Application Note

Vess A8120 : Multiple-Purpose Platform Designed For IVA And NVR

Version:1.0
Date:2022/02/20

Contents

PREFACE

With each progressive stage of Moore's Law, platform performance improves and bottlenecks are removed. Simultaneous advancements in application technologies then demand acceleration of improvement in hardware platform performance. Thus, we have a never-ending and beneficial competition between improved hardware and applications that run on them.

This is just as true in Video Surveillance. Newer, faster CPUs, increased RAM and network speed are throttled by increased demands created by VMS and complex Analytics. More cameras, higher resolution, higher frame rates, and increased use of AI analytics, all put great pressure on server platforms to perform better and faster.

PROMISE Vess A8120

Performance Powerhouse Server Platform Build for Surveillance

Vess A8120 from PROMISE is an extremely powerful server platform designed and optimized for Video Surveillance. This multipurpose server performs the three server functions on the surveillance network: Management Server, Recording Server, or IVA (Intelligent Video Analytics) Server.

The scalable CPU architecture of the Vess A8120 server enables handling of extremely heavy load created by many cameras recording, and simultaneous application of complex AI-based analytics with the addition of a graphic card option.

PROMISE Vess R3600

Battle Hardened Unified Storage

The market proven Vess R3000 Series unifi¬ed storage appliance from PROMISE consolidates both block storage and fi¬le storage protocols on a single hardware platform. Designed for high-availability with active-active confi¬guration, the Vess R3000 Series storage solutions are used in data-intensive enterprise environments. Vess R3000 Series supports up to 208 hard drives with large online expansion potential.

PROMISE Vess A8120 + Vess R3600

Build to Perform, Build to Last

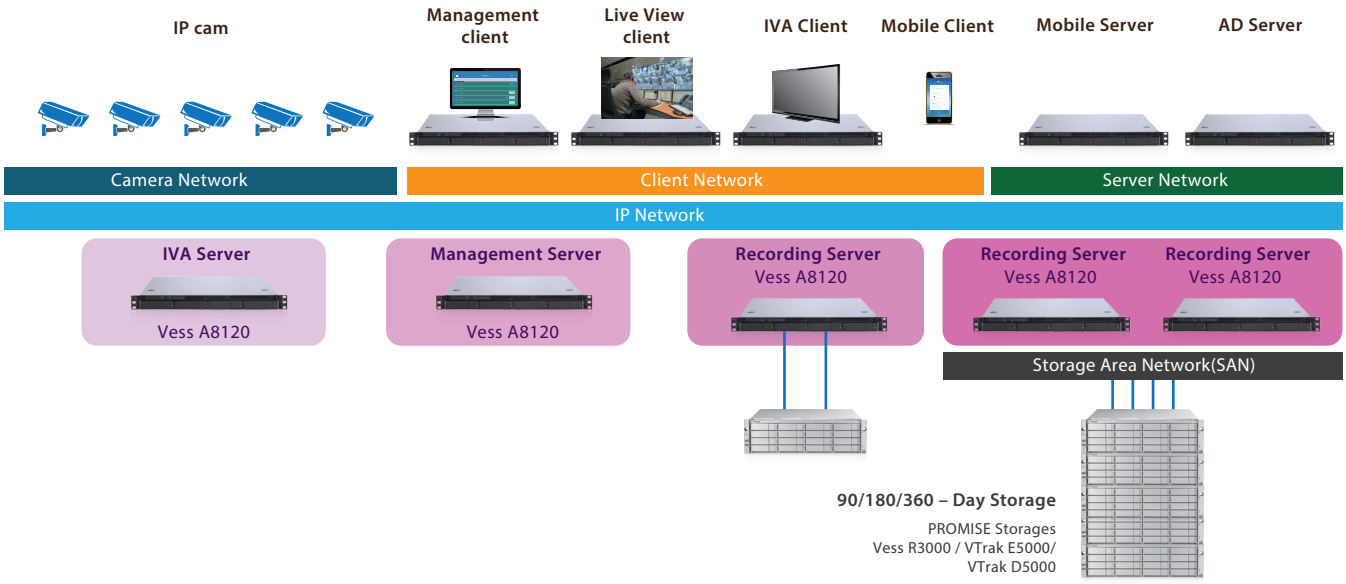
Vess A Series Storage Systems utilize the PROMISE SmartBoost™ technologies bundle created especially for optimization of video surveillance. The end result is that many more cameras can be used while maintaining performance and video quality levels.

However a bottleneck can occur using such optimization on 1U4 servers due to the lower storage spindle count; there are only 4 HDD to process the increased number of cameras. Additional Vess R3600 Storage Systems with SmartBoost™ paired with the 1U4 server resolves these issues.

PROMISE Vess A8120 servers/Vess R3600 unified storage, a winning combination:

- PROMISE SmartBoost™ significantly enhances the capability of the server platform to handle a greater number of cameras.
- Vess A8120/Vess R3600 combination removes the bottleneck of limited HDD spindles while providing high performance storage for video data handling.
- PROMISE Vess A8120 server with sufficient available resources, can also handle the AI analytics, using an optional graphics card for AI analytics acceleration.

Generic Vess Series Product based Video Surveillance Architecture



PROMISE Vess A8120 + Vess R3600

Performance

The combination of Vess A8120 high performance server platform, Vess R3600 unified storage and Vess J3600 JBOD expansion provide Petabytes of storage.

The phenomenal performance is achieved using just a single CPU setup and 16 HDD per storage enclosure.

Recording Server	Recording Pool	Camera	Codec	Resolution	FPS
Vess A8120	Vess R3600tiD(Pool1)	150	h.264	1080P (1920x1080)	30
	Vess J3600sD (Pool2)	150			
	Vess R3600tiD(Pool1)	200			

Criteria

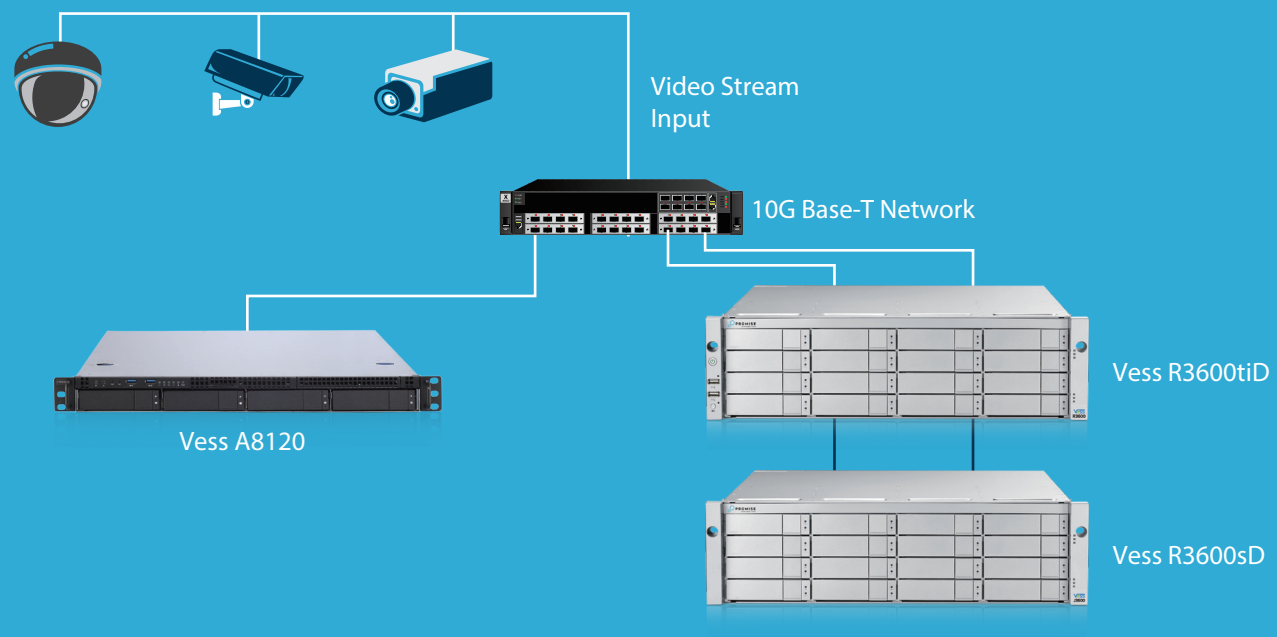
- No frame loss
- No overflow events
- CPU utilization under 70%
- Live recording only, Motion detection disabled, RAID level RAID5+Spare.

Setup

Server	Product	Vess A8120, 1U 4Bay, 19" Rackmount Server
	System Processor	Intel Xeon Silver 4208R @2.1GHz *1
	System Memory	16GB*1 RAM
	Network Interface	10G Base-T
	Operating System	Microsoft® Windows Server 2019
Storage	Product	Vess R3600iD, 3U 16Bay, 19" Rackmount
	Drives	16* 3.5" 12G SAS HDD
	System Memory	8GB per Controller
	Network Interface	Dual 10GbE BaseT per Controller
	RAID Levels	RAID5 + Spare
	Protocol	iSCSI
	Capacity/Expansion	Vess J3600sD
Software	VMS	Milestone Corporate VMS

Topology

10GbE interface provides extra large network bandwidth for handling very large data flows.
Vess A8120 network options include a 10GbE and 1GbE version. The requirements of each deployment will determine which version is appropriate.
Vess R3600 network interface options include: 4 x 1GbE BASE-T, optionally 2 x 10GbE SFP+/BASE-T or 4 x 16GB Fibre Channel.



AI Video Acceleration

The trend of increased use of threat perception technology; requirements for immediate security alerts and high resolution feeds have motivated development of extremely powerful AI-based solutions for video surveillance. To support advanced video surveillance environments, the market is providing better performance in hardware platforms. However, this increases the overall cost of installation. It is common to use multiple servers for recording and multiple servers for AI analytics to meet these more demanding requirements.

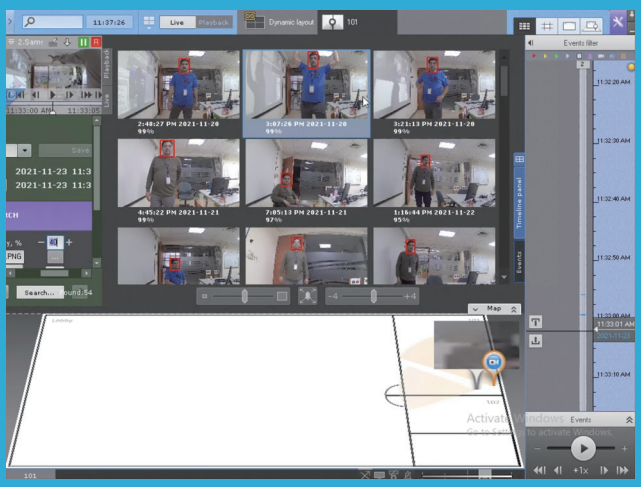
General purpose servers are not capable of recording a high number of video surveillance cameras, due to the hardware, firmware and software limitations, and the consequence of using a non-specialized platform. PROMISE SmartBoost™ optimized Vess A8120 comfortably handles large number of cameras (see the Performance section). Simultaneously, it can provide the resources needed to perform complex AI-based video analytics.
To perform online video analytics, the server needs to provide superior platform resources. Scalable CPU architecture of Vess A8120 provides suitable resources for such applications.

Additionally, for AI acceleration, a graphics card is required to for processing. Vess A8120 is equipped with dual 16-Lane PCIe Gen3 bus, capable of attaching various types of graphics cards.

Vess A8120 / Vess R3600

AI Video Analytics

Vess A8120 uses a dual CPU platform design including the option to add a GPU for intelligent video analytics service such as facial recognition, object detection, video tracking and so on. This configuration can meet the recommended requirements of graphics cards for VMS applications.



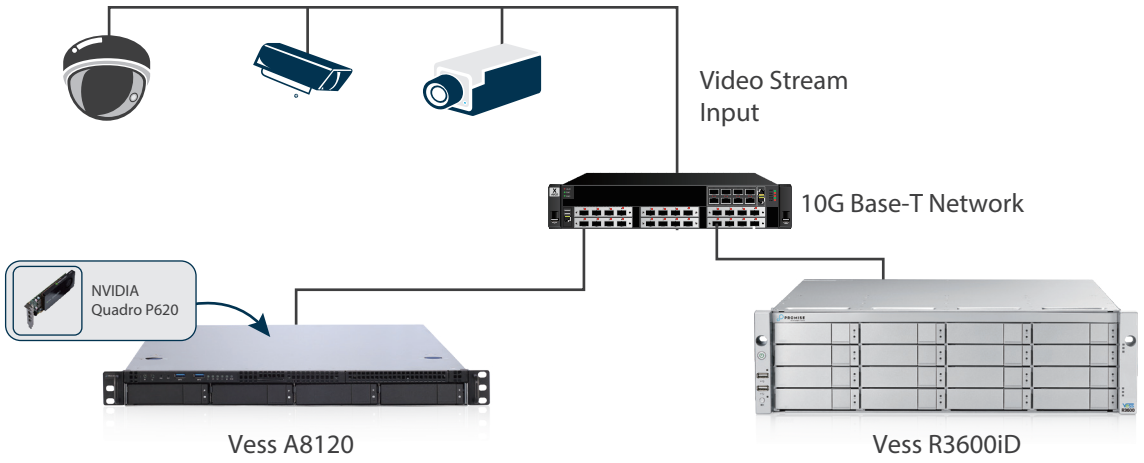
Criteria

Test and verification of major IVA features including online face detection, intrusion alarm, line crossing, etc.

Setup

Server	Product	Vess A8120, 1U 4Bay, 19" Rackmount Server
	System Processor	Dual Xeon® Scalable Silver4208, 8C/16T CPU
	System Memory	16GB*1 RAM
	Network Interface	1GbE Lan Ports x 4
	Operating System	Microsoft® Windows Server 2019
Storage	Product	Vess R3600iD, 3U 16Bay, 19" Rackmount
	Drive Support	Up to 16 3.5" 12G SAS/6G SATA, HDD and SSD
	System Memory	8GB per Controller
	Network Interface	Quad 1GbE Ports per Controller(Optional Dual 10GbE SFP+/BaseT or Quad 16GB FC)
	RAID Levels	0, 1, 5, 6, 10, 50, 60
	Capacity/Expansion	Online Capacity/Volume Expansion up-to 12 JBOD's, 208 drives
AI Acceleration	Graphic Card	NVIDIA Quadro P620
Software	VMS	Axxonsoft, Axxon Next Intelligent VMS Professional

Topology



Conclusion

Test results demonstrate the combination of PROMISE Vess A8120 and Vess R3600 provide a high-performance recording environment for enterprise level video surveillance. This setup is ideal for critical infrastructure where high reliability, long retention periods and high performance are required. The scalable CPU architecture of PROMISE Vess A8120 performs well as a platform for online AI-based video analytics. PROMISE Vess products are designed for compatibility with other Vess servers and storage products. The Vess product line are qualified and tested with the most widely distributed Video Management Software and environments.

Vess A8120 equipped with a graphics card performs all essential IVA detection and alerts, including face detection, intrusion detection, face and object search.
The combination of Vess A8120 surveillance optimized servers with the graphics card option and Vess R3600 unified storage is the most capable, cost effective and reliable setup. The combination is able to handle very high numbers of cameras and perform AI-based IVA.

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