Technical white paper

Video surveillance verification with HPE Alletra Storage MP B10000 and Milestone XProtect

Contents

Executive summary

This technical white paper provides guidance and best practice information for implementing HPE Alletra Storage MP B10000 and Milestone XProtect video management software (VMS). The information and recommendations shared in this paper are results on experiences with XProtect software installed in a Hewlett Packard Enterprise lab.

This document is intended for solution architects, project managers, storage administrators, and system support personnel involved in planning, designing, and configuring a Milestone XProtect video surveillance solution.

Introduction

Milestone Systems is a global leader in video technology software. Their portfolio includes the award-winning XProtect video management software (VMS). XProtect video management software's open-platform flexibility means organizations of any size can build and customize more future-proof security systems. Choose from the market's widest choice of cameras, sensors, and IoT devices, and protect your investment with greater cybersecurity and compliance.

As more and more high-resolution cameras are used and more are added in the future, it is even more important to use the right storage solution. Milestone recommends using high performance storage connected through DAS or SAN to store the live recording database. The recording database needs uninterrupted block-level access to the storage system to ensure high performance and continuous recording of live media data. HPE Alletra Storage MP B10000 provides the required performance ideal for handling the high-speed demands of live recording. It helps ensure that video streams from surveillance cameras are written to storage in real-time without latency or dropped frames. This is especially beneficial in environments using high-resolution cameras, such as 4K or those with high frame rates, which generate large amounts of data. Additionally, it ensures reliable and stable recording even during peak workloads or system surges, reducing the risk of data loss.

HPE Alletra Storage MP B10000 provides a trusted partner solution with AI-driven cloud management, flexible disaggregated scaling, and guaranteed 100% data availability.[1] Verified by Milestone, HPE Alletra Storage MP B10000 delivers dependable performance and seamless integration with XProtect software.

HPE Alletra Storage MP B10000 for Milestone XProtect

HPE Alletra Storage MP B10000 offers the industry's first disaggregated, scale-out block and file storage with a 100% data availability guarantee.[1] It simplifies storage management and reduces risk with an AI-driven cloud experience, disaggregated scaling, and a secure always-on architecture. This frees you to transform from IT operator to service provider, focusing on accelerating outcomes and not managing infrastructure.

40% lower costs

Scale performance and capacity independently with the industry's first disaggregated block and file storage, for greater efficiency and up to 40% lower cost[2] for evolving workloads. Start small, scale big, and boost ROI with nondisruptive, data-in-place upgrades—without repurchasing existing storage. Eliminate silos and complexity by deploying block and file workloads on a single hardware architecture with a common cloud experience.

100% worry free

Enhance your cyber resilience with comprehensive ransomware detection across both storage and applications. Benefit from assured outcomes that mitigate risk, including an unparalleled 100% data availability guarantee[1] and service-level agreements (SLAs) that boost investment protection, productivity, efficiency, ransomware recovery, and workload optimization.

[1, 2] "HPE Storage substantiation," HPE, 2025.

99% faster provisioning

Get a unified, AI-driven cloud experience across hybrid cloud that simplifies management and shifts operations from infrastructure-centric to app-centric. Experience 99% operational time savings[3] with intelligent, self-service provisioning while managing and protecting workloads across on-prem and the public cloud from a single cloud console.

Built-in ransomware detection

The B10000 provides on-array intelligent ransomware detection and recovery technologies to help ensure your data remains resilient against ransomware attacks. It also simplifies your workflow for detection, protection, and recovery with seamless orchestration, thanks to the streamlined data management experience offered by the Data Services Cloud Console.

AI-driven cloud experience

HPE Alletra Storage MP B10000 is powered by industry-leading AIOps for infrastructure, delivered through the Data Services Cloud Console on the HPE GreenLake cloud. The latest release of the HPE Data Ops Manager app on Data Services Cloud Console continues to eliminate the guesswork for customers when it comes to storage optimization through enhanced and extended AI-based performance reporting and analytics for improved troubleshooting and insights.

Solution overview

This section describes the hardware and software components used in the verification.

Software

Milestone's XProtect® VMS is a powerful and versatile solution tailored to meet the security needs of today's businesses. Its open-platform flexibility enables organizations of all sizes to create and customize security systems that are more future ready.

Milestone XProtect

XProtect Corporate 2024 R1 running on Windows Server 2022 Standard edition uses the following components:

- Milestone XProtect Management server
- Milestone XProtect Recording server
- Milestone XProtect Management Client
- Milestone StableFPS device driver

Hardware

The solution described in this technical white paper uses the hardware components described in this section.

HPE Alletra Storage MP B10000

The HPE Alletra Storage MP B10000 storage array was used for the live recording database. B10000 configuration:

- B10140 controller nodes
  - Two controller nodes, switchless
- One HPE Alletra Storage MP 10001 NVMe Configure-to-order Expansion Shelf
- 24 HPE Alletra Storage MP 3.84TB NVMe SFF Self-encrypting SSD
- Eight 32 Gb FC ports
- Four 25GbE iSCSI ports

For the verification, 24 HPE Alletra Storage MP 3.84 TB NVMe SFF SSDs were used and configured in a single Common Provisioning Group (CPG) using RAID 6.

[3] "HPE Storage substantiation," HPE, 2025.

Explore the features and benefits of HPE Alletra Storage MP B10000

HPE ProLiant DL servers

One HPE ProLiant DL360 Gen10 server was used as the Milestone XProtect Management server:

– Two CPUs having four cores each

– 96 GB of RAM

– HPE FlexFabric 10 Gb 2-port network card

Four HPE ProLiant DL380 Gen10 servers were used to host 10 Milestone XProtect Recording server VMs. Configuration per server:

– Two CPUs having twenty cores each

– 384 GB of RAM

– HPE FlexFabric 10Gb 2-port network card

– HPE SN1600Q 32Gb 2p FC HBA

– Windows Server 2022 Standard Edition and Hyper-V installed

Explore the features and benefits of HPE ProLiant DL servers

Milestone XProtect Corporate components

Figure 1 illustrates XProtect Corporate components. It shows four networks: the management network with the connected components of Milestone XProtect Management server, Milestone XProtect Management Client, Milestone XProtect Smart Client, and Milestone XProtect Recording server. The camera network with connected cameras and the Milestone XProtect Recording server. The Fibre Channel network with connected HPE Alletra Storage MP B10000 and Milestone XProtect Recording servers. Instead of Fibre Channel connectivity, it is possible to use iSCSI connectivity of the HPE Alletra Storage MP B10000. The Ethernet storage network with connected archive storage and Milestone XProtect Recording server. A short description of each component follows. A full description of the XProtect components is available at Milestone's documentation website.

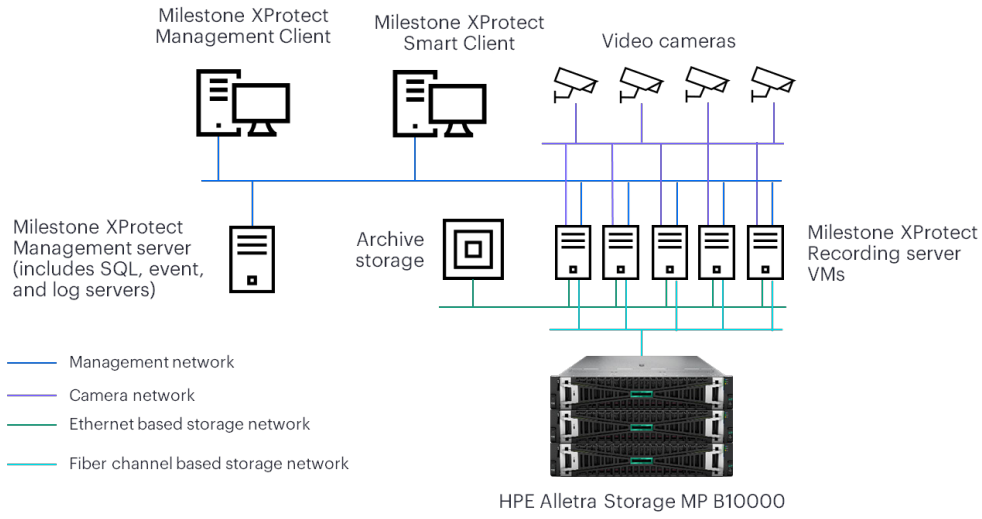

Figure 1. Milestone XProtect Corporate core components

Milestone XProtect Management server

The Milestone XProtect Management server is the central component of the Milestone XProtect VMS. It manages the overall system configuration, user permissions, camera settings, and event handling. It coordinates the various components of the XProtect system, ensuring seamless operation, scalability, and efficient management of video surveillance networks. The configuration of the surveillance system is stored in an SQL database. The SQL database can run on the Milestone XProtect Management server or a separate SQL Server on the network.

Milestone XProtect Recording server

The Milestone XProtect Recording server is a core component, responsible for capturing, processing, and storing video and audio data from connected cameras as well as providing client access to both live and recorded audio and video. In large installations, more than one Milestone XProtect Recording server is often used.

Milestone XProtect Log server

The Milestone XProtect Log server is responsible for storing log messages for the entire system. The server uses the same SQL Server as the XProtect Management server system configuration database. It is typically installed on the same server as the Milestone XProtect Management server. However, it can be installed on a separate server if the XProtect Management server or XProtect Log Server performance needs to be improved.

Microsoft SQL Server

The Management server, the event server, the log server, and other components use an SQL database to store, among others, the system configuration, alarms, events, and log messages. The XProtect installer includes Microsoft SQL Server Express, which is a free edition of SQL Server. For very large systems or systems with many transactions to and from the SQL databases, Milestone recommends that you use a Microsoft SQL Server Standard Edition or Microsoft SQL Server Enterprise Edition of SQL Server on a dedicated computer on the network and on a dedicated hard disk drive that is not used for other purposes. Installing SQL Server on its drive improves the performance of the entire system.

Milestone XProtect Management Client

The Milestone XProtect Management Client is a feature-rich administration client for configuration and day-to-day management of parts included in the system. It is designed to run remotely and is typically installed on the surveillance system administrator's workstation. It is available in several languages.

Milestone XProtect Smart Client

The Milestone XProtect Smart Client enables operator access to live and recorded video as well as other key surveillance system features, such as the export of recordings for use as evidence. Using the MIP SDK, users can integrate various types of security and business systems and video analytics applications, which you manage through XProtect Smart Client.

Verification environment overview

The Milestone verification process was used by running XProtect software with a given number of simulated cameras. To generate the appropriate camera workload, the Milestone StableFPS device driver developed by Milestone Systems was used to generate network and storage load.

Verification testing

The targets and limits for the test to pass the verification are:

- Camera emulation Milestone StableFPS device driver Door_1920x1080_8Mbit
- H.264 video codec
- 30 frames per second (FPS)
- Motion detection enabled
- Overall test duration of seven days
- The limits expected from a stable system:
  - Network loads, both receiving and sending, should not exceed 70%[4] of available bandwidth
  - Percent committed bytes should not exceed 70%[4]
  - Disk latency, reading, or writing should not exceed 200 milliseconds[4]
  - Media lost/sec should not exceed 1%[4]

[4] The limits shall never be exceeded, measured as an average value over any one-hour period during the full test period of seven days.

Verification environment

The Milestone XProtect Management server was installed on a dedicated HPE ProLiant DL360 Gen10 server.

Four HPE ProLiant DL380 Gen10 servers were deployed, running Windows Server 2022 and Hyper-V installed. Each server was configured with one dual-port 10GbE network interface card and one dual-port 32 Gb Fibre Channel interface card. One Fibre Channel port was used to connect to B10000 storage volumes used for the media database. As B10000 supports iSCSI, it can be used instead of Fibre Channel.

The Ethernet connections supported access to archive storage, management functions between the Recording servers, and XProtect Management server.

In total, 10 Recording server VMs were deployed, two servers hosted three VMs, and 2 servers hosted 2 VMs.

Configuration per VM

– 20 vCPU

– 16 GB memory

– Network port to storage. Second is recommended for cameras and third for management

– One virtual hard disk for the guest OS

– One virtual hard disk for live recording data hosted on B10000

– One virtual hard disk for archive

– Static IP addresses were used

Figure 2 provides a high-level architectural view of the server and storage setup deployed in an HPE lab for conducting the verification test.

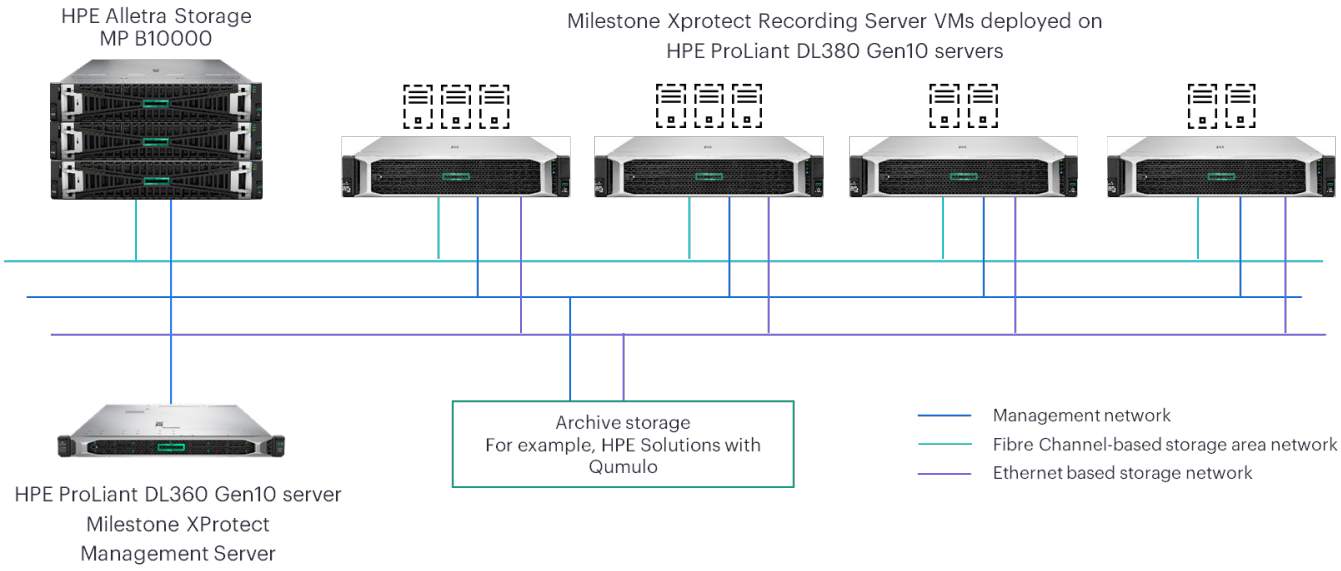

Figure 2. High-level architectural view of the verification setup

Verification result

Milestone confirmed that the HPE Alletra Storage MP B10000 is compatible with Milestone XProtect Corporate 2024 R1 for live recording storage and archiving enabled. The verification test was performed using 1000 cameras (1920x1080_8Mbit, continuous streaming). In other words, a total storage bandwidth of 8000 Mbit/s for live recording. The retention time for the tier-1 storage was 3 hours, and for tier-2 storage, 3 days. Every hour, data was transferred from tier-1 to tier-2 storage.

Best practices and configuration guidance

In this section, it is assumed that the setup and configuration guidance provided by the Milestone documentation website has been understood and is expected to be followed.

Camera throughput and storage capacity

Camera throughput is the key factor when sizing a video surveillance solution. Look at the camera vendor specifications to get an average understanding of the image size, bandwidth, and storage requirements.

Usually, camera vendors provide the required information in a camera data sheet or offer a sizing tool that simplifies and helps to determine an estimation of the required values.

Separate OS and XProtect VMS volumes

With the Milestone XProtect Recording server, it is important to use separate physical volumes (different partitions on the same disk are not good enough) for the OS and the XProtect VMS recordings.

Note

If the same drive is used for both the Windows OS and XProtect VMS media data, at times, Windows will perform various operations that require a large percentage of disk access. This will potentially impact the XProtect VMS recording performance and lead to lost recordings.

HPE GreenLake Flex Solution built for Video Management

HPE GreenLake brings the cloud experience to all your IT—now with built-in intelligence that makes it smarter every day. Adopt a single hybrid cloud operating model with HPE GreenLake, a full-stack platform that delivers the cloud experience wherever your apps and data live. Now with agentic AIOps capabilities, it offers flexibility, scalability, and autonomous operations—combining security, visibility, and simplicity whether you buy, subscribe, or pay per use.*

HPE GreenLake Flex Solution built for Video Management delivers a hybrid cloud platform with HPE infrastructure—and associated services, focused on operating Milestone XProtect VMS. The solution includes HPE Alletra Storage MP B10000 for the live-recording (short-term retention) shared storage, and HPE Solutions with Qumulo for archive (long-term retention) storage.

Summary

Milestone XProtect deployments with 100s or 1000s of cameras rely on high performance storage for live recording. Milestone's verification confirms that HPE Alletra Storage MP B10000 is compatible with their XProtect software.

In the end, to fast-forward data-driven modernization, your organization must focus on eliminating the infrastructure management complexity that continues to slow you down. That's precisely what makes HPE Alletra Storage MP B10000 so compelling: it simplifies storage management and reduces risk with an AI-driven cloud experience, disaggregated scaling, and guaranteed 100% data availability.[5] It frees your organization to dramatically accelerate your digital transformation journey.

* May be subject to minimums or reserve capacity may apply

[5] "HPE Storage substantiation," HPE, 2025.

References

HPE Alletra Storage MP B10000

HPE ProLiant servers

HPE GreenLake

HPE at Milestone technology partner finder

HPE GreenLake Flex Solution built for Video Management

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