

Dell Validated Design for Retail Edge

with Deep North

Solution Overview

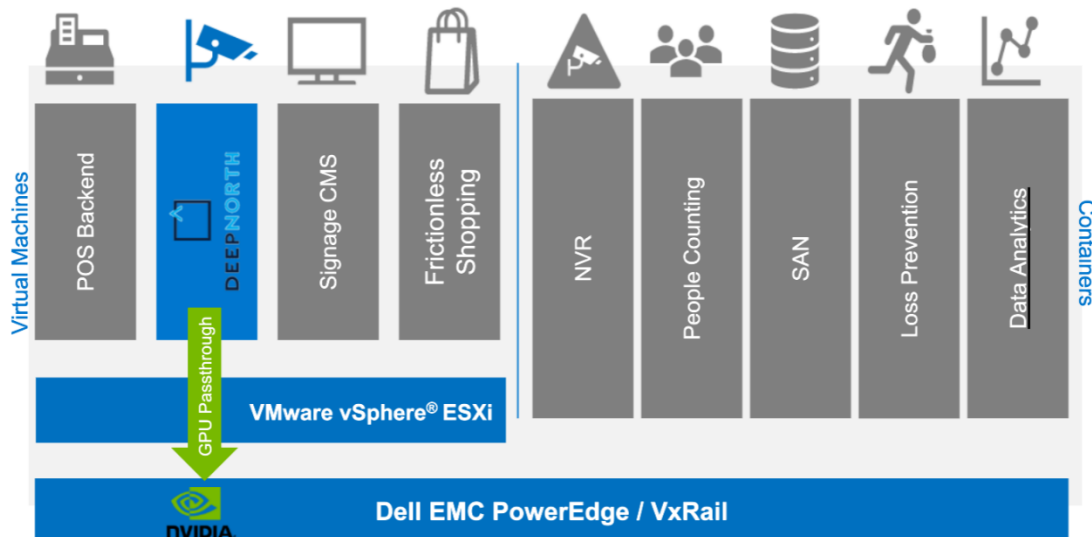
The Dell Validated Design for Retail with Deep North is a solution that simplifies the path to smart retail outcomes by:

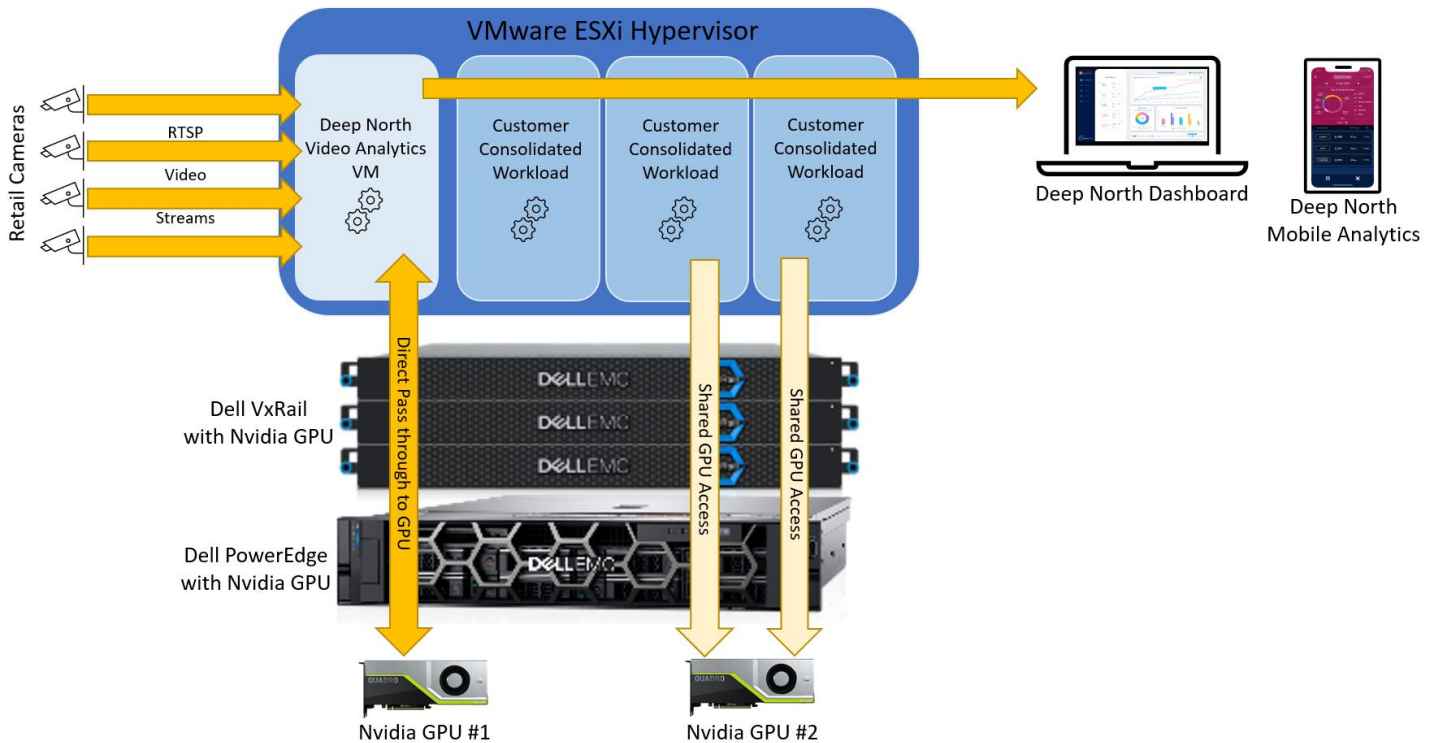
- Providing customer insights for improved retailer decision making
- Streamlining deployment and integration from edge devices to cloud applications for faster time to value
- Powering live insights out of the box for OT, IT, and the business with better, faster decisions
- Ensuring resiliency and security to manage at the global scale while minimizing disruptions.

Solution Detail

Within the Dell Design for Retail with Deep North, there are three key building blocks that comprise the architecture to support the use cases and workloads for the smart manufacturing outcomes.

- **Dell EMC VxRail:** The VxRail hyperconverged infrastructure creates a turnkey deployment at Edge that offers maximum flexibility for HA, scale and consolidation of OT workloads and applications.
- **Dell EMC PowerEdge Servers:** For scenarios where HA is not required at the Edge, the solution will run on single node PowerEdge server running VMware ESXi. Also, within the solution we have validated ruggedized server platforms (XR11 and XR12) that can offer deployment flexibility for the solutions outside of the datacenter.
- **VMware:** ESXi and vSphere bring traditional cloud multi-tenancy infrastructure to the edge, providing the needed infrastructure to consolidate multiple on-prem workloads into a single, manageable, securable platform. By disaggregating hardware and software lifecycles, IT departments can more easily and consistently maintain technology deployments across an entire fleet of retail locations.
- **Deep North:** The software resides on a virtual machine running on Dell hardware with VMware ESXi hypervisor. By leveraging GPU Passthrough technology to directly access the host system's underlying NVIDIA GPU and CUDA libraries, Deep North can execute machine learning inferencing on-prem at near native speeds.





Technical Specifications

The Dell Validated Design for Retail Edge has been validated on the following platforms

- XR11
- XR12
- R650
- R750XA
- VxRail E660F

The following table provides guidance on sizing underlying hardware capabilities when deploying a validated Deep North virtual machine. **NOTE these are starting points for reference.** Specific customer configs will vary based on at least the following 3 primary factors.

- 1) The number of camera streams Deep North will be processing. This maybe related but is not necessarily equal to the total number of cameras on site.
- 2) The number of days video should be retained across those cameras
- 3) The added compute resources of any additional workloads the retailer may wish to run along side the Deep North virtual machine.

Dell Validated Design - Base Config				
Additional Workload	Min		Max	
Physical CPU	Intel Xeon Silver 4310 2.1GHz	Intel Xeon Silver 4310 2.1GHz	Intel Xeon Gold 6248R 3.0GHz	Intel Xeon Gold 6248R 3.0GHz
Physical CPU Count	1	1	2	1
Physical CPU Cores	12	12	12	24
Physical Memory	64 GB	64 GB	64 GB	192 GB
Physical Storage	4x 480 GB SSD SATA	4x 480 GB SSD SATA	4x 480 GB SSD SATA	4x 480 GB SSD SATA
Software Requirement	VMware Edge Compute Stack			
vCPU	vSphere 7			
vCPU Count	1	2	2	2
vCPU Cores	8	8	8	24
VM Memory	16 GB	32 GB	32 GB	128 GB

15 Cameras					
SMALL	Nvidia GPU	1x TESLA T4	1xTESLA T4	1xTESLA T4	1xTESLA T4
	1 day storage (12 hrs daily recording)	200 GB	200 GB	200 GB	200 GB
	15-day storage (12 hrs daily recording)	3.5 TB	3.5 TB	3.5 TB	3.5 TB
25 Cameras					
MEDIUM	Nvidia GPU		1xTESLA T4	1xTESLA T4	1xTESLA T4
	1-day storage (12 hrs daily recording)		360 GB	360 GB	360 GB
	15-day storage (12 hrs daily recording)		5.5 TB	5.5 TB	5.5 TB
50 Cameras					
LARGE	Nvidia GPU			2x TESLA T4	2x TESLA T4
	1 day storage (12 hrs daily recording)			720 GB	720 GB
	15-day storage (12 hrs daily recording)			11 TB	11 TB