

DELL EMC INTEGRATED SYSTEM FOR MICROSOFT AZURE STACK HUB

Dell EMC Integrated System for Microsoft Azure Stack Hub powered by Dell Technologies hyper-converged infrastructure standard scale units

Overview

Dell EMC Integrated System for Microsoft Azure Stack Hub is a fully engineered hybrid cloud platform that is built on hyper-converged infrastructure powered by the latest Dell EMC PowerEdge servers. The platform leverages software defined compute, storage, and networking capabilities and is managed via a customer-owned instance of Azure Resource Manager, or the Azure control plane. This provides customers with a familiar Azure experience, whether in the public cloud or on-premises.

This architecture consists of common modular building blocks that scale linearly from 4 to 16 nodes in a scale unit (SU). Microsoft Azure Stack Hub provides a simple, cost-effective solution that delivers multiple performance and capacity options to match any use case and covers a wide variety of cloud-native applications and workloads.

Based on Microsoft Azure Stack Hub software and incorporating 2nd and 3rd generation Intel Xeon scalable processors, the Dell Technologies solution enables customers to start small and grow, scaling capacity and performance easily with minimal disruption. Scaling in predictable units ensures a “pay-as-you-grow” approach for future growth.

The following figure shows the solution architecture:

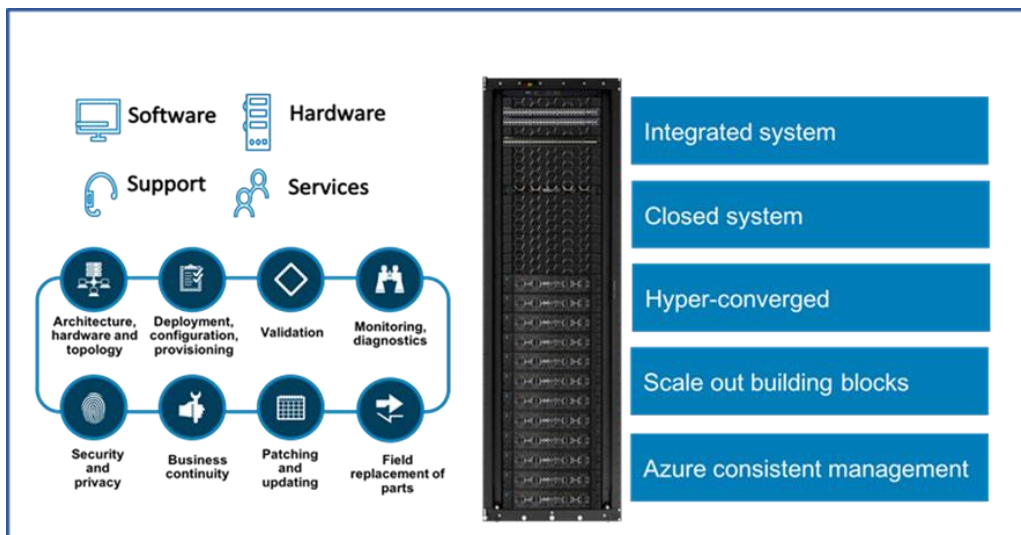


Figure 1 Solution architecture

Configuration options

The following table lists the dense, hybrid, and all-flash SUs that are available with the Integrated System for Microsoft Azure Stack Hub solution.

Table 1 Scale units

Server	Configuration	Minimum nodes	Maximum nodes
Dell EMC PowerEdge R740xd	Hybrid	4	16
Dell EMC PowerEdge R640	All flash	4	16
Dell EMC PowerEdge R840	Dense	4	16

Note: The configuration for tactical scale units can be found [here](#).

The following tables list the capacity and performance options that each SU supports.

Note: All SSD drives in the Scale Unit configurations noted below are SAS Mix Use (MU) unless otherwise stated.

Table 2 Capacity and performance option for dense configuration

Configuration	Processor	Memory	SSD capacity	GPU
96-core	Platinum 8260 24 cores, 2.4 GHz	1,532 GB	24 x 3.84 TB (92.16 TB)	None
48-core	Platinum 8260 24 cores, 2.4 GHz	1,532 GB	24 x 3.84 TB (92.16 TB)	2 x 32 GB NVIDIA V100s or 2 x 16 GB AMD Mi25

Table 3 Capacity and performance options for hybrid configurations

Configuration	Processor	Memory	Cache	Data storage
24-core	Silver 4214 12 cores, 2.2 GHz	384 GB	6 x 960/800 GB SSD = approx. 5.7 TB SAS	10 x 4 TB (40 TB) SAS
			6 x 1.92 TB (11.5 TB) SAS	10 x 8 TB (80 TB) SAS
				10 x 12 TB (120 TB) SAS
		576 GB	6 x 960/800 GB SSD = approx. 5.7 TB SAS	10 x 4 TB (40 TB) SAS
			6 x 1.92 TB (11.5 TB) SAS	10 x 8 TB (80 TB) SAS
				10 x 12 TB (120 TB) SAS

Configuration	Processor	Memory	Cache	Data storage
36-core	Gold 5220 18 cores, 2.2 GHz	384 GB	6 x 960/800 GB SSD = approx. 5.7 TB SAS	10 x 4 TB (40 TB) SAS
			6 x 1.92 TB (11.5 TB) SAS	10 x 8 TB (80 TB) SAS
				10 x 12 TB (120 TB) SAS
		576 GB	6 x 960/800 GB SSD = approx. 5.7 TB SAS	10 x 4 TB (40 TB) SAS
			6 x 1.92 TB (11.5 TB) SAS	10 x 8 TB (80 TB) SAS
				10 x 12 TB (120 TB) SAS
		768 GB	6 x 960/800 GB SSD = approx. 5.7 TB SAS	10 x 4 TB (40 TB) SAS
			6 x 1.92 TB (11.5 TB) SAS	10 x 8 TB (80 TB) SAS
				10 x 12 TB (120 TB) SAS
40-core	Gold 6248 20 Cores, 2.5 GHz	576 GB	6 x 960/800 GB SSD = approx. 5.7 TB SAS	10 x 4 TB (40 TB) SAS
			6 x 1.92 TB (11.5 TB) SAS	10 x 8 TB (80 TB) SAS
				10 x 12 TB (120 TB) SAS
		768 GB	6 x 960/800 GB SSD = approx. 5.7 TB SAS	10 x 4 TB (40 TB) SAS
			6 x 1.92 TB (11.5 TB) SAS	10 x 8 TB (80 TB) SAS
				10 x 12 TB (120 TB) SAS
48-core	Gold 6248R 24 Cores, 3.0 GHz	768 GB	6 x 960/800 GB SSD = approx. 5.7 TB SAS	10 x 4 TB (40 TB) SAS
			6 x 1.92 TB (11.5 TB) SAS	10 x 12 TB (120 TB) SAS
		1,536 GB	6 x 1.92 TB (11.5 TB) SAS	10 x 12 TB (120 TB) SAS
48-core	Platinum 8260 24 Cores, 2.4 GHz	768 GB	6 x 960/800 GB SSD = approx. 5.7 TB SAS	10 x 4 TB (40 TB) SAS
			6 x 1.92 TB (11.5 TB) SAS	10 x 8 TB (80 TB) SAS
				10 x 12 TB (120 TB) SAS
		1,536 GB	6 x 960/800 GB SSD = approx. 5.7 TB SAS	10 x 4 TB (40 TB) SAS
			6 x 1.92 TB (11.5 TB) SAS	10 x 8 TB (80 TB) SAS
				10 x 12 TB (120 TB) SAS

Table 4 Capacity and performance options for all-flash configurations

Configuration	Processor	Memory	SSD capacity	Optional GPU
24-core	Silver 4214 12 cores, 2.2 GHz	384 GB	10 x 1.92 TB (19.2 TB)	1 x 16 GB NVIDIA T4
		576 GB		None
		768 GB		None
36-core	Gold 5220 18 cores, 2.2 GHz	576 GB	10 x 1.92 TB (19.2 TB)	None
			10 x 3.84 TB (38.40 TB)	None
		768 GB	10 x 1.92 TB (19.2 TB)	None
			10 x 3.84 TB (38.40 TB)	1 x 16 GB NVIDIA T4
40-core	Gold 6248 20 Cores, 2.5 GHz	768 GB	10 x 1.92 TB (19.2 TB)	None
			10 x 3.84 TB (38.40 TB)	None
48-core	Gold 6248R 24 Cores, 3.0 GHz	768 GB	10 x 3.84 TB (38.40 TB)	1 x 16 GB NVIDIA T4
		1,536 GB		
48-core	Platinum 8260 24 cores, 2.4 GHz	768 GB	10 x 3.84 TB (38.40 TB)	None

Note: The capacity and performance options must be homogenous. You cannot mix and match within an SU.

Each SU also includes the required HLH server and network switches as listed in the following table.

Table 5 Server and network switches

Switch	Quantity	Hybrid configuration	All-flash configuration
Management server (HLH)	1	Dell EMC PowerEdge R640	Dell EMC PowerEdge R640
Top-of-rack (ToR)	2	Dell EMC Networking S5248-ON	Dell EMC Networking S5248F-ON Cisco Nexus 93180YC-FX Note: Cisco switch is only available in a customer-provided rack.
Management (Mgt)	1	Dell EMC PowerSwitch N3248TE-ON	Dell EMC PowerSwitch N3248TE-ON Cisco Nexus 9348GC-FXP Note: Cisco switch is only available in a customer-provided rack.

Table 6 Capacity and performance options for R640 HLH server

Configuration	Processor	Memory	SSD capacity
18-core	Gold 5220 – 18 cores, 2.2 GHz	192 GB	2 x 1.92 TB SAS Read Intensive (RI)

Environmental requirements

The following tables list the environmental requirements for an Integrated System for Microsoft Azure Stack Hub solution with different configurations of:

- SUs with 14th generation PowerEdge servers
- 200-volt AC input voltage
- 35°C maximum ambient temperature

Table 7 GPU environmental requirements

Object	4-node		8-node	
	Watts	BTU/hr	Watts	BTU/hr
NVIDIA V100s GPU				
Input power	7,159	24,400	13,391	45,600
Input current (amps) at 200 V _{IN}	35.8		68.0	
Weight	880 lbs (399 kg)		1,204 lbs (546 kg)	
AMD Mi25 GPU				
Input power	7,159	24,400	13,391	45,600
Input current (amps) at 200 V _{IN}	35.8		68.0	
Weight	880 lbs (399 kg)		1,204 lbs (546 kg)	
NVIDIA T4 GPU				
Input power	4009	13,679	6,621	22,591
Input current (amps) at 200 V _{IN}	18.4		30.0	
Weight	880 lbs (399 kg)		1,204 lbs (546 kg)	

Table 8 Dense configuration environmental requirements

Object	4-node		8-node		12-node		16-node	
	Watts	BTU/hr	Watts	BTU/hr	Watts	BTU/hr	Watts	BTU/hr
Input power	5,630	19,200	10,411	35,500	15,161	51,700	19,941	68,000
Input current (amps) at 200 V _{IN}	28.4		52.4		76.4		100.4	
Weight	880 lbs (399 kg)		1204 lbs (546 kg)		1,593 lbs (693 kg)		2301 lbs (1,044 kg) 2 racks	

Table 9 Hybrid configuration environmental requirements

Object		4-node		8-node		12-node		16-node	
		Watts	BTU/hr	Watts	BTU/hr	Watts	BTU/hr	Watts	BTU/hr
Input power	Min config.	3,395	11,577	5,979	20,388	8,563	29,200	11,147	38,011
	Mid config.	3,691	12,586	6,571	22,407	9,451	32,228	12,331	42,049
	Max config.	3,927	13391	7,043	24,017	10,159	34,642	13,275	45,268
Input current (amps)	Min config.	17.2		30.3		43.4		56.5	
	Mid config.	18.7		33.3		47.8		62.4	
	Max config.	19.9		35.6		51.4		67.1	
Weight		790 lbs (358 kg)		1,082 lbs (491 kg)		1,374 lbs (623 kg)		1,666 lbs (756 kg)	

Table 10 All-flash configuration environmental requirements

Object		4-node		8-node		12-node		16-node	
		Watts	BTU/hr	Watts	BTU/hr	Watts	BTU/hr	Watts	BTU/hr
Input power	Min config.	2,620	8,800	4,360	14,600	6,090	20,400	7,830	26,200
	Max config.	3,410	11,500	5,930	20,000	8,460	28,500	10,980	37,100
Input current (amps)	Min config.	13.1		21.8		30.5		39.7	
	Max config.	17.05		29.7		42.3		54.9	
Weight		703 lbs (319 kg)		899 lbs (408 kg)		1,096 lbs (497 kg)		1,292 lbs (586 kg)	

Table 11 PSU information for SUs and HLH

Server	Configuration	PSU
Dell EMC PowerEdge R740xd	Hybrid	2 x 1100 W
Dell EMC PowerEdge R640	All-flash	2 x 750 W or 2 x 1100 W
Dell EMC PowerEdge R840	Dense	2 x 1600 W
Dell EMC PowerEdge R640 HLH	HLH	2 x 750 W

PDU power-drop requirements

The following table lists the power drops required for each number of SUs.

Table 12 Power drop requirements

Number of SU nodes	Required number of power drops		
	Single phase	Three-phase Delta	Three-phase Wye
Dense (Non-GPU)			
4	4	2	2
8	6	2	2
12	8	4	2
16	10	6	4
Dense (GPU)			
4	4	2	2
8	6	2	2
12	10	4	4
16	12	4	4
Hybrid			
4	2	2	2
8	4	2	2
12	6	2	2
16	8	4	2
All flash			
4	2	2	2
8	4	2	2
12	4-6 ¹	2	2
16	6-8 ¹	2-4 ¹	2

¹ Higher number of drops if ordering with the Intel® Xeon® 6248R processors.

The integrated system enables you to use different PDU connector types to best integrate into your data center, as listed in the following table.

Table 113 PDU and connector options

Location	Single phase	Three-phase Delta	Three-phase Wye
North America, Japan	<ul style="list-style-type: none"> • L6-30P • L7-30P • Russellstoll 3750DP 	<ul style="list-style-type: none"> • Hubbell Pro CS8365L • Russellstoll 9P54U2T/1100 	<ul style="list-style-type: none"> • Hubbell C530P6S • ABL Sursum S52S30A • Flying Leads
International	IEC60309-332P6W	Russellstoll 9P54U2T/1100	<ul style="list-style-type: none"> • Hubbell C530P6S • ABL Sursum S52S30A • Flying Leads
Australia	Clipsal 56PA332		



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