The archiver continued to run for an additional 24 hours, both writing to and deleting from the storage array. The VMS deleted the data per the prescribed retention period. If the allotted drive space filled up before the specified retention, it was overwritten.

An additional playback requirement demanded that during the last two hours of testing, 20% of the simulated cameras had their archived footage played back. This requirement confirmed that reads from the drive occurred simultaneously with the writes and the deletions.

Test results

All performance data was collected by using Windows Performance Monitor. Genetec ACT software was also used to collect and to archive event logs that Security Center software had generated. The event logs for this certification effort showed no major issues and virtually no Real-Time Transport Protocol (RTP) packet loss, as shown in Table 1, Table 2, Figure 3, and Figure 4.

Table 1) NetApp E2860 test results.

| Test Case Number	Aggregate Average Throughput to Disk[1] (MBps)	Average Incoming Network Throughput[2] (MBps)
1	111.0	113.2
2	27.3	56.6
3	114.6	117.6
4	114.7	117.3

[1]The sum of the individual disks' average write throughput over a 24-hour period.
[2]The average network throughput received by the archiver server over a 24-hour period.

Table 2) NetApp E5760 test results.

Test Case Number	Aggregate Average Throughput to Disk[1] (MBps)	Average Incoming Network Throughput[2] (MBps)
1	111.1	113.3
2	35.0	57.0
3	114.6	117.8
4	114.7	117.3

[1]The sum of the individual disks' average write throughput over a 24-hour period.
[2]The average network throughput received by the archiver server over a 24-hour period.

Figure 3) Disk reading (bytes/sec) for a single volume during playback phase.

Figure 4) Disk writing (bytes/sec) for a single volume during playback phase.
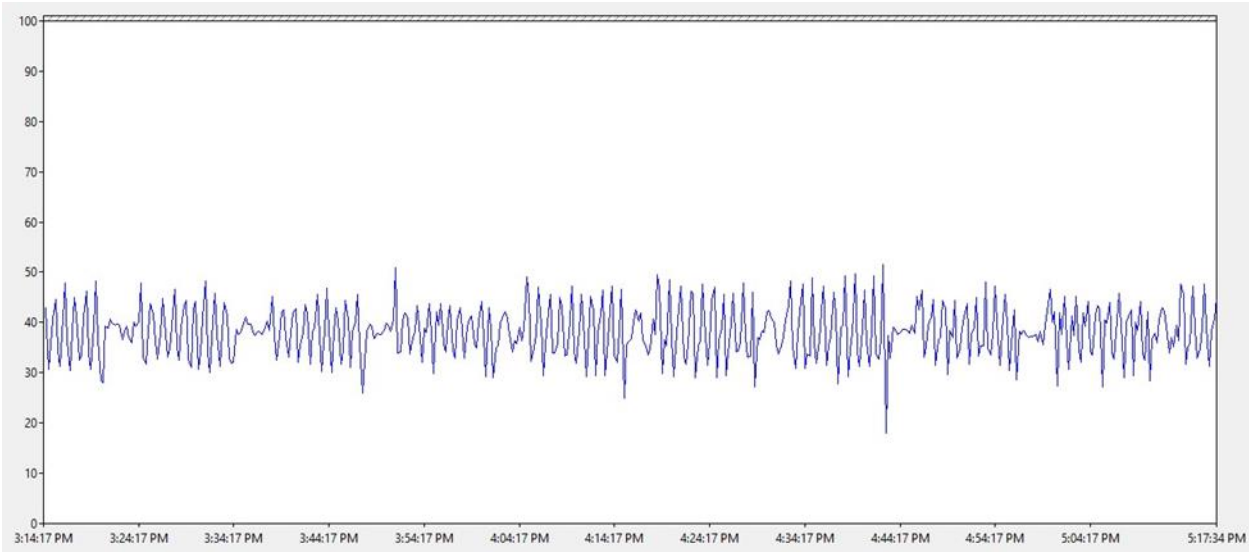
Configuration details

The test setup included the following components:

- Management server:
    - Intel Xeon Processor E5-2670 v3, 2.3GHz 12 cores x 2
    - 128GB RAM
    - Microsoft Windows Server 2016 Datacenter
- Archiver server:
    - Intel Xeon Processor E5-2630 v3, 2.4GHz 8 cores x 2
    - 64GB RAM
    - Microsoft Windows Server 2016 Datacenter
- Camera emulation server:
    - Intel Xeon Processor E5-2699 v3, 2.3GHz 18 cores x 2
    - 128GB RAM
    - Microsoft Windows 10 Enterprise
- NetApp E2860 storage array:
    - NetApp SANtricity® management software 11.50
    - NetApp DDP technology
    - 30x NL-SAS 7.2K RPM hard drives used for three volumes
- 10GbE network switches

Conclusion

The performance statistics and event logs analysis indicate that the NetApp E2800 and NetApp E5700 product lines are prime candidates to work with Genetec Security Center software. The E-Series storage system easily met all the requirements to attain Genetec's stringent gold-level certification.

Where to find additional information

To learn more about the information that is described in this document, review the following documents:

- E-Series and SANtricity 11 Documentation Center
  https://docs.netapp.com/us-en/e-series-family/index.html
- E-Series and SANtricity Documentation Resources page
  https://www.netapp.com/support-and-training/documentation/eseries-santricity/
- WP-7240: NetApp E-Series Storage for Video Surveillance—The Advantages of Simple, Reliable Block Storage in Video Surveillance Environments
  http://www.netapp.com/us/media/wp-7240.pdf
- TR-4825: NetApp E-Series for Video Surveillance Best Practice Guide
  https://www.netapp.com/us/media/tr-4825.pdf
- TR-4652: SANtricity OS Dynamic Disk Pools—Feature Description and Best Practices
  https://www.netapp.com/us/media/tr-4652.pdf

Version history

Version	Date	Document version history
Version 1.0	May 2019	Initial release.
Version 1.1	February 2020	Addition of E5760.
Version 1.2	May 2020	Added link to NetApp E-Series for Video Surveillance Best Practice Guide under Where to Find Additional Information.
Version 1.2.1	November 2021	Updated with new template.
Version 1.2.2	April 2024	Updated with new template.

Refer to the Interoperability Matrix Tool (IMT) on the NetApp Support site to validate that the exact product and feature versions described in this document are supported for your specific environment. The NetApp IMT defines the product components and versions that can be used to construct configurations that are supported by NetApp. Specific results depend on each customer's installation in accordance with published specifications.

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