



# Best of Breed Surveillance System

**SOLUTION WHITEPAPER**

# Introduction

The effectiveness of your surveillance system relies on a solid foundation of best of breed technologies. Milestone IP-based video management software (VMS) on Pivot3 video surveillance systems based on hyperconverged infrastructure (HCI) provide that solid foundation. This proven, joint solution provides an open, scalable, flexible surveillance system that is highly resilient, simple to manage, and high performing.

## The Business Challenge

### Secure, Efficient & Performant Video Handling

As camera resolutions and retention times increase, the requirements for video storage become more strenuous and costly. It is estimated that the data generated by video surveillance will grow at 42% CAGR (Compound Annual Growth Rate) between now and 2020, with an estimated 62ZB of video data being stored by that time.

Another key challenge with video surveillance workloads is maintaining the integrity of the video as it is being stored. Dropped frames, video loss and throughput spikes can all compromise video, and often the issue is only discovered during the replaying of an incident, which is a less than ideal time to discover that your IT infrastructure isn't fit for purpose with the increases in quality and camera throughput.

Having a VMS that is efficient with its video management and long-term retention strategies is almost as important as having an IT infrastructure that delivers unparalleled raw storage efficiency and market leading performance.

### Protecting Critical Video Data

Video Surveillance is a highly aggressive IT workload, comprising of 99% write traffic, with high throughput and high demands on storage performance, especially in cases of hardware failure. There is a very good reason for this; If the infrastructure for video surveillance fails, the consequences can be catastrophic. Video recording fails, frames are lost and there is a very real chance that you miss an incident and incur liability. In the worst-case scenario, video data can be irrevocably lost through hardware failures.

### Decreasing Incident Response Times

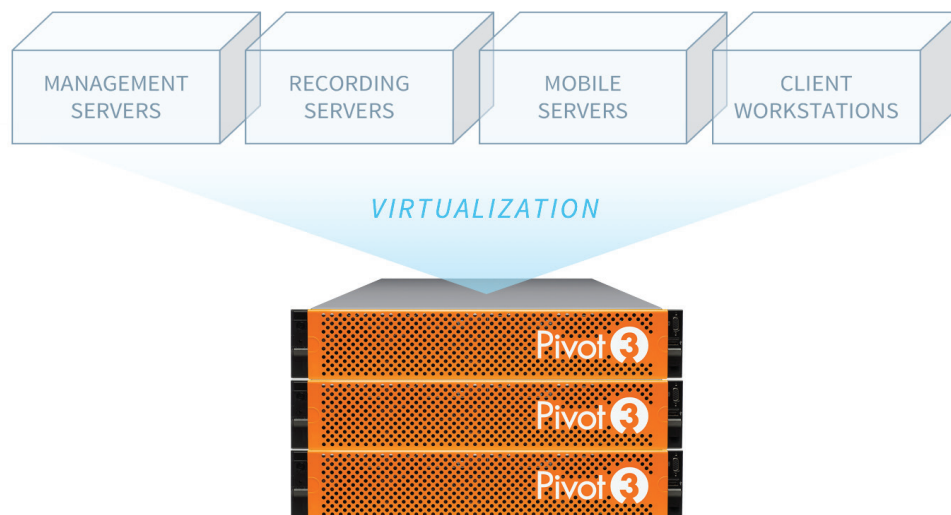
During an incident, situational awareness is vital, and can truly mean the difference between a peaceful resolution or a situation escalating out of control. A large part of this awareness is the ability to share information securely amongst teams, and other agencies, search data in real time for the events leading up to the incident and annotating live events for analysis after the event.

Centralized management and the ability to access video storage remotely, especially during an incident, while maintaining performance is crucial. Having multiple "eyes" on an incident will also speed incident resolution, so the ability to virtualize the operator desktop and provision it, with all of the necessary camera feeds, becomes an important tool in incident response, enabling security to bring in remote operators in a secure and seamless way.

## The Milestone Pivot3 Solution

Pivot3 provides the ideal platform for running Milestone xProtect VMS software, by bringing all the benefits of an enterprise grade IT infrastructure, with all the simplicity and ease of use a security director desires. With unrivalled storage efficiency and resilience, Pivot3 provides a scalable, secure storage platform for critical video data, captured and managed by the xProtect VMS. Also eliminated are the single points of failure, and isolated storage subsystems of a traditional NVR solution, meaning more effective management, centralized data storage and a reduction in total cost of ownership.

In addition, Pivot3's ultra-low system overhead and integrated compute platform allows security chiefs to run all of the advanced Milestone software features, and integrated analytics software in a single location, with greater resilience and uptime, as well as superior processing power, delivering greater levels of analytical detail in shorter time frames. This only drives up the situational awareness of the security team!



**CONSOLIDATE MULTIPLE APPLICATIONS ON PIVOT3 SURVEILLANCE SOLUTION**

## Proven Partnership

Pivot3 and Milestone are long standing Solution Alliance Partners and have been deployed together in demanding surveillance installations of all sizes all over the world. Pivot3 tests and validates its surveillance optimized HCI solutions with Milestone software to produce sizing guides and deployment best practices to ensure successful sizing and deployment at customer sites. Pivot3 HCI solutions for video surveillance are certified with the XProtect Platform under the Milestone Technology Partner (MTP) Certification program.



## Milestone xProtect

### Scale-Out Surveillance Systems

Milestone's Federated Architecture concept enables multiple individual XProtect Corporate systems to be interconnected into a hierarchical architecture. This allows organizations to join multiple independent XProtect Video Management Systems together for a complete and overall view of the surveillance system as a whole.

Milestone Federated Architecture makes it possible to monitor and manage distributed surveillance systems centrally from headquarters or regional offices, but also enables local management and monitoring – a key advantage whenever a site is temporarily offline from the corporate network. Milestone Federated Architecture also allows a corporation to house surveillance operations in separate premises for monitoring during off hours or to perform more advanced system administration from headquarters. Milestone Federated Architecture gives surveillance system administrators the ability to configure the system so different entities or users can access different cameras depending on a defined schedule. For example, an administrator might want to give surveillance guards access to outdoor cameras on sub-sites during working hours but allow them to access all cameras during off hours. Another example is giving users on a local site access to cameras only during working hours.

### Situationally Aware Surveillance Software

Milestone uses a number of features to provide greater situational awareness amongst operators, for further details refer to the Milestone website. Two particular features that complement Pivot3's leading scale and efficiency are the XProtect Smart Wall and the Interactive Map Function.

XProtect Smart Wall provides important support to control room operators in their daily surveillance operation. Supporting a wide range of different content, the Smart Wall canvas can be optimized for the specific operational condition. Content like live feeds from cameras, camera carousels, and maps afford operators a complete overview and situational awareness in the daily real-time monitoring activities. The Smart Wall can also display HTML content, as a complementary information and decision support. The support for HTML content can be used for a broad variety of applications, including news feeds, status information or instructions. Predefined text messages can also be displayed on the Smart Wall based on specific events and time schedules. These messages can be used for announcements and to bring operators' attention to critical matters or instructions.

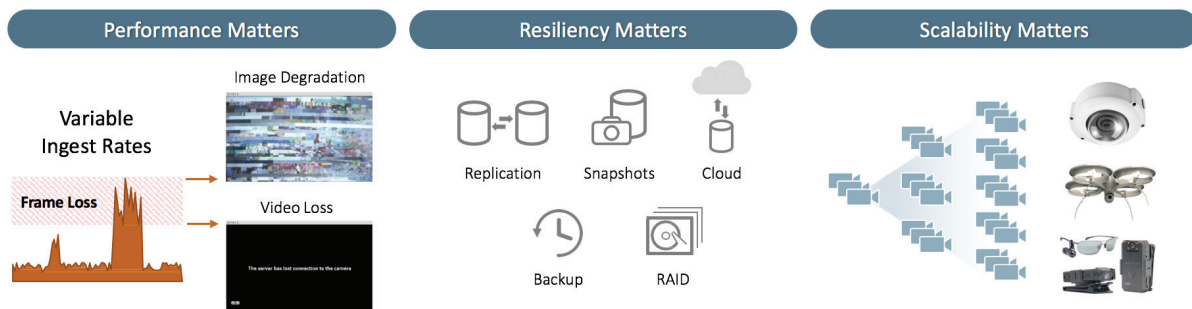
Milestone XProtect VMS products include an interactive map function that provides operators with real-time situational overview, and the ability to instantly access any camera or control any security peripheral connected to the VMS surveillance system. Large security installations may contain several thousand cameras, detectors, audio devices, doors and other access points. It is not only the sheer number of cameras and other security peripherals in the system that makes it difficult to efficiently manage larger installations. The physical distribution across different building floors, buildings and across different premises, can make it challenging for operators to get a complete overview.

As the true operational hub, the map function enables operators to control any security device connected to the system. This means that the operator can control everything from lights to doors and gates directly from the map. It is also possible to make announcements via speakers and PA systems directly via the map.

Furthermore, these features facilitate combine to deliver efficient collaboration and information exchange in command and control centers, maps can be shared on Milestone’s video wall solution, XProtect Smart Wall. Operators simply send cameras to the XProtect Smart Wall through a drag-and-drop operation into the Smart Wall control.

## Pivot3 Hyperconverged Solutions Optimized for Video Surveillance

Pivot3’s hyperconverged infrastructure (HCI) offers software-defined storage and server infrastructure in cost-effective, industry standard server hardware. Purpose-built for demanding, data-intensive video surveillance workloads, Pivot3 provides the highest levels of performance, resiliency and scalability so critical video surveillance data is stored without loss, protected from any failures and always available when and where it is needed most. Pivot3 HCI also enables you to consolidate video management, access control and other related applications onto a single platform, eliminating the need for separate physical servers to reduce costs, complexity and valuable rack space.



CORE CRITICAL INFRASTRUCTURE REQUIREMENTS FOR A VIDEO SURVEILLANCE SOLUTION

### Highly Scalable

As video data storage demands increase with the adoptions of higher resolution cameras and increased retention times, datacenter footprints can quickly grow out of control. The cost of acquiring the usable storage required (storage once any RAID or replication overheads are calculated) to store, manage and maintain the integrity of the video data becomes prohibitive.

One of the primary challenges that occurs with a traditional server/SAN infrastructure is the scaling of compute, storage and networking both linearly and independent of each other. With most traditional SANs, storage bandwidth becomes the challenge when you begin to scale the number of recorders, meaning the addition of entirely new storage arrays, further increasing cost and complexity in the infrastructure.

Pivot3 helps organizations avoid those costs by using a patented Erasure Coding technology that delivers up to 90% usable storage and dramatically reduces the cost of acquisition and cost of ownership for video surveillance data.

### Highly Resilient

Along with storage efficiency, Erasure Coding brings a benefit in the resilience aspect of video storage, with the ability to protect video data, and maintain access with up to 5 simultaneous drive failures, or an entire node and 2 ADDITIONAL drive failures. As video data is considered more and more critical, protecting that data becomes more

important, but a balance has previously had to have been made to the level of protection versus the amount of storage capacity that is required to deliver that protection.

Pivot3's hardware resilience ensures that critical data is more highly tolerant of hardware failure both at the drive and at the node level, and less critical data doesn't consume a disproportionate amount of capacity. This serves to keep storage acquisition costs low without having to sacrifice protection or video quality.

Additionally, Pivot3 VM failover ensures systems remain online during major hardware failures – keep recording, maintain access to live video. And even better, bring this failover capability to the entire security suite (not just the VMS) – access control, visitor management, PSIM, analytics, any other application that they consolidate onto this infrastructure. Those applications usually have no failover protection.

## **Sustained Throughput & Performance**

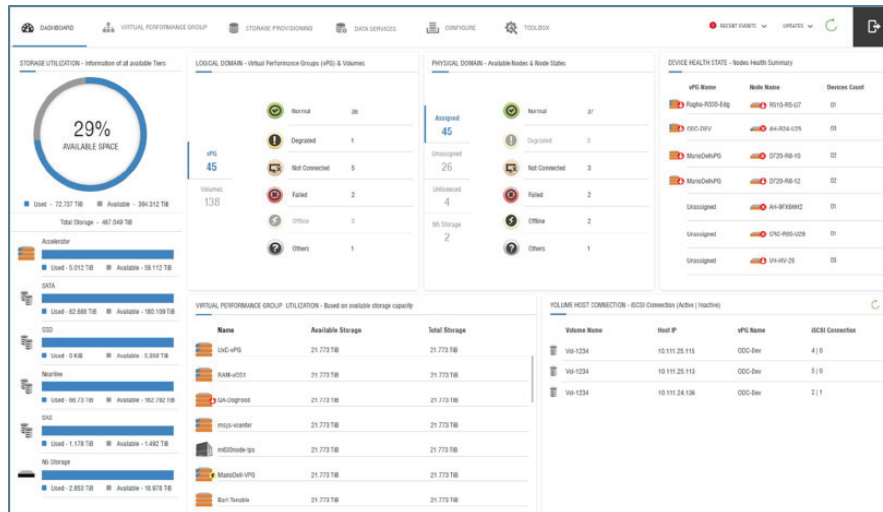
The implementation design of a modular surveillance infrastructure has myriad benefits, most notably in the simple, phased expansion of the system as more cameras are required, and more analytics packages are deployed. By aggregated all of the storage into a single, software-defined pool, the issue of isolated islands of storage is removed and the aggregated performance leveraged by all of the available drives allows for a much greater camera density per node, reducing the overall footprint and cost of the solution dramatically.

Pivot3 takes a unique approach to storage performance, by aggregating all of the drives in the nodes to a single pool of storage. This provides a linear bandwidth scaling pattern that has led to Pivot3 being the best performing video surveillance solution on the market, both under standard operating conditions AND during failures.

In addition, infrastructures can be designed for simple expansion, with a calculation made around the number of cameras that can be managed per node, allowing simple future forecasting and guaranteed performance and storage availability.

## **Simple, Centralized Management**

Pivot3, like Milestone XProtect, provides a single, central management point for both the compute and storage aspects of your video surveillance solution, using an intuitive HTML5 interface, giving Administrators a global view of their surveillance infrastructure, enabling a more rapid response to incidents on a global basis, as well as system administration and configuration. Camera's, analytics software and supporting applications may be run on the same hardware, with closer access to the data, giving more intelligence with a seamless and non-disruptive expansion of the environment if and when required.



SIMPLE MANAGEMENT USING THE PIVOT3 MANAGEMENT CONSOLE

## Conclusion

Pivot3 and Milestone combine capabilities from the leading providers of infrastructure and management software for video surveillance to deliver a secure, resilient and high scalable solution that will meet your current and future surveillance and security needs. Find out more at [www.pivot3.com](http://www.pivot3.com) and [www.milestonesys.com](http://www.milestonesys.com)