

Dell Technologies Validated Design for Manufacturing Edge with Litmus

Solution Overview

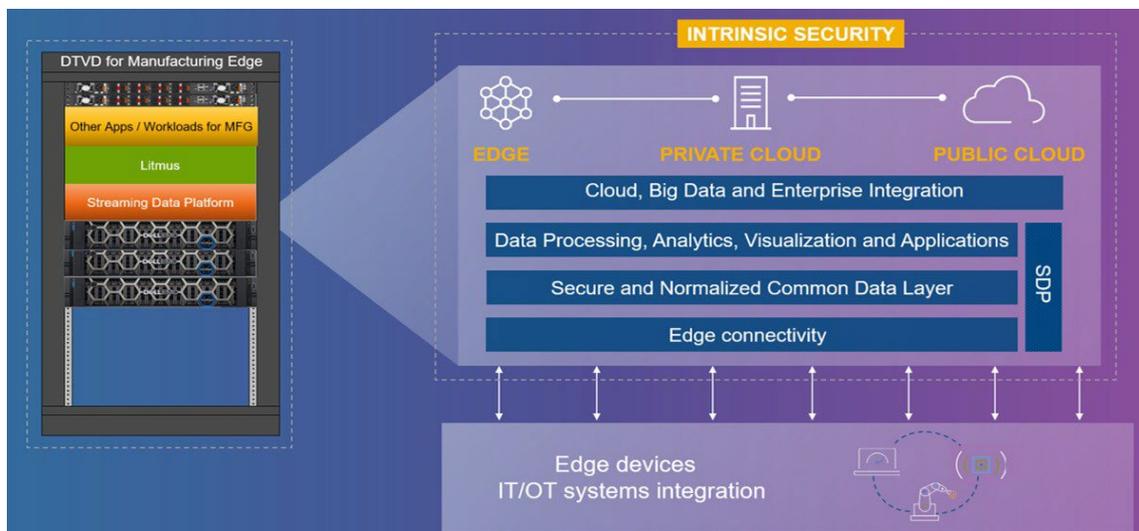
The Dell Technologies Validated Design for Manufacturing Edge with Litmus is a solution that simplifies the path to smart manufacturing outcomes by:

- 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
- Running artificial intelligence and machine learning workloads at the edge to predict, classify, and detect anomalies

Solution Detail

Within the Dell Technologies Validated Design for Manufacturing Edge with Litmus, there are four key building blocks that comprise the architecture to support the use cases and workloads for the smart manufacturing outcomes.

- **Dell VxRail:** The VxRail hyperconverged infrastructure creates a turnkey deployment at the edge that offers maximum flexibility for HA, scale, and consolidation of OT workloads and applications.
- **Dell PowerEdge Servers:** For scenarios where HA is not required at the edge, the solution runs on a single-node PowerEdge server running VMware ESXi. Also, within the solution we have validated ruggedized server platforms (XR11, XR12, and R650) that can offer deployment flexibility for solutions outside of the data center.
- **Dell Streaming Data Platform:** Streaming Data Platform (SDP) provides a storage capability for OT data streams. Also, SDP has integrated analytics capabilities. SDP is built on open-source platforms and runs on the VxRail as a VM specifically for this solution. SDP acts as the “aggregation point” for the data ingested across Litmus Edge instances in this solution. One or more SDP instances can be deployed depending on the deployment scenario.
- **Litmus:** Litmus Edge is a Linux-based OS that provides the IT/OT connectivity and capability to contextualize and normalize OT data. It can be run within a VM or on a gateway device. Litmus Edge Manager is the management solution that allows you to manage all the Litmus Edge deployments within the environment.



	        		
Workload size	Small Up to 5,000 tags	Medium Up to 15,000 tags	Large Up to 30,000 tags
Dell PowerEdge servers 	XR11, XR12, or R650	XR11, XR12, R650, or R750	R650 or R750
Dell VxRail HCI 	E660F, D5610F, or E560F	E660F, D5610F, or E560F	P570F, E660F, or D560F
Dell Streaming Data Platform			
 Litmus Edge software: Foundation, Growth, or Scale			
 VMware® vSAN® or VMware vSphere® Enterprise Plus or ESXi			

Technical Specifications

PowerEdge and VxRail Specifications

	Form Factor	#CPU	Compute	Memory	Storage	
Small > 5,000 tags	XR11	1U	1	Xeon® Silver 4316 2.3 G, 20C/40T, 10.4 GT/s, 30 M Cache	6 x 16 GB RDIMM	4 x 1.92 TB SSD SAS Mixed Use
	XR12	2U	1	Xeon® Silver 4316 2.3 G, 20C/40T, 10.4 GT/s, 30 M Cache	6 x 16 GB RDIMM	4 x 1.92 TB SSD SAS Mixed Use
	R650	1U	2	2 x Xeon® Silver 4310 2.1 G, 12C/24T, 10.4 GT/s, 18 M Cache	12 x 8 GB RDIMM	4 x 1.92 TB SSD SAS Mixed Use
	VxRail E560F	1U	1	Xeon® Gold 6226R 2.9 G, 16C/32T, 10.4 GT/s, 22 M Cache	6 x 16 GB RDIMM	1 x 800 GB SSD SAS Write Intensive 3 x 1.92 TB SSD SAS Read Intensive
	VxRail D560F	1U	2	2 x Xeon® Silver 4215 2.5 G, 8C/16T, 9.6 GT/s, 11 M Cache	8 x 16 GB RDIMM	1 x 800 GB SSD SAS Mix Use 3 x 1.92 TB SSD SAS Read Intensive
	VxRail E660F	1U	1	Xeon® Silver 4314 2.4 G, 16C/32T, 10.4 GT/s, 24 M Cache	8 x 16 GB RDIMM	1 x 800 GB SSD SAS Write Intensive 3 x 1.92 TB SSD SAS Read Intensive
Medium < 15,000 tags	XR11	1U	1	Xeon® Gold 5318N 2.1 G, 24C/48T, 11.2 GT/s, 36 M Cache	6 x 32 GB RDIMM	3 x 3.84 TB SSD SAS Mixed Use
	XR12	2U	1	Xeon® Gold 5318N 2.1 G, 24C/48T, 11.2 GT/s, 36 M Cache	6 x 32 GB RDIMM	3 x 3.84 TB SSD SAS Mixed Use
	R650	1U	2	2 x Xeon® Silver 4310 2.1 G, 12C/24T, 10.4 GT/s, 18 M Cache	12 x 16 GB RDIMM	3 x 3.84 TB SSD SAS Mixed Use
	R750	2U	2	2 x Xeon® Silver 4310 2.1 G, 12C/24T, 10.4 GT/s, 18 M Cache	12 x 16 GB RDIMM	3 x 3.84 TB SSD SAS Mixed Use
	VxRail E560F	1U	1	Xeon® Gold 6252 2.1 G, 24C/48T, 10.4 GT/s, 35.75 M	12 x 16 GB RDIMM	2 x 800 GB SSD SAS Write Intensive 4 x 3.84 TB SSD SAS Read Intensive
	VxRail D560F	1U	2	2 x Xeon® Silver 4210 2.2 G, 10C/20T, 9.6 GT/s, 13.75 M	12 x 16 GB RDIMM	2 x 800 GB SSD SAS Mix Use 4 x 3.84 TB SSD SAS Read Intensive
	VxRail E660F	1U	2	2 x Xeon® Silver 4310T 2.3 G, 10C/20T, 10.4 GT/s, 15 M	8 x 32 GB RDIMM	2 x 800 GB SSD SAS Write Intensive 4 x 3.84 TB SSD SAS Read Intensive

	Form Factor	#CPU	Compute	Memory	Storage
Large < 30,000	R650	1U	2 x Xeon® Platinum 8368 2.4 G, 38C/76T, 11.2 GT/s, 57 M Cache	16 x 16 GB RDIMM	6 x 3.84 TB SSD SAS Read Intensive
	R750	2U	2 x Xeon® Platinum 8368 2.4 G, 38C/76T, 11.2 GT/s, 57 M Cache	16 x 16 GB RDIMM	6 x 3.84 TB SSD SAS Read Intensive
	VxRail D560F	1U	2 x Xeon® Gold 6242 2.8 G, 16C/32T, 10.4 GT/s, 22 M Cache	16 x 16 GB RDIMM	2 x 800 GB SSD SAS Mix Use 6 x 3.84 TB SSD SAS Read Intensive
	VxRail E660F	1U	2 x Xeon® Gold 6326 2.9 G, 16C/32T, 11.2 GT/s, 24 M Cache	16 x 16 GB RDIMM	2 x 800 GB SSD SAS Write Intensive 6 x 3.84 TB SSD SAS Read Intensive
	VxRail E570F	2U	2 x Xeon® Gold 6246R 3.4 G, 16C/32T, 10.4 GT/s, 35.75 M Cache	16 x 16 GB RDIMM	2 x 800 GB SSD SAS Write Intensive 6 x 3.84 TB SSD SAS Read Intensive

Litmus

Litmus Edge 3.1.5.0 and Edge Manager 2.1.1

Predefined Config	Tags	Litmus VM(s)	LM VM	CPU/Mem Per Litmus VM	CPU/Mem LM VM	Storage Litmus Per VM	Storage LM VM
Small	5000	1	0	4 Cores/8 GB	N/A	60 GB	N/A
Medium	15000	3	1	4 Cores/8 GB	4 Cores/8 GB	60 GB	100 GB
Large	30000	6	1	4 Cores/8 GB	8 Cores/16 GB	60 GB	200 GB

Litmus Features

		Foundation (10,000 Tags)	Growth (15,000 tags)	Scale (30,000 tags)
Features	Product			
Industrial Common Data Layer (All Industrial Drivers) LoopFlows Integrations Data Storage	Litmus Edge	✓	✓	✓
Centralized Edge lifecycle Management Centralized Data Connectivity Centralized OTA Firmware Update Centralized Backup-Restore Centralized Template management	Litmus Edge	✗	✓	✓
Public Marketplace Access Native Docker Application Support	Litmus Edge	✗	✓	✓
Edge Analytics Manufacturing KPIs Edge Machine Learning Runtimes	Litmus Edge	✗	✓	✓
Vision Processing Modules	Litmus Edge	✗	✗	✓
	Litmus Edge Manager	✗	✗	✓