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Specifications	AFF8020	AFF8040	AFF8060	AFF8080 EX
				
	8.3.1 Clustered Data ONTAP	**8.3.1 Clustered Data ONTAP**	**8.3.1 Clustered Data ONTAP**	**8.3.1 Clustered Data ONTAP**
Max Raw Capacity (HA)	921.6 TB	1105.92 TB	1105.92 TB	1105.92 TB
Recommended Min Raw Capacity Array LUNs (GB)	-	-	-	-
Absolute Min Raw Capacity Array LUNs (GB)	-	-	-	-
Max Storage Devices (HA)	240 (disks)	288 (disks)	288 (disks)	288 (disks)
Max DS2246 Shelves (HA)	10	12	12	12
Max DS4243 Shelves (HA)	Not Supported	Not Supported	Not Supported	Not Supported
Max DS4246 Shelves (HA)	Not Supported	Not Supported	Not Supported	Not Supported
Max DS4486 Shelves (HA)	Not Supported	Not Supported	Not Supported	Not Supported
Max DS14-Class Shelves (HA)	Not Supported	Not Supported	Not Supported	Not Supported
Max Nodes Per Cluster - NAS[1]	24	24	24	24
Max Nodes Per Cluster - SAN[1]	8	8	8	8
Aggregate Size 32 bit (TiB)	-	-	-	-
Aggregate Size 64 bit (TiB)	324	324	400[2]	400[2]
Min Size for an Array LUN Aggregate (GB)	-	-	-	-
Flex Volume Size 32 bit (TiB)	-	-	-	-
Flex Volume Size 64 bit (TiB)	70	100	100	100
Max Infinite Volume Data Constituent Size (TiB)	70	100	100	100
Max Volume Count	1000	1000	1000	1000
Max Array LUN Size (GB)	-	-	-	-
Min Array LUN Size (GB)	-	-	-	-
Min Array LUN Size – Root Volume (GB)	-	-	-	-
Min Root Volume Size	350 GB	350 GB	350 GB	350 GB
Spare Core Array LUN Min Size (GB)	-	-	-	-
Max RAID Groups in an Aggregate	-	-	-	-
Block Size (bytes)	-	-	-	-
Neighborhood Visible and Assigned Devices	-	-	-	-
Chassis Height	5.12" (13.00 cm)	10.20" (25.90 cm)	10.20" (25.90 cm)	10.20" (25.90 cm)
Chassis Width with Mounting Flanges				
Chassis Width without Mounting Flanges	17.60" (44.70 cm)	17.60" (44.70 cm)	17.60" (44.70 cm)	17.67" (44.88 cm)
Chassis Depth with Cable Mgmt	23.92" (60.75 cm)	24.29" (61.70 cm)	28.90" (73.40 cm)	29.00" (73.66 cm)
Chassis Depth without Cable Mgmt			24.29" (61.70 cm)	
Rack Units	3	6	6 (without IOXM) 12 (with IOXM)	6 (without IOXM) 12 (with IOXM)
Chassis Weight – Two Controllers Modules	74.08 lb (33.6 kg)	119.49 lb (54.2 kg)	121.47 lb (55.1 kg)	125.66 lb (57 kg)
Chassis Weight – Controller + IOXM	-	-	115.08 lb (52.2 kg)	121.47 lb (55.1 kg)
Front Clearance (Cooling/Maintenance)	10.01" (25.40 cm) 30.02" (76.20 cm)	5.99" (15.20 cm) 30.02" (76.20 cm)	5.99" (15.20 cm) 30.02" (76.20 cm)	5.99" (15.20 cm) 30.02" (76.20 cm)
Rear Clearance (Cooling/Maintenance)	12.02" (30.50 cm) 30.02" (76.20 cm)	12.02" (30.50 cm) 36.01" (91.40 cm)	12.02" (30.50 cm) 36.01" (91.40 cm)	12.02" (30.50 cm) 36.01" (91.40 cm)
Operating Temperature Range	50 to 104 deg F 10 to 40 deg C	50 to 104 deg F 10 to 40 deg C	50 to 104 deg F 10 to 40 deg C	50 to 104 deg F 10 to 40 deg C
Storage Temperature Range	-40 to 158 deg F -40 to 70 deg C	-40 to 158 deg F -40 to 70 deg C	-40 to 158 deg F -40 to 70 deg C	-40 to 158 deg F -40 to 70 deg C
Transit Temperature Range	-40 to 158 deg F -40 to 70 deg C	-40 to 158 deg F -40 to 70 deg C	-40 to 158 deg F -40 to 70 deg C	-40 to 158 deg F -40 to 70 deg C
Operating Relative Humidity	20 to 80 %	20 to 80 %	20 to 80 %	20 to 80 %
Storage Relative Humidity	5 to 95 %	5 to 95 %	5 to 95 %	5 to 95 %
Transit Relative Humidity	5 to 95 %	5 to 95 %	5 to 95 %	5 to 95 %
Operating Altitude	0 to 9997.44 ft 0 to 3048 m	0 to 9997.44 ft 0 to 3048 m	0 to 9997.44 ft 0 to 3048 m	0 to 9997.44 ft 0 to 3048 m
Storage Altitude	0 to 39989.8 ft 0 to 12192 m	0 to 39989.8 ft 0 to 12192 m	0 to 39989.8 ft 0 to 12192 m	0 to 39989.8 ft 0 to 12192 m
Transit Altitude	0 to 39989.8 ft 0 to 12192 m	0 to 39989.8 ft 0 to 12192 m	0 to 39989.8 ft 0 to 12192 m	0 to 39989.8 ft 0 to 12192 m
Acoustic Noise - Sound Power	7.5 bels	7.5 bels	7.6 bels	7.6 bels
Acoustic Noise - Sound Pressure	61.3 dBA	61.3 dBA	62.4 dBA	-
Input Power Voltage	100 to 120, 200 to 240	100 to 120, 200 to 240	4 x 64-bit 8-core 2.10 Ghz	4 x 64-bit 10-core 2.80 Ghz

Processor	2 x 64-bit 6-core 2.00 Ghz	2 x 64-bit 8-core 2.10 Ghz	100 to 120, 200 to 240[3]	100 to 120, 200 to 240[3]
Memory	48 GB	64 GB	128 GB	256 GB
NVRAM	8 GB (Onboard)	16 GB (Onboard)	16 GB (Onboard)	32 GB (Onboard)
Ethernet Ports	4 x RJ45 (1Gbps) 4 x SFP+ (10Gbps)	8 x RJ45 (1Gbps) 8 x SFP+ (10Gbps)	8 x RJ45 (1Gbps) 8 x SFP+ (10Gbps)	8 x RJ45 (1Gbps) 8 x SFP+ (10Gbps)
Fibre Channel Ports				
UTA2 Ports	4 x SFP+ (16Gbps)[4]	8 x SFP+ (16Gbps)[4]	8 x SFP+ (16Gbps)[4]	8 x SFP+ (16Gbps)[4]
Expansion Slots	4 x PCIe3	8 x PCIe3	8 x PCIe3 (without IOXM) 24 x PCIe3 (with IOXM)	6 x PCIe3 (without IOXM) 24 x PCIe3 (with IOXM)
SAS Ports	4 x QSFP (6Gbps)	8 x QSFP (6Gbps)	8 x QSFP (6Gbps)	8 x QSFP (6Gbps)
Max Back-End FC Loops (HA)	8	32	14	32
Min version of Data ONTAP 7				
Min version of Data ONTAP 8 (both modes)	8.3	8.3	8.3.1RC1 (with IOXM) 8.3 (without IOXM)	8.3 (with IOXM) 8.3.1 (without IOXM)
Max version of Data ONTAP 8 (both modes)	8.3.2RC2	8.3.2RC2	8.3.2RC2	8.3.2RC2
EOA				
EOS				

Notes ID	**Notes Description**
1	Maximum number of nodes within a cluster is determined by platform which supports the fewest number of nodes
2	This is the maximum aggregate size supported by Data ONTAP. Currently, an aggregate of this size cannot be configured using the available SSD capacities. However, this aggregate size will be configurable once larger capacity SSDs are available.
3	100V is not supported on single chassis HA Configurations.
4	The onboard UTA2 ports can be configured as FC Target/Initiator or CNA (FCoE target/Ethernet). The UTA2 ports are based on a dual port ASIC and both ports on each ASIC must be set to the same mode (enforced by Data ONTAP). Install X6599A-R6 10GbE SFP+ modules or approved copper twinax cables when using in CNA (FCoE target/Ethernet) mode. Install X6596-R6 16Gb FC SFP+ module when using in FC Target/Initiator mode.

INTERPRETING THESE MEASUREMENTS

The headings for the electrical requirements tables are defined as follows:

• Worst-case - Power consumption with system running on one PSU, high fan speed and power distributed over one power cord. DS4xxx disk shelves are an exception, in that they require two PSUs.

• Per PSU - Typical power needs, per PSU, for a system operating under normal conditions.

• System - Typical total power needs for two PSUs in a system operating under normal condition and power distributed over two power cords or four power cords for DS4243 disk shelves.

HOW THESE MEASUREMENTS ARE MADE

These published system measurements are conservative. The following assumptions, conditions and observations apply to these measurements:

• Line voltage is either 100V AC, 200V AC or -48V DC.

• Current and power are steady state rms values.

• Heat dissipation in BTU/hour is based on Watts multiplied by 3.4129

• Measurements are taken at room ambient.

• Data is collected for each individual controller, controller module, or disk shelf, not for clustered systems or other combinations. Except for platforms that have two controllers in one chassis.

• Each disk shelf is fully populated with a particular drive type and speed and exercised with multiple threads of a disk stress test program.

• Controllers or controller modules with PCI slots are fully populated and are exercised with test program.

• To account for customer work loads that exceed these conditions, the total system workload is calculated using random read disk_qual to obtain electrical current, power, and heat dissipation values.

• If the system configuration causes fan speed to increase or decrease, the data is collected in that mode.

• Because fan speed can vary for a given set of conditions, the worst case set of numbers is presented.

• Electrical requirements for systems containing performance accelerator, Flash Cache and Flash Cache 2 modules are measured with the maximum number of these modules installed in the system.

AFF8020 Dual Controllers

	100 to 120V (100V actual)		200 to 240V (200V actual)		200 to 240V (215V actual)		-60 to -40V (-40V actual)	
	Worst-Case, Single PSU	Typical System, Two PSU	Worst-Case, Single PSU	Typical System, Two PSU	Worst-Case, Single PSU	Typical System, Two PSU	Worst-Case, Single PSU	Typical System, Two PSU
Input Current Measured (Amps)	5.96	4.44	2.92	2.16	N/A	N/A	N/A	N/A
Input Power Measured (Watts)	596	444	583	432	N/A	N/A	N/A	N/A
Thermal Dissipation (BTU/hr)	2032	1514	1988	1473	N/A	N/A	N/A	N/A

AFF8040 Dual Controllers

	100 to 120V (100V actual)		200 to 240V (200V actual)		200 to 240V (215V actual)		-60 to -40V (-40V actual)	
	Worst-Case, Single PSU	Typical System, Two PSU	Worst-Case, Single PSU	Typical System, Two PSU	Worst-Case, Single PSU	Typical System, Two PSU	Worst-Case, Single PSU	Typical System, Two PSU
Input Current Measured (Amps)	8.76	6.05	4.28	2.98	N/A	N/A	N/A	N/A
Input Power Measured (Watts)	876	605	855	596	N/A	N/A	N/A	N/A
Thermal Dissipation (BTU/hr)	2987	2063	2916	2032	N/A	N/A	N/A	N/A

AFF8060 Single Controller and IOXM

	100 to 120V (100V actual)		200 to 240V (200V actual)		200 to 240V (215V actual)		-60 to -40V (-40V actual)	
	Worst-Case, Single PSU	Typical System, Two PSU	Worst-Case, Single PSU	Typical System, Two PSU	Worst-Case, Single PSU	Typical System, Two PSU	Worst-Case, Single PSU	Typical System, Two PSU
Input Current Measured (Amps)	9.29	6	4.5	3	N/A	N/A	N/A	N/A
Input Power Measured (Watts)	929	608	904	601	N/A	N/A	N/A	N/A
Thermal Dissipation (BTU/hr)	3167	2075	3084	2051	N/A	N/A	N/A	N/A

AFF8060 Dual Controllers

	100 to 120V (100V actual)		200 to 240V (200V actual)		200 to 240V (215V actual)		-60 to -40V (-40V actual)	
	Worst-Case, Single PSU	Typical System, Two PSU	Worst-Case, Single PSU	Typical System, Two PSU	Worst-Case, Single PSU	Typical System, Two PSU	Worst-Case, Single PSU	Typical System, Two PSU
Input Current Measured (Amps)	N/A	N/A	5.04	3.76	N/A	N/A	N/A	N/A
Input Power Measured (Watts)	N/A	N/A	1007	752	N/A	N/A	N/A	N/A
Thermal Dissipation (BTU/hr)	N/A	N/A	3434	2564	N/A	N/A	N/A	N/A

AFF8080 EX Single Controller and IOXM

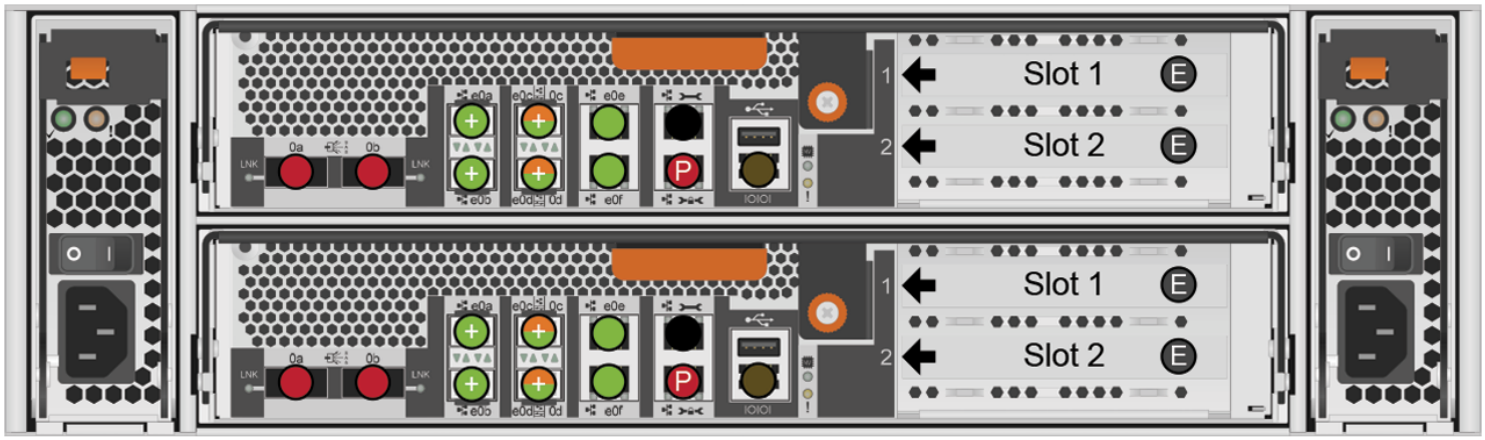
	100 to 120V (100V actual)		200 to 240V (200V actual)		200 to 240V (215V actual)		-60 to -40V (-40V actual)	
	Worst-Case, Single PSU	Typical System, Two PSU	Worst-Case, Single PSU	Typical System, Two PSU	Worst-Case, Single PSU	Typical System, Two PSU	Worst-Case, Single PSU	Typical System, Two PSU
Input Current Measured (Amps)	9.9	6.72	4.92	3.36	N/A	N/A	N/A	N/A
Input Power Measured (Watts)	981	655	953	645	N/A	N/A	N/A	N/A
Thermal Dissipation (BTU/hr)	3348	2234	3252	2199	N/A	N/A	N/A	N/A

AFF8080 EX Dual Controllers

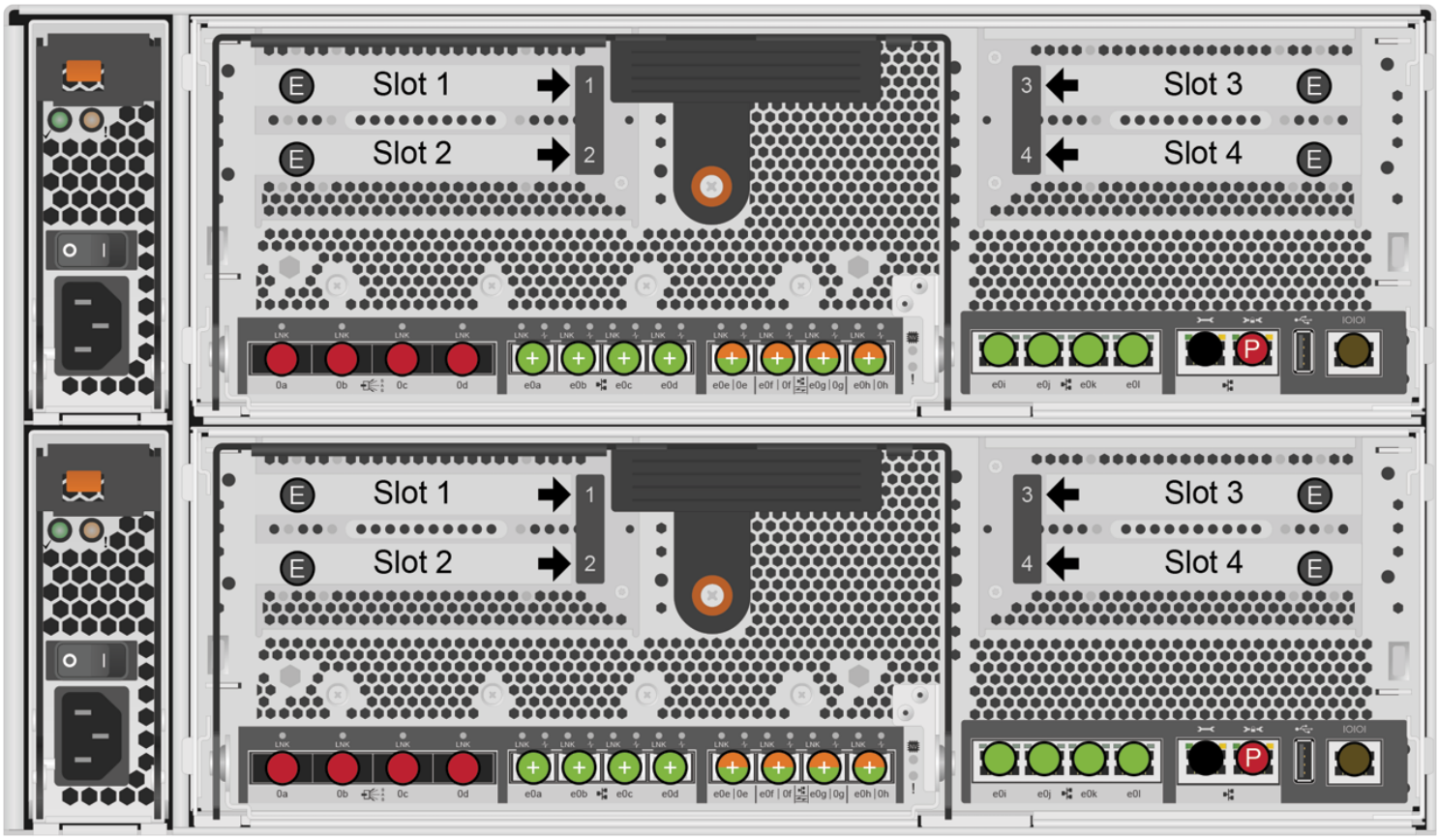
	100 to 120V (100V actual)		200 to 240V (200V actual)		200 to 240V (215V actual)		-60 to -40V (-40V actual)	
	Worst-Case, Single PSU	Typical System, Two PSU	Worst-Case, Single PSU	Typical System, Two PSU	Worst-Case, Single PSU	Typical System, Two PSU	Worst-Case, Single PSU	Typical System, Two PSU
Input Current Measured (Amps)	N/A	N/A	5.74	4.2	N/A	N/A	N/A	N/A
Input Power Measured (Watts)	N/A	N/A	1116	789	N/A	N/A	N/A	N/A
Thermal Dissipation (BTU/hr)	N/A	N/A	3809	2693	N/A	N/A	N/A	N/A

Rear View Images

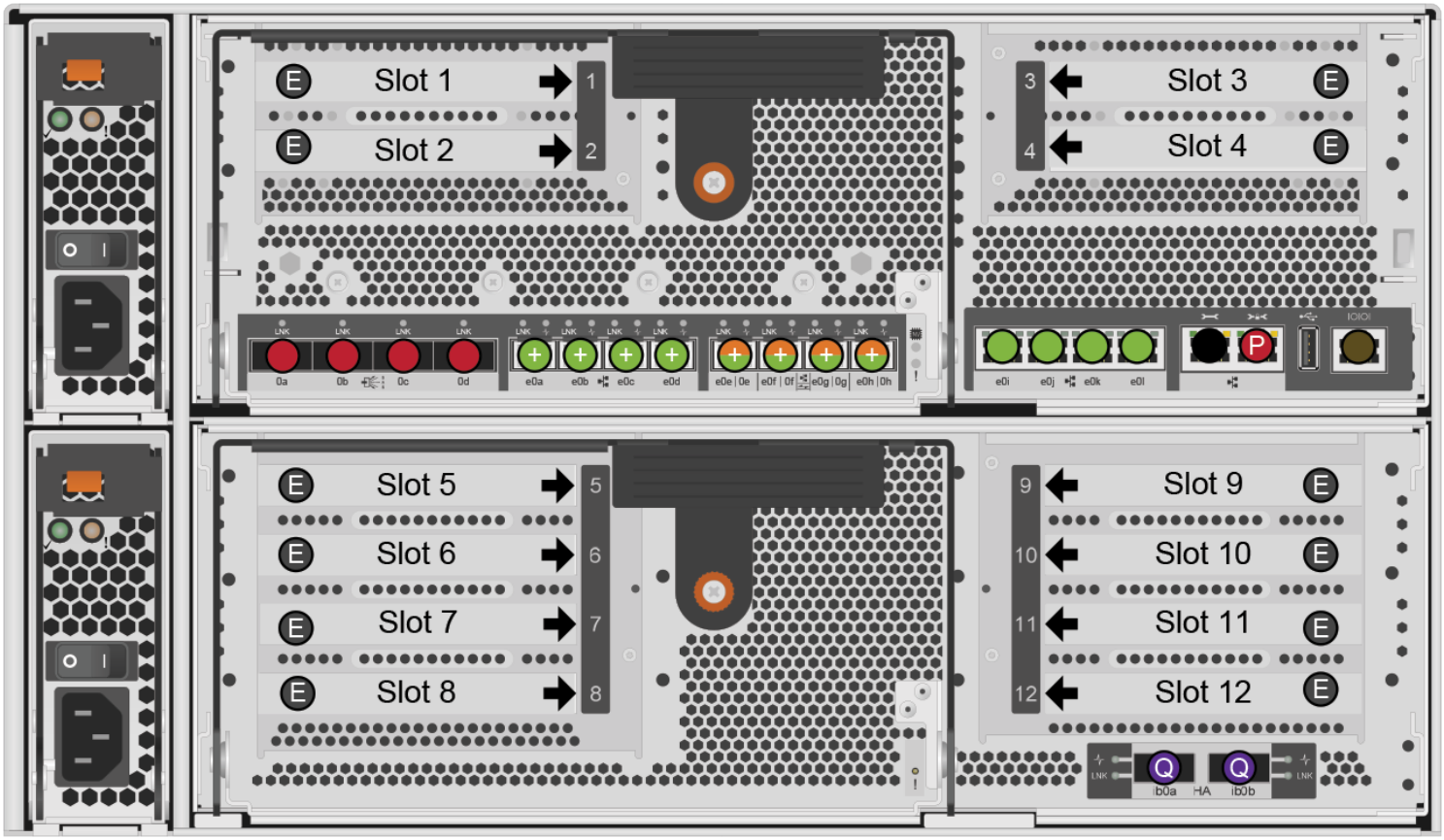
Rear View - AFF8020 (Controller + Controller)



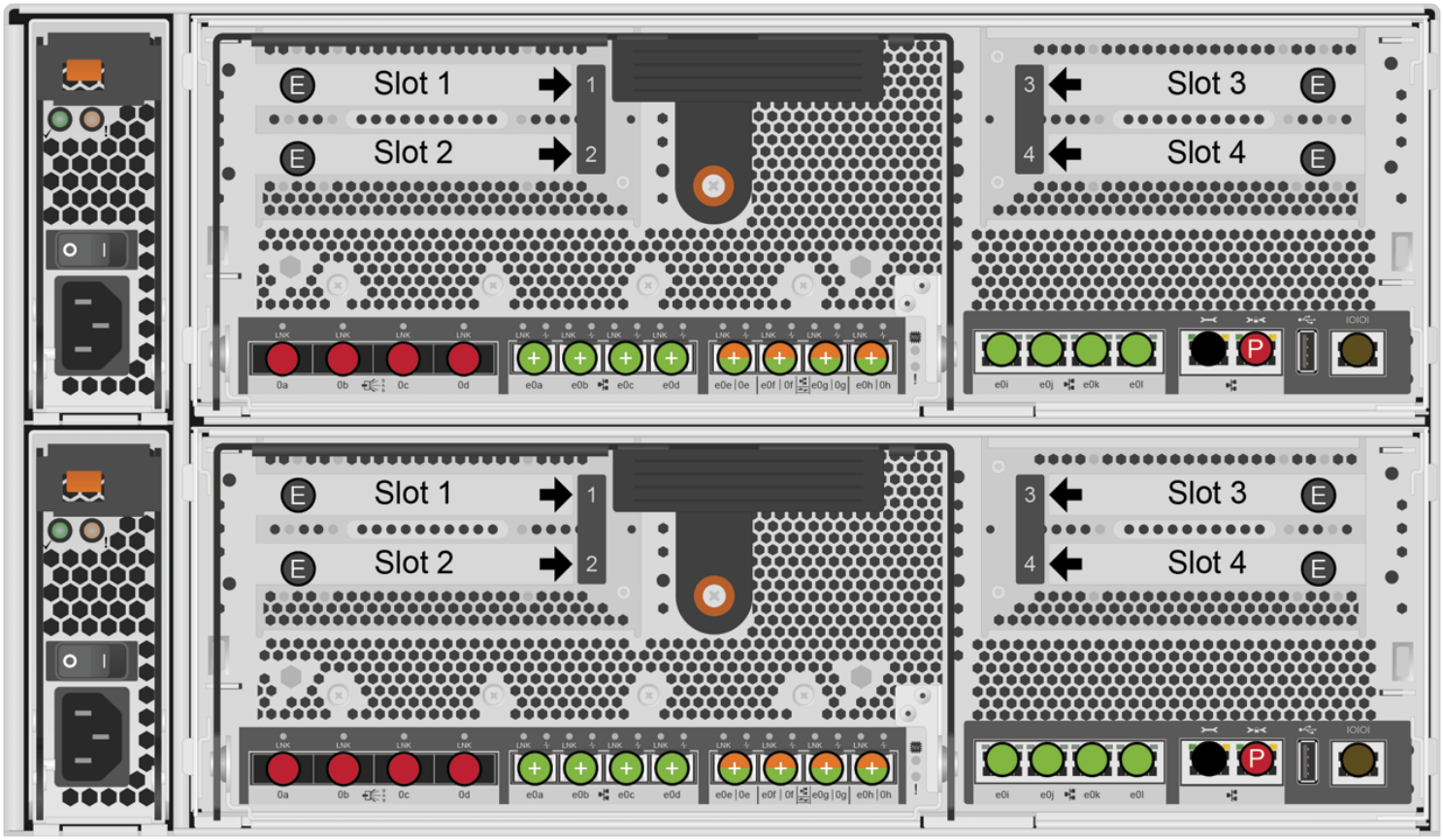
Rear View - AFF8040 (Controller + Controller)



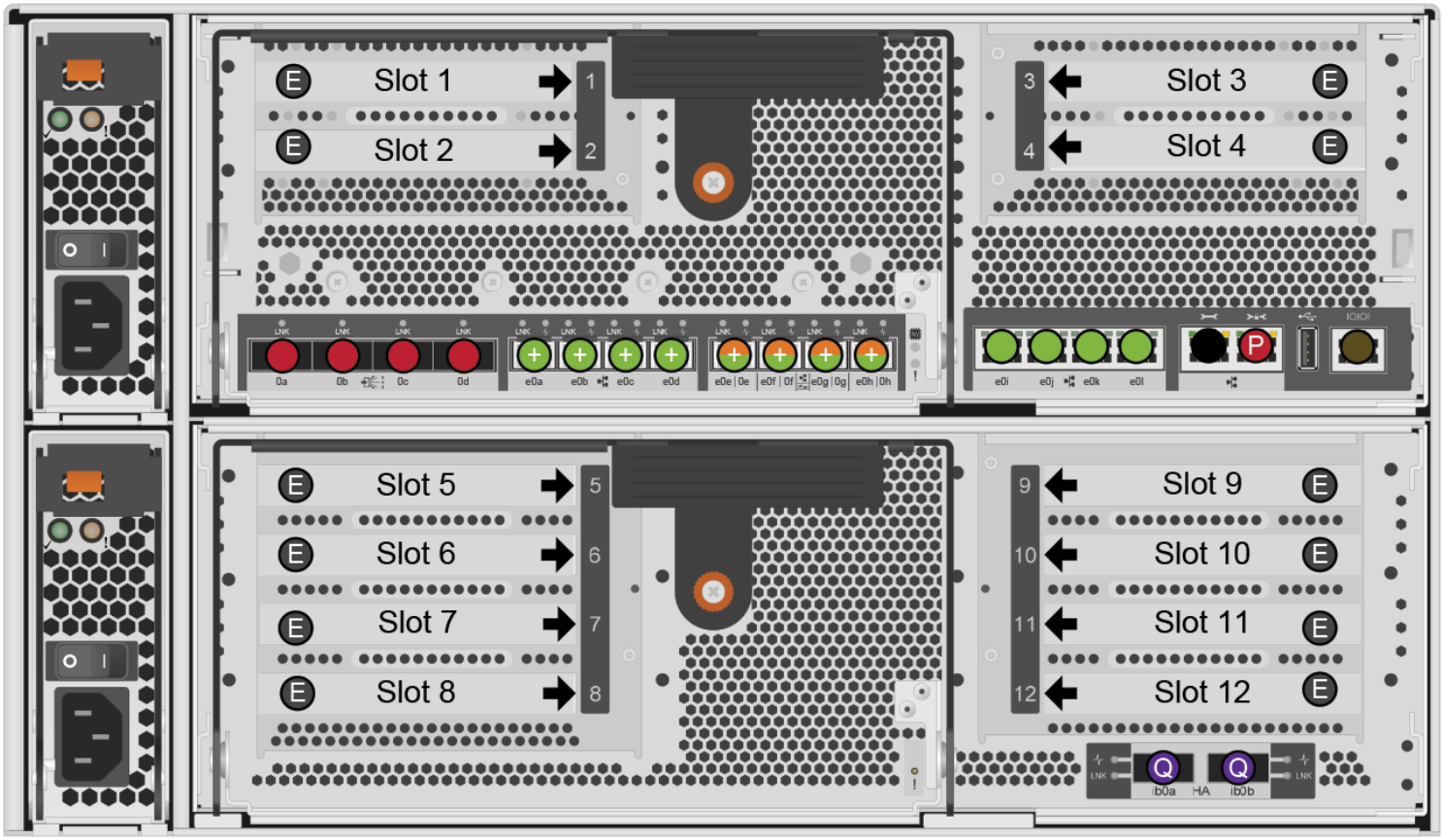
Rear View - AFF8060 (Controller + IOXM)



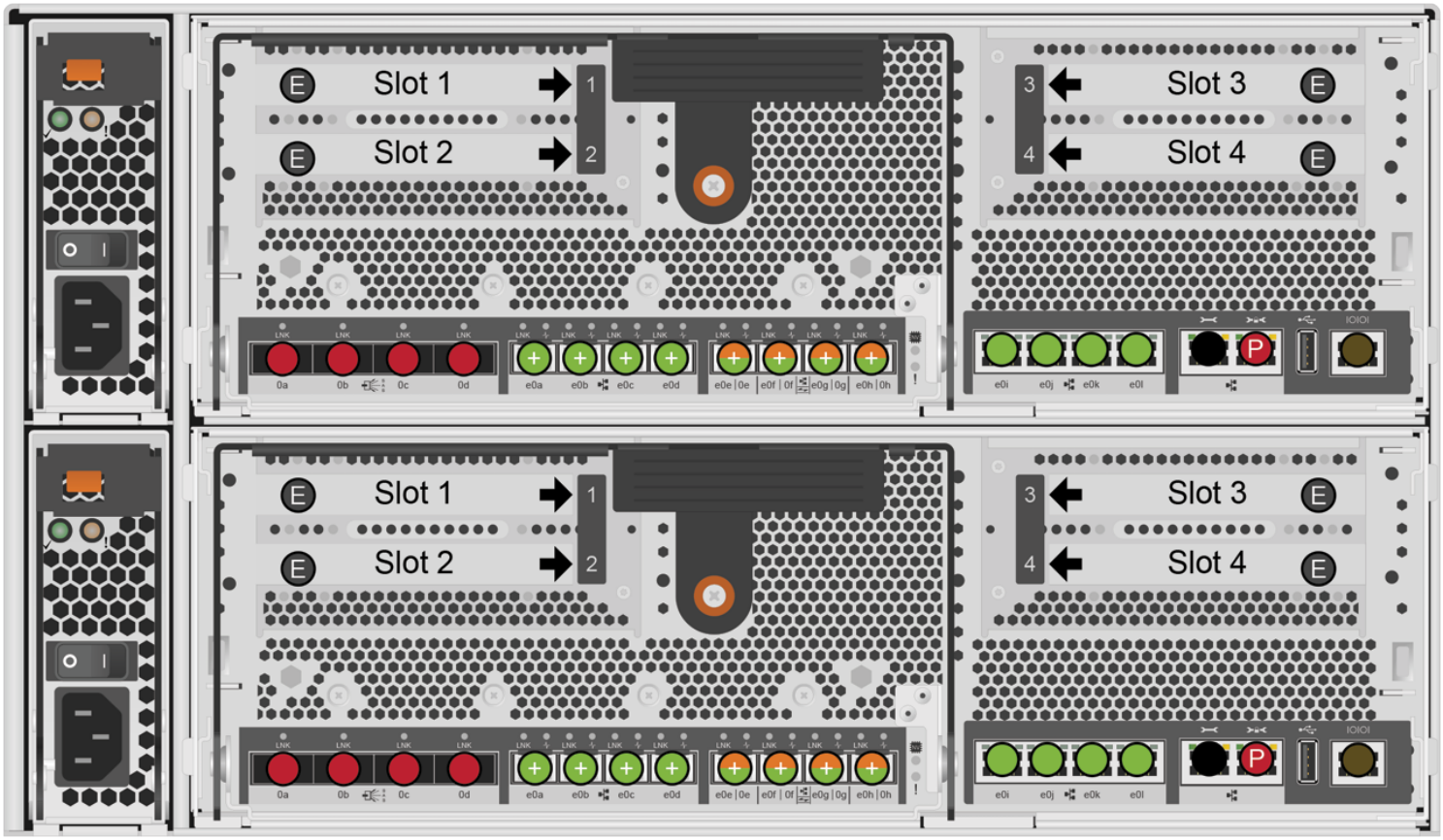
Rear View - AFF8060 (Controller + Controller)



Rear View - AFF8080 EX (Controller + IOXM)



Rear View - AFF8080 EX (Controller + Controller)



Expansion Slot PCIe (E)	Gigabit Ethernet RJ45	2/4Gb Fibre Channel SFP	SCSI-LVD VHDCI (L)	Serial Console RJ45	HA Interconnect IB4X
Expansion Slot PCI-X (X)	10 Gigabit Ethernet SFP+	8Gb Fibre Channel SFP+	3/6Gb SAS QSFP	Remote Management RJ45	HA Interconnect QSFP (Q)
Expansion Slot Mezzanine (M)	10 Gigabit Ethernet RJ45 (T)	10/16Gb UTA2 SFP+	Alternate Control Path RJ45 (P)		HA Interconnect SFP+
Expansion Slot Install Direction					