

# On-Net Surveillance Systems (OnSSI) CERTIFICATION TEST REPORT

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## About Seagate Technology

Seagate is the leading expert in scalable storage solutions, developing robust products that enable people and businesses around the world to create, share and preserve their most critical memories and business data. Seagate has been at the cutting edge of storage solutions for over 38 years, starting with the development of the 5 megabyte ST506 5 ¼” disk drive released in 1980 to a 60 terabyte solid state drive (SSD) announced in 2016. Seagate is also renowned for its cutting-edge SAN solutions intended to solve today’s most challenging storage problems where performance, availability, cost, and ease of use are paramount.



The Seagate RealStor RAID storage array is NEBS Level 3 and MIL STD 810 G compliant for meeting stringent telecommunications and military requirements for shock and vibration. The Seagate RealStor 6000 series used in the OnSSI Certification Tests can scale to 448 terabytes in a single array and reach 1.9 petabytes with additional storage arrays. Performance of up to 250,000 IOPS per disk is possible, along with 12 gigabytes per second sequential reads and 5.7 gigabytes per second sequential writes. The Seagate RealStor chassis supports a hybrid solution of HDD and SSD devices to provide tiered storage for demanding environments.

Seagate creates space for the human experience by innovating how data is stored, shared, and used. Learn more at <http://www.seagate.com>.

## About On-Net Surveillance Systems

Founded in 2002, OnSSI is a global industry leader in developing comprehensive and intelligent IP video surveillance management software. Its worldwide headquarters is located in Pearl River, New York, and its European headquarters is in Bruchsal, Germany. OnSSI also has representation in over 100 countries around the globe. Their dominance in the video surveillance market can best be explained in an IHS Research statement in 2011 where they announced “OnSSI is ahead of every other open-platform IP video management system provider.” Visit <http://www.onssi.com> for more information.



## Introduction

This report summarizes the results of benchmark tests completed by Seagate Labs, conducted with an intent to certify Seagate Storage in partnership with OnSSI. Test results confirmed that Seagate's solution met and easily exceeded performance expectations.

- **Performance and Reliability:** The Seagate RealStor Storage Platform supported video storage at the high rate over 800 megabits per second. Proprietary ASICs significantly reduced parity calculation overhead and increased performance.
- **Availability:** One recording server supported 90 cameras in a RAID 6 configuration tolerant of two disk failures. When considering low storage processor CPU and bandwidth usage under test, a single Seagate RealStor system can support as many as 1,100 cameras while maintaining CPU usage of less than 36%.
- **Robustness:** Even with the demands of high-definition video in conjunction with standard compression, the Seagate RealStor Storage Platform delivered a high-performance solution with less than 2% storage processor utilization.

With successful certification, Seagate storage solutions ensure that any surveillance system architecture will be able to provide a level of performance and reliability consistent with OnSSI design recommendations.

## Seagate Solution Architecture

The Seagate Labs test bed consisted of:

- One server from a major server vendor, configured with dual 8 core processors and 20GB of RAM.
- A VMware vSphere ESXi environment on a virtualized Windows Server 2012 platform.
- Ninety cameras configured with high-definition (HD) quality and standard compression.
- Single-tier recording storage with incoming streams directly recorded to the drive set.

## Data Protection Methodology

Data was protected with robust drives, expandable storage, and a RAID 6 configuration:

- One Seagate RealStor Storage Platform configured with 110 SAS 7,000 rpm drives.
- The drives provided a total user space of 559.5 terabytes, and the user space was scalable to 1.9 petabytes of storage with additional expansion arrays.
- Sixteen linear class volumes were configured, and each volume exhibited 114 IOPS and 112.2 megabytes per second data samples during test.
- One OnSSI Ocularis Recorder was supported with a 10 drive, 8 + 2 RAID 6 disk group through an 8 gigabits per second (8Gbps) fiber channel network.

## Camera Configuration

Ninety cameras were configured to support:

- 30FPS Motion JPEG (MJPEG)
- 720p High Definition (HD)
- Approximately 9.6 megabits per second (1.2 megabytes per second) bit rate from each stream

This camera configuration represents optimal video content clarity in use cases where high definition with standard compression is required, such as casinos and big-box retail outlets where fraud and theft is a concern, and where MJPEG is a requirement.

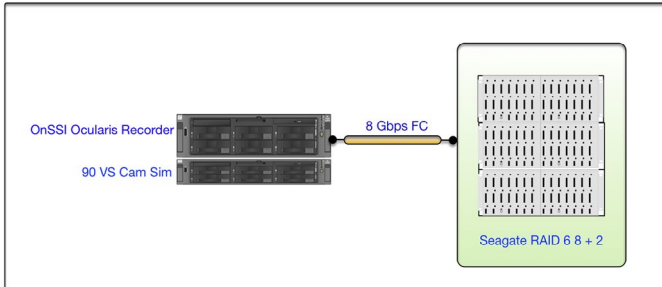


Figure 1: Test Bed Topology

## Test Summary

Recording was conducted over a 5-day period. Server CPU usage was low, with an average processor load of 39%, as exemplified in Figure 2: Percent Processor Time.

In contrast, average RAID storage CPU usage was at an extremely low 2% while supporting average disk writes of 848 megabits per second (106 megabytes per second) and a maximum 872 megabits per second (109 megabytes per second). See Figure 3: Disk Write Bytes per Second.

Average disk write latency was measured at 80 milliseconds, and a minimum of 60 milliseconds, as shown in Figure 4: Average Disk Seconds per Write.

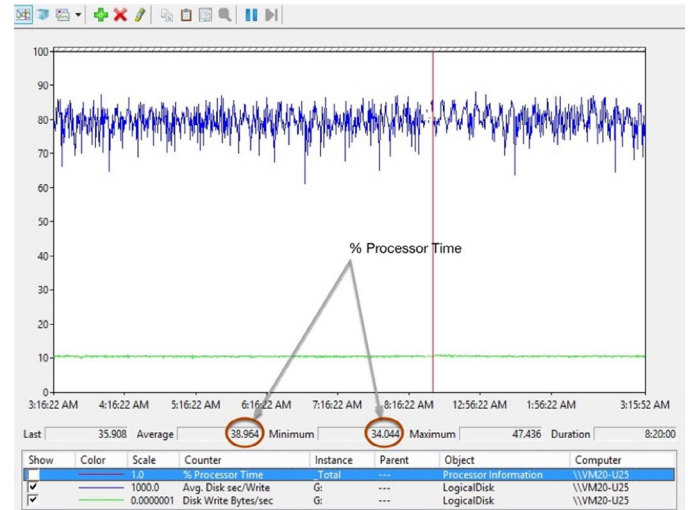


Figure 2: Percent Processor Time

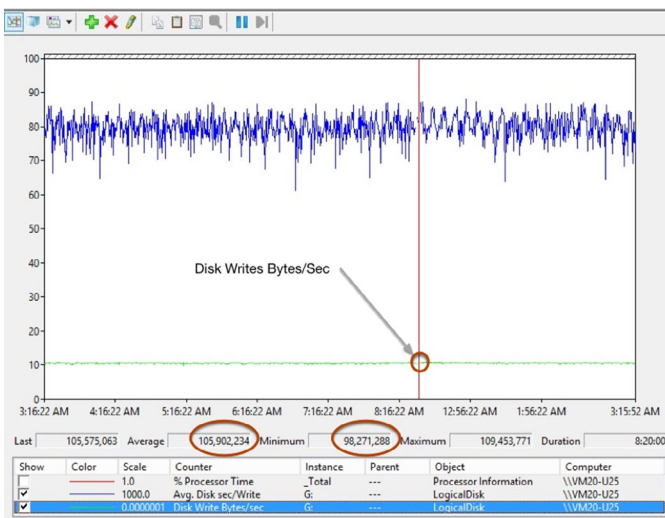


Figure 3: Disk Write Bytes per Second

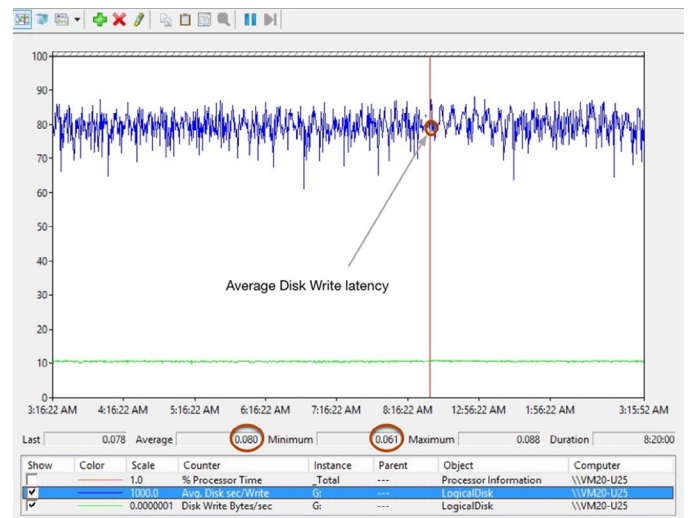


Figure 4: Average Disk Seconds per Write



## Certified Products

- Seagate RealStor 6000 Series RAID Storage Platform, certified for use with the entire XProtect product line
- OnSSI Ocularis 5.3 Enterprise

## Key Findings

Based on conclusive test results, Seagate Technology's RealStor Storage Platform is a highly qualified and scalable storage solution for On-Net Surveillance Systems' video surveillance installations. A total of 90 high-definition cameras were processed and stored on a Seagate RealStor Storage Platform exhibiting very low write latency and extremely low storage processor load. Based on these results, a single Seagate RealStor system can support as many as 1,100 cameras while maintaining CPU usage of less than 36%, and also while supporting over 1 gigabyte per second (8,000 megabits per second) throughput.

These test results coupled with Seagate's ability to provide a complete solution, including Seagate drives, drive controllers, and enclosures with multiple I/O options, sets Seagate apart from the competition. With this system, integrators and end-users can have complete confidence that high availability, reliability, and performance will be delivered in a comprehensive, standards-based solution.

