Milestone Certified Solution

ARXYS

Certified
Solution for
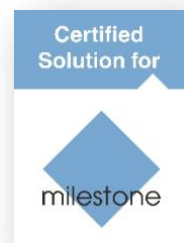
milestone

Shield|Key R12/R36

Date certified (2019-03-05)

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About Arxys

Arxys has been crafting data protection and data analytics solutions for the most demanding organizations for more than 25 years. Our unique Activated Hardware Acceleration technologies deliver enterprise class performance and protection at working class prices.

Arxys Shield | Key NVR's brings the power of hardware accelerated video analytics and enterprise class protection together with Milestone Certified performance to bring new levels of security. With open standards ONVIF and H.265 support and GPU powered AI Shield | Key delivers. More information at www.arxys.com

About Milestone Systems

Milestone Systems is a global leader in providing open platform IP video surveillance software. Milestone has provided easy-to-use, powerful video management software in more than 200,000 installations, worldwide.

Milestone XProtect® provides open architecture products that 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.

Executive Summary

The Shield | Key NVR's deliver enterprise class performance and protection and advanced video motion detection and analytics at breakthrough prices. The crucial tests in the certification were performed with server-side video motion detection and metadata collection enabled.

Hardware Accelerated Video Decoding delivers breakthrough performance at a much lower price. Arxys' Hardware Acceleration technology supports 50% more full HD cameras with server-side Video Motion Detection for 24/7 Video recording with forensic-grade zero frame loss and video analytics built-in at no extra cost.

Our advanced data protection features ensure forensic grade recording and always-on 24/7 video protection. The Enterprise Class hard drives easily handle extreme heat fluctuations, equipment vibrations and 24/7 writes + mixed mode reads from analytics. 10x lower error rate, 2.5x higher MTBF hours, 3x higher duty cycle and Secure Erase (SE) technology deliver continuous uptime.

The tested system delivered unprecedented performance with video motion detection and metadata enabled. Certified to support 300 cameras at 1080P and 25fps with server-side video motion detection with metadata collection while ensuring CPU, RAM and network utilization are always below 70% in accordance with Milestone best practices.

The Arxys Shield | Key is a top performing, hardware accelerated Milestone Certified NVR that delivers breakthrough video motion detection and video analytics performance at no extra cost.

Certified Products

- Shield | Key NVR R12 (Network Video Recorders) all-in-one appliances
- Shield | Key NVR R36 (Network Video Recorders) all-in-one appliances
- (The R12 and R36 tested share the same main components, the only difference is the number of drive bays)
- Milestone XProtect Corporate 2018 R3

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

Test Setup

Two dedicated video load servers running Windows Server 2016 were utilized. A single Arxys Shield | Key rackmount system with the following configuration:

- Intel Core i5-8600 CPU 8th Gen 3.10 Ghz
- 32GB DRAM
- 2x 1Gb/s ethernet ports, full duplex
- 12x Western Digital Ultrastar Enterprise HDDs, 8TB, 7200RPM, SATA 6Gb/s 256MB cache

- Hardware RAID 6 (double parity)
- Microsoft Windows 64 Bit

All simulated video streams used in this test were configured at 25 or 30 frames per second (FPS). Video streams were configured to use primarily the H.264 video codec with a few at H.265. All tests were performed with 24/7 continuous recording. Majority of tests were performed with video motion detection and metadata enabled to stress the system and the GPU.

Test Topology
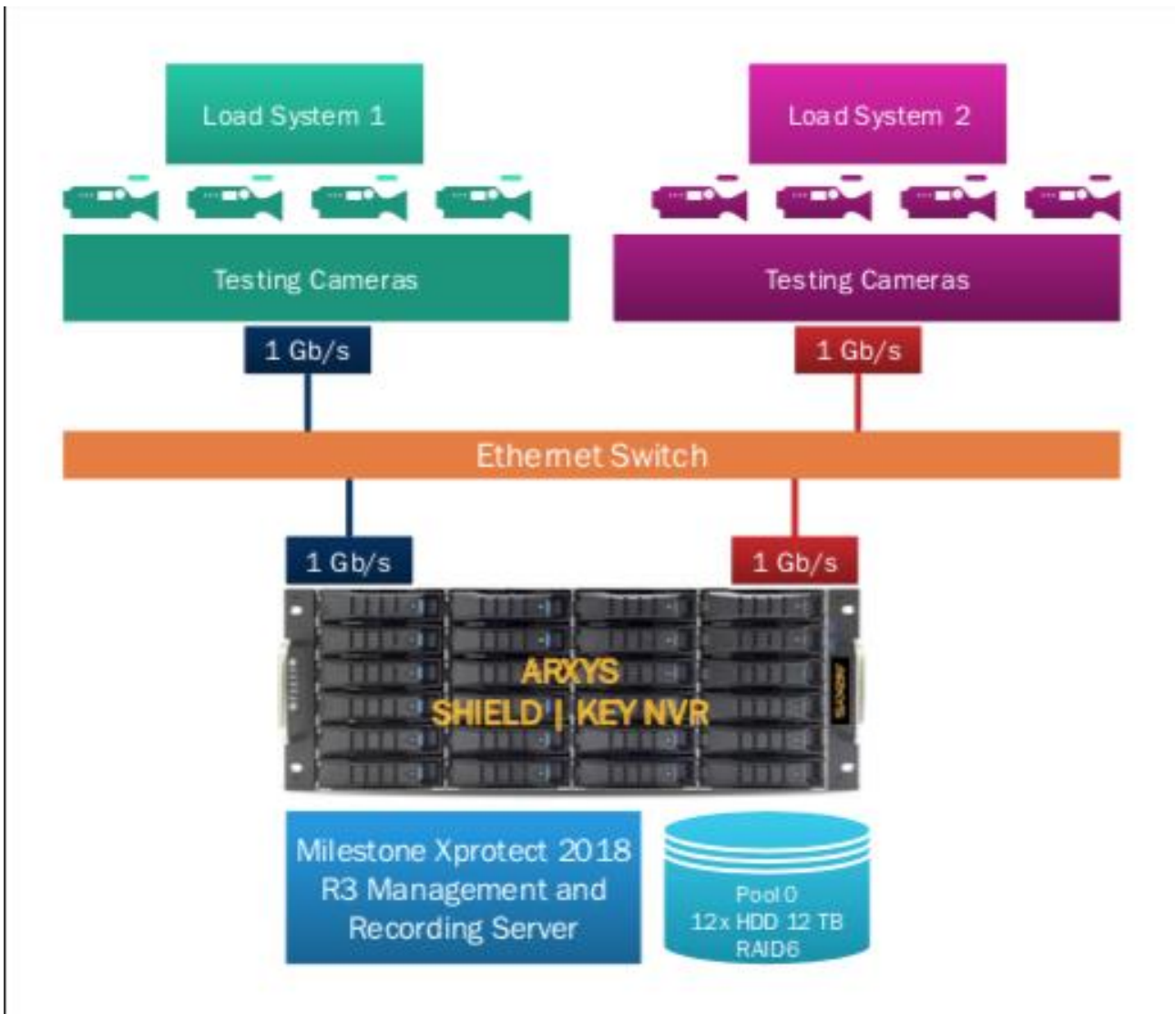
Certified Test Results

Below is the summary of the Milestone Certified performance test results for 6 wide ranging video surveillance scenarios. The tests were designed to showcase the depth and breadth of the performance and capabilities of the Shield | Key NVRs running Milestone XProtect with modern high-end video surveillance specifications.

From 300 cameras @ 1080P/25fps with full server-side motion detection to 500 cameras @ 4k/30fps running h.265 codec the Shield| Key delivers remarkable performance results.

Max Cameras	Resolution	FPS	VMD	Video Stream	Max FPS	Video Bandwidth
300	1080P	25	Yes	3.4 Mb/s	7,500	1,020 Mb/s
400	720P	25	Yes	1.8 Mb/s	10,000	720 Mb/s
100	4K	30	No	9.9 Mb/s	3,000	994 Mb/s
260	1080P	25	No	5.9 Mb/s	7,800	1,534 Mb/s
200	4K h.265	30	No	3.5 Mb/s	6,000	708 Mb/s
500	1080P h.265	30	No	2.5 Mb/s	15,000	1,245 Mb/s

Scenario 1: 300 Cameras 1080p H.264 with Server-Side Motion Detection
Camera Configuration:

- 300 cameras with the following video stream profile
    - Parameters:
        - 1920x1080 resolution
        - H.264
        - 25 FPS
    - Approximately 3.5 Mbps stream size
    - Analytics: Server-side video motion detection enabled w/Metadata
    - Recording Configuration: Continuous recording

Certified Performance Metrics:

- CPU Usage: 63%
- Memory Usage: 46%
- Total FPS: 7499
- Number of channels: 300
- Disk Writes: 128.1 MB/s
- Network Bandwidth: 1,020 Mb/s

Scenario 2: 400 Cameras 720p H.264 with Server-Side Motion Detection
Camera Configuration:

- 400 cameras with the following video stream profile
  - Parameters:
    - 1280x720 resolution
    - H.264
    - 25 FPS
  - Approximately 1.8 Mbps stream size
  - Analytics: Server-side video motion detection enabled w/Metadata
  - Recording Configuration: Continuous recording

Certified Performance Metrics:

- CPU Usage: 12%
- Memory Usage: 41%
- Total FPS: 9,999
- Number of channels: 400
- Disk Writes: 87.1 MB/s
- Network Bandwidth: 720 Mbps

Scenario 3: 100 Cameras 4K H.264
Camera Configuration:

- 100 cameras with the following video stream profile
  - Parameters:
    - 4096x2160 resolution
    - H.264
    - 30 FPS
  - Approximately 10 Mbps stream size
  - Analytics: None
  - Recording Configuration: Continuous recording
- 1080+ Mbps network ingress bandwidth

Certified Performance Metrics:

- CPU Usage: 57%
- Memory Usage: 12%
- Total FPS: 2,999
- Number of channels: 100
- Disk Writes: 124.6 MB/s
- Network Bandwidth: 994 Mbps

Scenario 4: 260 Cameras 1080p H.264
Camera Configuration:

- 260 cameras with the following video stream profile
  - Parameters:
    - 1920x1080 resolution
    - H.264
    - 30 FPS
  - Approximately 6 Mbps stream size
  - Analytics: None
  - Recording Configuration: Continuous recording

Certified Performance Metrics:

- CPU Usage: 52%
- Memory Usage: 13%
- Total FPS: 7,800
- Number of channels: 260
- Disk Writes: 192.2 MB/s
- Network Bandwidth: 1,534 Mbps

Scenario 5: 200 Cameras 4K H.265
Camera Configuration:

- 480 cameras with the following video stream profile
  - Parameters:
    - 3840x2160 resolution
    - H.265
    - 30 FPS
  - Approximately 3.5 Mbps stream size
  - Analytics: None
  - Recording Configuration: Continuous recording

Certified Performance Metrics:

- CPU Usage: 18%
- Memory Usage: 13%
- Total FPS: 15,000
- Disk Writes: 156.7 MB/s
- Network Bandwidth: 708 Mbps

Scenario 6: 500 Cameras 1080p H.265
Camera Configuration:

- 500 cameras with the following video stream profile
  - Parameters:
    - 1920x1080 resolution
    - H.265

- 30 FPS
  - Approximately 2.5 Mbps stream size
  - Analytics: None
  - Recording Configuration: Continuous recording

Certified Performance Metrics:

- CPU Usage: 18%
- Memory Usage: 13%
- Total FPS: 15,000
- Disk Writes: 156.7 MB/s
- Network Bandwidth: 1,245 Mbps

Conclusion

The tested system delivered unprecedented performance with video motion detection and metadata enabled. Certified to support 300 cameras at 1080P and 25fps with server-side video motion detection with metadata collection while ensuring CPU, RAM and network utilization are always below 70% in accordance with Milestone best practices.

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Resources

Shield | Key NVRs

Video Bandwidth & Storage Calaculator