

Storage Networking I/O Guide



LAN/SAN Converged
(FC/FCoE)

1GbE iSCSI
and NAS

10GbE iSCSI
and NAS

Fibre Channel

Storage Array
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Interoperability
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Technical Guides

I/O Connectivity Options for Dell Storage

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Quick Reference Guide

	LAN/SAN converged	8Gbps FC	16Gbps FC			
						
Models	Dell S5000	Brocade 300	Brocade 6505	Brocade 6510	Brocade 6520	Brocade 8510
Overview	Fully modular converged fabric switch to unify LAN and SAN	Entry-level Gen 4 FC switch	Entry-level Gen 5 FC switch	Mid-market Gen 5 FC switch	High-density Gen 5 FC switch	High-density Gen 5 FC Director switch
Performance						
Switching capacity	1.28Tbps	192Gbps	384Gbps	768Gbps	1536Tbps	8.2Tbps
Latency (micro sec)	0.8µs	0.7µs	0.8µs	0.8µs	0.7µs – 2.1µs	0.8µs – 2.4µs
Ports						
1GbE	Up to 48 using modules	-	-	-	-	-
10GE	48 or 64 (with breakout)	-	-	-	-	-
40GE	4	-	-	-	-	-
8Gbps FC	Up to 12	Up to 24	Up to 24	-	-	-
16Gbps FC	-	-	Up to 24	Up to 48	Up to 96	Up to 384
Expansion modules	4 slots and 2 choices: *12 port 1/10GbE *12 port 10GbE/8Gbps FC	-	-	-	-	8/4 slots and 5 choices *FC16-32, FC16-48, FC16-64 *FC8-64
Power and cooling						
Power options	AC or DC	AC	AC	AC	AC	AC
Redundant power supplies	2 hot-swappable	1, fixed	1+1 hot-swappable	2 hot-swappable	2 hot-swappable	2 hot-swappable
Air flow	F>B/B>F hot-swappable	B>F	B>F	F>B/B>F	F>B/B>F	B>F
Features						
Storage technologies	FC, FCoE, RoCE, iSCSI	FC	FC	FC	FC	FC
Port types	F, E, NPIV N	FL, F, E, M, NPIV N	FL, F, E, M, NPIV N	FL, F, E, M, NPIV N	FL, F, E, M, NPIV N	FL, F, E, M, NPIV N
Domain/fabric	3	56	56	56	56	-
Hops/fabric	2	7	7	7	7	7
Link aggregation	Session based distribution	ISL trunking	ISL trunking	ISL trunking	ISL trunking	ISL trunking
Fabric services	Zoning, FSPF, NPIV, RSCN, SNS	Zoning, FSPF, NPIV, RSCN, SNS, frame filtering	Zoning, FSPF, NPIV, RSCN, SNS, frame filtering	Zoning, FSPF, NPIV, RSCN, SNS, frame filtering	Zoning, FSPF, NPIV, RSCN, SNS, frame filtering	Zoning, FSPF, NPIV, RSCN, SNS, frame filtering



Quick Reference Guide

	LAN/SAN converged		8Gbps		16Gbps	
						
Models	Dell MXL		IO Aggregator	Brocade M5424	Dell 8/4Gbps Pass-Through	Brocade M6505
Overview	Fully modular converged switch to unify LAN and SAN		Converge infrastructure and connect easily to 3 rd party networks	Advanced 8Gbps FC switch	Basic 8Gb Aggregator	High-performance 16Gbps FC switch
Performance						
Switching capacity	1.28Tbps		192Gbps	256Gbps	384Gbps	
Latency (micro sec)	0.8µs		0.7µs	-	0.7µs	
Ports						
Internal blade server ports	32 (10GbE)		16	16	16	
External 1/10GbE	8 or 24 (with breakout)		-	-	-	
40GE	Up to 6		-	-	-	
8Gbps FC	Up to 8		8	16	-	
16Gbps FC	-		-	-	8	
Expansion modules	2 slots and 4 choices: <ul style="list-style-type: none"> 4 port 1/10GbE (RJ-45), maximum of one per switch 4 port 1/10GbE (SFP+) 2 port 40GbE (QSFP+) 4 port 8Gbps FC (SFP+) 	2 slots and 4 choices: <ul style="list-style-type: none"> 4 port 1/10GbE (RJ-45), maximum of one per switch 4 port 1/10GbE (SFP+) 2 port 40GbE (QSFP+) 4 port 8Gbps FC (SFP+) 	-	-	-	
Features						
Storage technologies	FC, FCoE, RoCE, iSCSI		FC, FCoE, RoCE, iSCSI	FC	FC	FC
Port types	NPIV N		NPIV N	FL, F, E, M, NPIV N	N_Port	FL, F, E, M, NPIV N
Domain/fabric	1		1	56	Not applicable	56
Hops/fabric	1		1	7	Not applicable	7
Link aggregation	Session based distribution		Session based distribution	ISL trunking	-	ISL trunking
Fabric services	Zoning, F_Port, NPIV		Zoning, F_Port, NPIV	Zoning, FSPF, NPIV, RSCN, SNS, frame filtering	-	Zoning, FSPF, NPIV, RSCN, SNS, frame filtering

- RoCE: RDMA over Converged Ethernet
- ISL Trunking: Brocade proprietary technology for link aggregation
- SNS: Enabled automated discovery, management and configuration of FC devices.
- NPIV: N_Port ID Virtualization is a Fibre Channel facility allowing multiple N_Port IDs to share a single physical N_Port
- RSCN: Registered state change notification (RSCN) is a Fibre Channel fabric's notification sent to all specified nodes in case of any major fabric changes
- Frame filtering: Brocade technology is the foundation of Brocade advanced performance monitoring
- FSPF: Routing protocol used in Fibre Channel networks






Quick Reference Guide

	1/10GbE ToR/access				1/10GbE blade	
						
Models	Dell S55	Dell S60	N2000	N3000	M6220	M6348
Overview	High throughput switch for demanding applications	Deep buffer switch to smooth out traffic spikes	Powerful and economical switches providing layer 2 connectivity	Power efficient and resilient with advanced layer 2/3 features	Flexible layer 2/3 switch with dual expansion slots	Leverage existing Ethernet cabling to enable broader scalability in the data center
Performance						
Switching capacity (Gbps)	176	176	172 (24P) / 220 (48P)	212 (24P) / 260 (48P)	128	184
Latency (micro sec)	<5µs	<9µs	(Note 1)	(Note 1)	6.3µs	3.6µs
Buffer size	4MB	1.25GB	4MB	4MB	768KB	4MB
Ports						
10/100/1000BASE-T	444	44	24 / 48	24/48/[2 combo N3024F]	4	16
1GbE (SFP) / 1GbE internal	4	4	-	2 combo / [24 N3024F]	16 Internal	32 internal
10GbE (SFP+)	4	4	2	2	-	2 SFP+ and 2 CX4
Expansion modules	2 slots and 2 choices: •2 port 10GbE SFP+ •2 port 12Gbps stacking	2 slots and 3 choices: •2 port 10GbE SFP+ •2 port 12Gbps stacking •1 port 24Gbps stacking	-	1 slots and 2 choices: •2 port 10GbE SFP+ •2 port 10GBASE_T	2 slots and 4 choices: •2 port 1/10GbE SFP+ •2 port 10GBASE-T •2 port CX4 1/10GbE •48Gbps Stacking module	-
Power and cooling						
Power options	AC or DC	AC or DC	AC	AC	N/A	N/A
Redundant power supplies	2 hot-swappable	2 hot-swappable	1	2 hot-swappable	N/A	N/A
Air flow ²	F>B/B>F hot-swappable	F>B/B>F hot-swappable	F>B	F>B	N/A	N/A
Features						
Storage technologies	iSCSI aware (detect and prioritize iSCSI traffic into pre-defined QoS); iSCSI Auto-Configuration (switch configuration routine for automated setup and optimal performance with Dell EqualLogic or Compellent arrays)					
Stacking	Up to 12	Up to 12	Up to 12	Up to 12	Up to 6	Up to 12
Jumbo frames	9,252	9,252	9,216	9,216	9,216	9,216
Max MAC entries	32K	32K	16K	32K	16K	16K
VLT / MLAG	Not supported	Not supported	Supported	Supported	Not supported	Not supported



Quick Reference Guide



10/40GbE
LAN/SAN converged or non-converged

					
Models	S4810	S4820T	S5000	N4000	S6000
Overview	High-performance switches designed to deliver non-blocking throughput for dense traffic environments			Power-efficient, flexible, and cost effective	Maximum density for large scale environments
Performance					
Switching capacity	1.28Tbps			640Gbps (24P) / 1.28Tbps (48P)	2.56Tbps
Latency (micro sec)	0.8µs	3.3µs	0.8µs	0.8µs	0.6µs
Buffer size	9MB			9MB	12MB
Ports					
1/10GE	48 SFP+	48 10GBASE-T	Up to 48 SFP+	48 SFP / 48 10GBASE-T	-
40GE	4 ³	4 ³	4 ³	4 ³	32 ³
Expansion modules	-	-	4 slots and 2 choices: •12 port 1/10GbE •12 port 10GbE or 2/4/8Gbps FC	1 slots and 3 choices: •4 port 10GbE SFP+ module •4 port 10GBASE-T module •2 port 40GbE QSFP+ module	-
Power and cooling					
Power options	AC or DC	AC or DC	AC or DC	AC	AC
Redundant power supplies	2 hot-swappable	2 hot-swappable	2 hot-swappable	2 hot-swappable	2 hot-swappable
Air flow ²	F>B/B>F hot-swappable	F>B/B>F hot-swappable	F>B/B>F hot-swappable	F>B hot-swappable	F>B/B>F hot-swappable
Features					
Storage technologies	iSCSI aware (detect and prioritize iSCSI traffic into pre-defined QoS); iSCSI Auto-Configuration (switch configuration routine for automated setup and optimal performance with Dell EqualLogic or Compellent arrays)				
DCB	Supported	Supported	Supported	Supported	Supported
DCBX (iSCSI TLV)	Supported	Supported	Supported	Supported	Supported
Stacking	Up to 6	Up to 6	Up to 6	Up to 12	-
VLT/MLAG	Supported	Supported	Supported	Supported	Supported
Jumbo frames	12K	12K	12K		12K





Quick Reference Guide

10/40GbE LAN/SAN converged or non-converged	
	 
Models	MXL IO Aggregator
Overview	Fully modular converged switch to unify LAN and SAN Converge infrastructure and connect easily to 3 rd party networks
Performance	
Switching capacity	1.28Tbps
Latency (micro sec)	0.68µs
Buffer size	9MB
Ports	
1/10GE	32 internal
40GE	2 ³
Expansion modules	2 slots and 3 choices: <ul style="list-style-type: none"> • 4 port 1/10GbE (RJ-45), maximum of one per switch • 4 port 1/10GbE (SFP+) • 2 port 40GbE (QSFP+) • 4 port 2/4/8Gbps FC (SFP+)
Power and cooling	
Power options	N/A
Redundant power supplies	N/A
Air flow	N/A
Features	
Storage technologies	iSCSI aware (detect and prioritize iSCSI traffic into pre-defined QoS); iSCSI Auto-Configuration (switch configuration routine for automated setup and optimal performance with Dell EqualLogic or Compellent arrays)
DCB	Supported
DCBX (iSCSI TLV)	Supported
Stacking	Up to 6
VLT/MLAG	Supported
Jumbo frames	12K

Notes

1. Varies depending upon the switch model. Check sourcebook for specifics.
2. F>B air flow represents I/O side to utility side airflow. B>F air flow represents utility side to I/O side airflow.
3. 40GbE QSFP+ ports can also be used as 10GbE ports using 40GbE to 4x10GbE breakout cables

Storage networking products

LAN/SAN converged (FC/FCoE)

MXL
PowerEdge M I/O Aggregator

S5000



1Gb iSCSI & NAS

M6348
M6220

N2000
N3000
S55
S60



10Gb iSCSI & NAS

MXL
PowerEdge M I/O Aggregator

N4000
S4810
S4820T
S5000
S6000



Fibre Channel

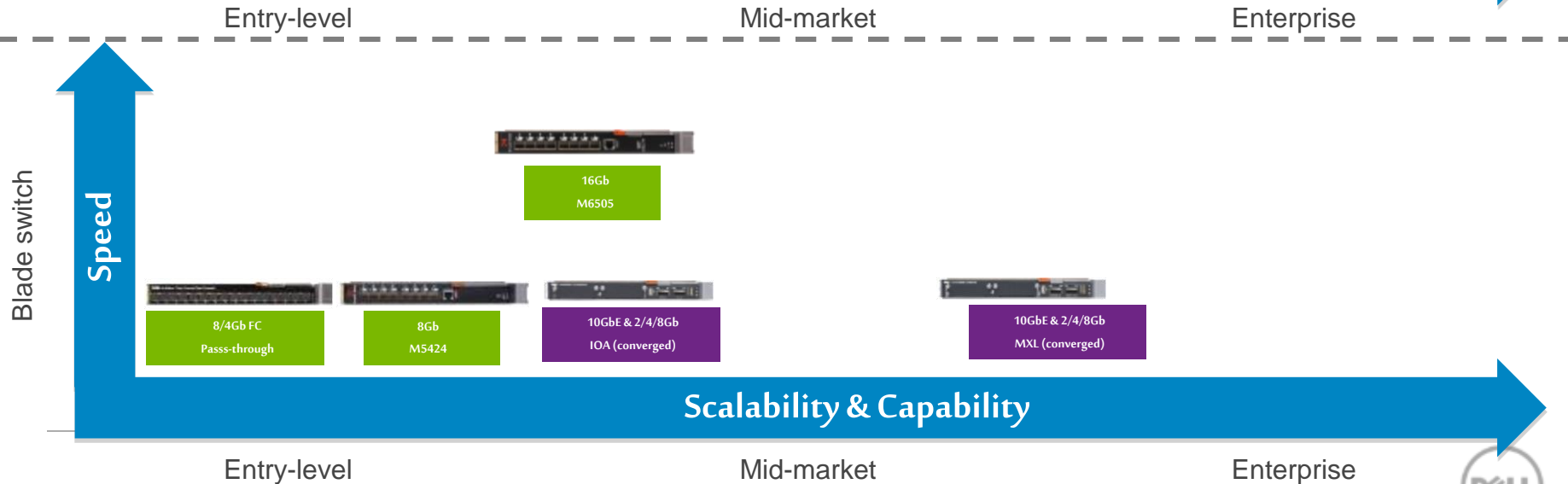
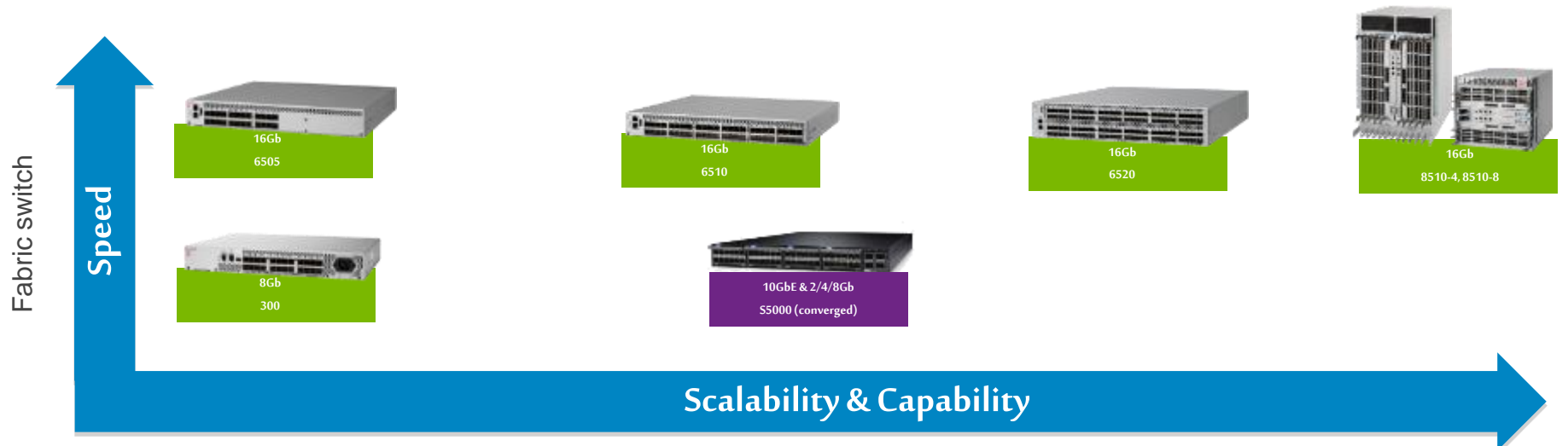
Brocade M6505
Brocade M5424
8Gb FC Pass-Through

Brocade 300
Brocade 6505
Brocade 6510
Brocade 6520
Brocade 8510



Storage Networking Portfolio Positioning

FC and FCoE



Storage Networking Portfolio Positioning

iSCSI and NAS



LAN/SAN Converged (FC/FCoE*)



10/40Gb Switch
S5000



10/40Gb
Switch
MXL

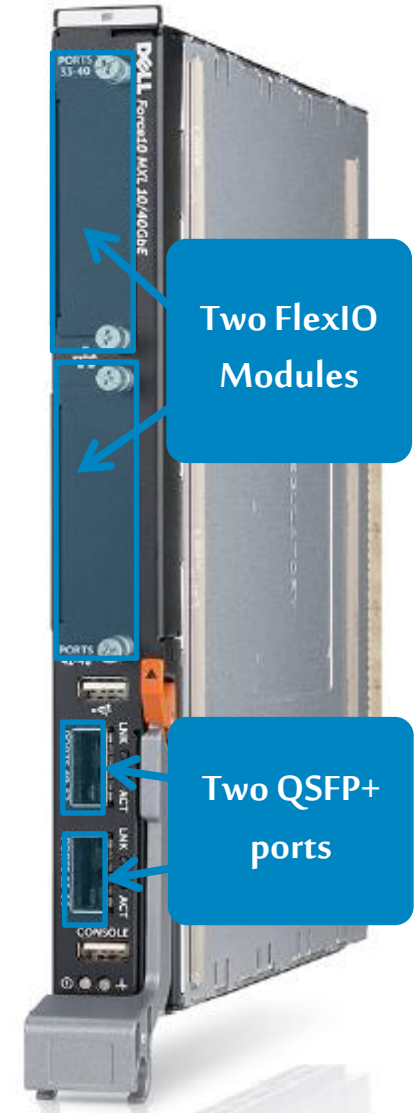
10Gb
Plug & Play
M-IOA



MXL – 10/40GbE blade



- Industry leading 56 port design:
 - 32x 10Gb internal server ports
 - Up to 6 external 40Gb ports
 - Up to 24 external 10Gb ports (6 QSFP+ ports with breakout cables)
- Two FlexIO bays enable choice (Modules can be different)
 - 2-port 40GbE QSFP+ module (can convert to 8-port 10GbE SFP+ using breakout cables)
 - 4-port 10GbE SFP+ module
 - 4-port 10GBASE-T module (If running Base-T module then second IO slot must be of different type due to power constraints)
 - 4-port FC module
- Stack up to 6 devices
- VLT
- PVST+ protocol for easy integration into Cisco environments
- Converged
 - Supports DCB (protocols PFC, ETC and DCBx)
 - Converged iSCSI with EqualLogic (supports iSCSI TLV)
 - Two FCoE Options
 - Native Fibre Channel uplinks with FC FlexIO module (FCoE on internal ports to the servers)
 - FCoE transit to top of rack switch with IOM acting as a FIP Snooping Bridge
- Industry standard CLI
- Enterprise class OS (FTOS)



MXL - 10/40GbE blade



Adapters

- 11G
- Broadcom 57712-k
 - Brocade BR1741M-k
 - Intel X520-x/k
 - QLogic QME8242-k

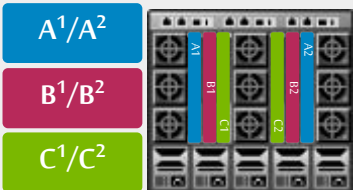
- 12G
- Broadcom 57810S-k
 - Broadcom 57840S-k
 - Brocade BR1741M-k
 - Intel X520-x/k
 - QLogic QME8262-k

Supports connectivity to 10Gb-KR adapters, all of which are notated with "-k." It does not provide connectivity to legacy 10Gb-XAUI NICs/CNAs

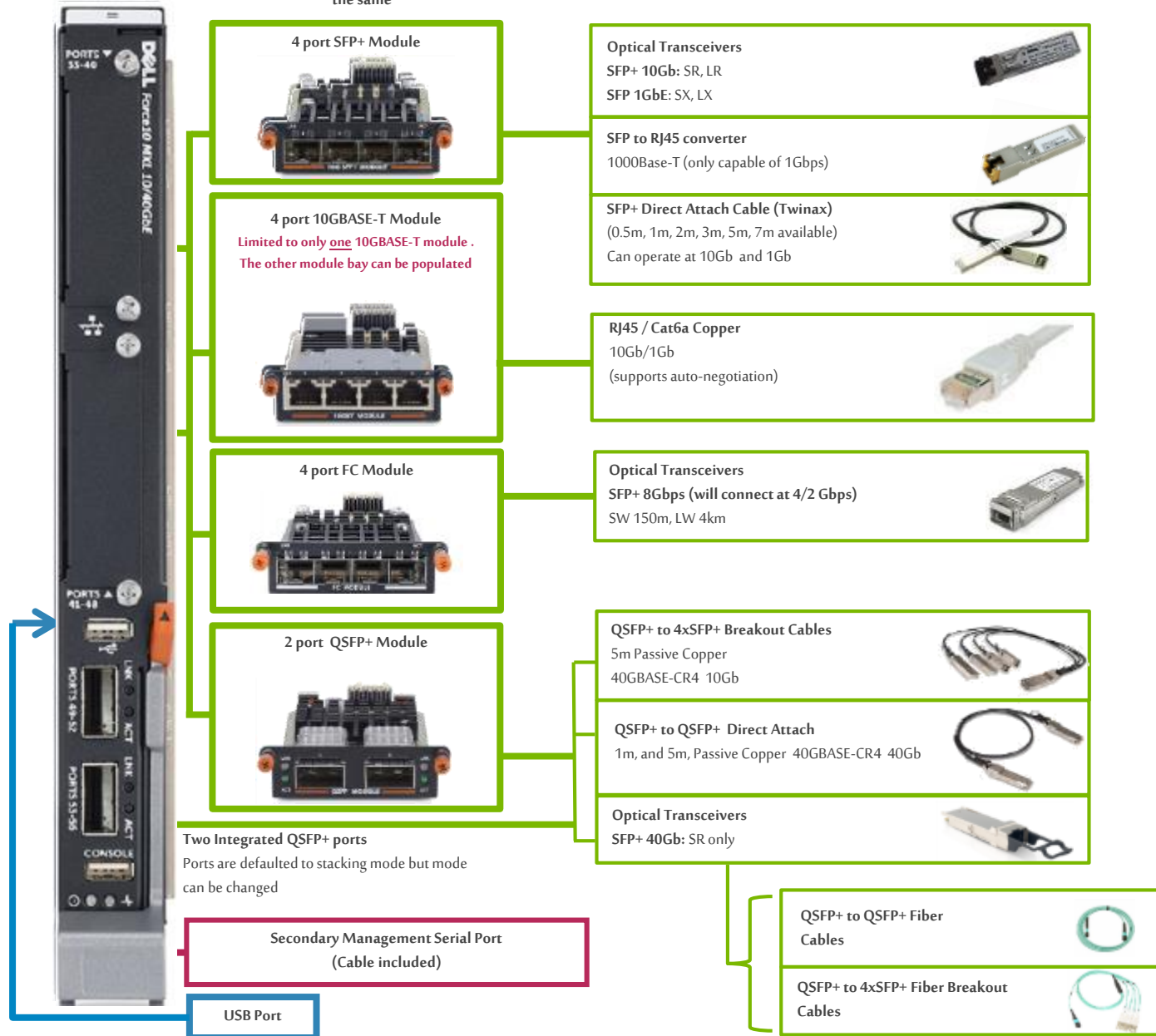
If connected to 1Gb Ethernet Mezzanine cards or LOMs, device will auto-negotiate individual internal ports to 1Gb.

More details in Adapter Portfolio section

Designed for I/O bays



FlexIO modules do not have to be the same



PowerEdge M I/O Aggregator

Plug & Play

- Easy Deployment
 - Simplified layer 2 connectivity (no spanning tree)
 - Faster Deployment: All VLANs on all ports with the option to set VLANs
 - No touch DCB and no touch FCoE
 - › DCB and FCoE settings detected from top of rack switch through DCBx protocol
- Simple GUI Integrated into Chassis Management Controller (CMC)
(Note: CMC GUI will not function if the IOA is stacked. IOA must be managed through CLI when stacked. Maximum stacking capability is 2)
- High Port Count:
 - 32x 10GbE internal server ports
 - Up to 16 external 10GbE ports (4 QSFP+ ports with breakout cables)
- Two FlexIO bays enable choice
 - 2-port 40GbE QSFP+ module (converts to 8-port 10GbE SFP+ using breakout cables)
 - 4-port 10GbE SFP+ module
 - 4-port 10GBASE-T module
(If running Base-T module then second IO slot must be of different type due to power constraints)
 - 4-port FC module
- Converged
 - Supports DCB (protocols PFC, ETC and DCBx)
 - Converged iSCSI with EqualLogic and Compellent
 - Two FCoE Options
 - Native Fibre Channel uplinks with FC FlexIO module (FCoE on internal ports to the servers)
 - FCoE transit to top of rack switch with IOM acting as a FIP Snooping Bridge
- Industry standard CLI. Standard troubleshooting commands via CLI
- VLT up to 2 devices



PowerEdge M I/O Aggregator

Adapters

11G

- Broadcom 57712-k
- Brocade BR1741M-k
- Intel X520-x/k
- QLogic QME8242-k

12G

- Broadcom 57810S-k
- Broadcom 57840S-k
- Brocade BR1741M-k
- Intel X520-x/k
- QLogic QME8262-k

Supports connectivity to 10Gb-KR adapters, all of which are notated with “-k.” It does not provide connectivity to legacy 10Gb-XAUI NICs/CNAs

If connected to 1Gb Ethernet Mezzanine cards or LOMs, device will auto-negotiate individual internal ports to 1Gb.

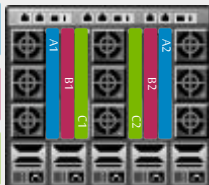
More details in Adapter Portfolio section

Designed for I/O bays

A¹/A²

B¹/B²

C¹/C²



FlexIO modules do not have to be the same

4 port SFP+ Module



Optical Transceivers

SFP+ 10Gb: SR, LR
SFP 1GbE: SX, LX



SFP to RJ45 converter

1000Base-T (only capable of 1Gbps)



SFP+ Direct Attach Cable (Twinax)

(0.5m, 1m, 2m, 3m, 5m, 7m available)
Can operate at 10Gb and 1Gb



RJ45 / Cat6a Copper

10Gb/1Gb
(supports auto-negotiation)



Optical Transceivers

SFP+ 8Gbps (will connect at 4/2 Gbps)
SW 150m, LW 4km



QSFP+ to 4xSFP+ Breakout Cables

5m Passive Copper
40GBASE-CR4 10Gb



QSFP+ to QSFP+ Direct Attach

1m, and 5m, Passive Copper 40GBASE-CR4 40Gb



Optical Transceivers

SFP+ 40Gb: SR only



QSFP+ to QSFP+ Fiber Cables



QSFP+ to 4xSFP+ Fiber Breakout Cables



4 port 10GBASE-T Module

Limited to only one 10GBASE-T module.
The other module bay can be populated



4 port FC Module



2 port QSFP+ Module



Two integrated QSFP+ ports

All QSFP+ ports and modules for this device are fixed in 4x10Gb breakout mode

Secondary Management Serial Port
(Cable included)

USB Port

Dell Networking S5000 unified switch

Dell's first fully modular 1RU top-of-rack and fabric switch

- **Pay-as-you-grow**, customizable modular unified switch
 - Up to 64 ports 10GbE; 4x40GbE
 - 2, 4, 8G Fibre Channel
- **Future-ready**, multi-stage design for next-gen I/O without rip & replace
- **Unified storage networking**, with complete support for iSCSI, RoCE, and FCoE with FC fabric services
- **Reduced management complexity**, Integrated automation, scripting and software programmability
- **Easy integration**, strong interoperability with major adapter, switch, & storage solutions



Dell Networking S5000

S5000 - 10/40GbE Top-of-Rack



Adapters & storage

- Broadcom 57810S-k 2P NDC
- Broadcom 57840S-k 4P 10G NDC
- Broadcom 57840S 4P SFP+ 10G
- Broadcom 57800S 2P SFP+ 2P BT NDC
- Broadcom 57810S 2P SFP+ NIC
- Broadcom 57810S-k 2P Mezz
- QLogic QMD8262-k KR NDC
- QLogic QME8262-k KR Mezz
- QLogic QLE8262 SFP+ NIC
- QLogic QLE8242 SFP+ NIC
- QLogic QLE8362
- QLogic 2460/2462 4Gb HBA
- QLogic 2560/2562 8Gb HBA
- QLogic 2660/2662 16Gb HBA
- Brocade BR1020 SFP+ NIC
- Brocade BR1741M-k Mezz
- Intel X520-k 2P NDC
- Intel X520 2+2 SFP+ NDC
- Intel X520-k 2P Mezz
- Intel X520 2P SFP+ NIC
- Intel X540-T2
- Emulex OCE 14102
- Emulex Ocm 14104
- Emulex LPe12000/12002 8Gb HBA
- Emulex LPe16000/16002 16Gb HBA
- Mellanox ConnectX-3 SFP+ 10G
- Mellanox ConnectX-3 QSFP+ 40G
- Compellent SC8000 (iSCSI, FC)
- Compellent SC4020 (FC)
- EqualLogic PS (iSCSI)
- PowerVault MD (FC)
- Compellent FS8600 (iSCSI, FC)
- EqualLogic FS7610 (iSCSI)
- FluidCache for SAN

More details in Product Sourcebook

Optical Transceivers SFP+ 10Gb: SR, LR, ER, LRM SFP 1GbE: SX, LX	
SFP to RJ45 converter 1000Base-T (only capable of 1Gbps)	
SFP+ Direct Attach Cable (Twinax) (0.5m, 1m, 3m, 5m, 7m available) Can operate at 10Gb and 1Gb	
Optical Transceivers SFP+ 10Gb: SR, LR	
Optical Transceivers 8Gbps FC SW 150m, LW 4km	
QSFP+ to 4xSFP+ Breakout Cables 5m Passive Copper 40GBASE-CR4 10Gb	
QSFP+ to QSFP+ Direct Attach 1m, 5m Passive Copper 10m, 50m Active Fiber	

 12-port SFP+ Module Up to four modules.	 12-port RJ-45 Module Up to four modules.	 12-port Unified Port Module Limited to only <u>one</u> module in a switch.	4 integrated 40GbE QSFP+ Ports Each port can be used as 4x10GbE ports (Breakout cable required)
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Management Port (RJ-45 connector)

Utility Panel

Serial Port (RJ-45 connector)

USB Type-A Port

USB Type-B Port

Two redundant fan modules (I/O to Utility, Utility to I/O air-flow)

Two redundant power supplies (AC, AC-R, DC)

1Gb Ethernet iSCSI & NAS



1/10Gb High-density Dell N3000



1/10Gb High-density Dell N2000



1/10Gb High-density Dell S55/S60



1/10Gb
High-density
M6348



1/10Gb
Basic
M6220

M6348

1/10GbE

High-density 1GbE copper with 10GbE uplinks

- Managed Layer 2/3 Gigabit Ethernet switch for M1000e blade enclosure
- Industry leading port availability
 - 32 internal (server) GbE ports; offering support of up to two ports per blade mezz card or Select Network Adapter (i.e. with quad-port 1GbE NICs)
 - 16 external fixed 10/100/1000Mb Ethernet RJ-45 ports
 - Up to four 10Gb uplink ports
 - 2x 10Gb Optical SFP+ (SR/LR) and/or SFP+ DAC
 - 2x 10Gb Copper CX4 or 32Gb stacking for M6348
 - Management console port
- Supports Dell Simple Switch Mode
- Stackable with rack-mount PowerConnect 7000 Series
- For optimized use (full internal-port utilization), pair with:
Quad-port GbE mezz cards or Quad-port Fabric A adapters



Adapters

Works with all 1Gb Mezzanine cards and LOMs. Optimal use is with quad-port 1Gb adapters.

Functions with all 10Gb Mezzanine cards and Select Network Adapters **with the exception of the:**
 QLogic 8242-k, 8262-k, and Brocade BR1741M-k.

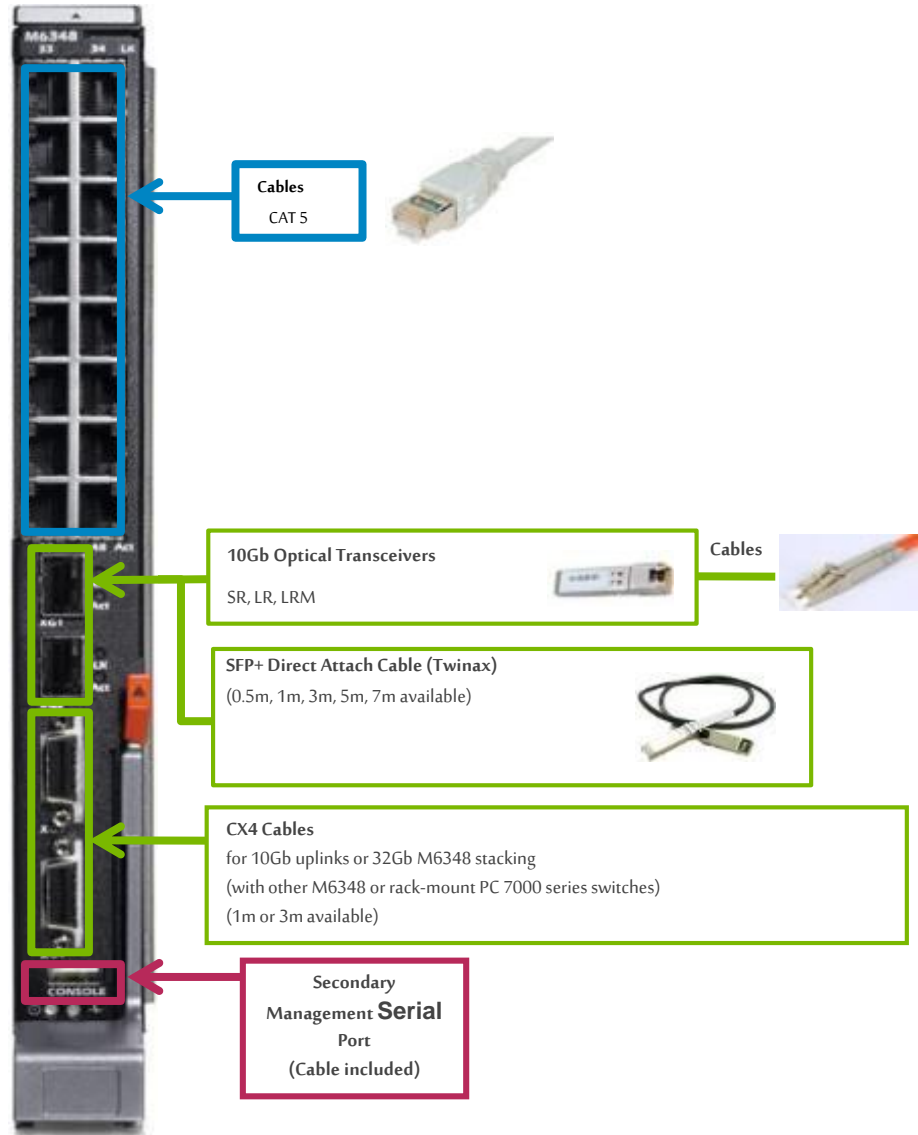
Dual port Mezzanine cards or LOMs/ Select Network Adapters **will** function and are fully supported with this IO module.

In such configurations, only half of the switch's internal ports will be used since the dual port Mezzanine card only has one port out to each IO module.

More details in Adapter Portfolio section

Designed for I/O bays

The diagram shows three rows of I/O bays labeled A1/A2, B1/B2, and C1/C2. Each row contains two columns of ports. The ports are color-coded: blue for A1/A2, pink for B1/B2, and green for C1/C2. The ports are arranged in a grid pattern.



M6220

1/10GbE

Basic 1GbE copper with FlexIO & 10GbE uplinks

- Gigabit Ethernet Layer 2/3 Switch
- Optional 10Gb uplinks & resilient stacking
- IPv6 support
- 24 port switch
 - 16 internal ports corresponding to 16 blade servers (1Gbps)
 - 4 external fixed RJ-45 connections (10/100/1000Mbps)
 - 2 FlexIO bays for:
 - 4 external 10Gbps uplink ports
 - or —
 - 2 external 10Gbps uplink ports and 2 external stacking ports
- Same software image features as PowerConnect 6224/6248 switches
 - Routing protocols
 - Multicast routing protocols
 - Advanced QoS
 - Advanced Security
 - IPv6
- Supports Dell Simple Switch Mode

4 x fixed
10/100/1000Mb (RJ-45)



2 FlexIO Bays for:



48Gb Stacking Module



2 x 10Gb Optical SFP+ Uplinks



2 x 10GBASE-T Copper Uplinks



2 x 10Gb Copper CX-4 Uplinks



Adapters

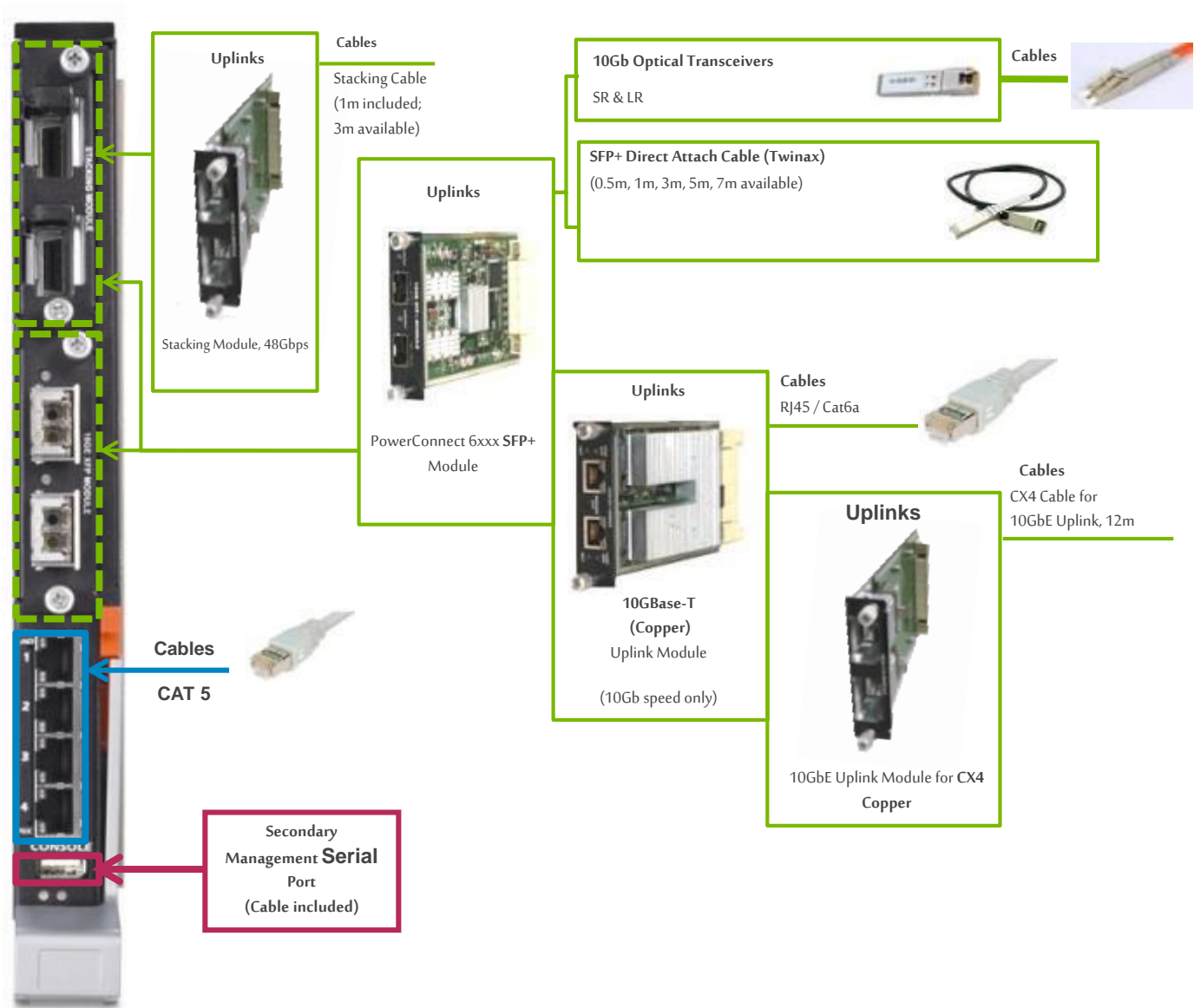
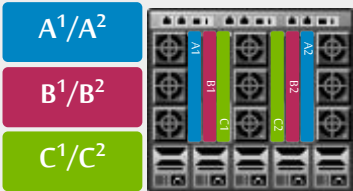
Works with all 1Gb Mezzanine cards and LOMs.

Functions with all 10Gb Mezzanine cards and Select Network Adapters **with the exception of the Qlogic 8242-k, 8262-k, and Brocade BR1741M-k.**

Quad port GbE Mezzanine cards or LOMs will function and are fully supported with this IO module. In such configurations, only half of the card's ports will be used since the switch only has one internal port per adapter.

More details in Adapter Portfolio section

Designed for I/O bays



Dell Networking N2000 Series

1/10GbE

1 Gigabit Ethernet with Layer 2+ capabilities

Key features and innovations

- Up to 220 Gbps switch fabric capacity.
- Supports up to 48 line-rate 1GbE ports per switch and up to 600 1GbE ports in a twelve-unit stack
- Standard N-Series stacking cables and built-in ports for cost-effective high-performance stacking at up to 84 Gbps
- Up to 4,094 VLANs supported
- USB Rapid deployment expedites switch configuration
- Energy Efficient Ethernet (EEE) and lower power PHYs reduce power to inactive ports and idle links
- Fresh Air® compliant for high operating temperature environments

Energy efficient and cost effective

A powerful and economical 1 Gigabit Ethernet switching solution (with 10GbE uplink ports) for efficient Layer 2+ access for end user devices, entry-level servers, and network devices.



Dell Networking N2000



N2000 - 1GbE Top-of-Rack Switch

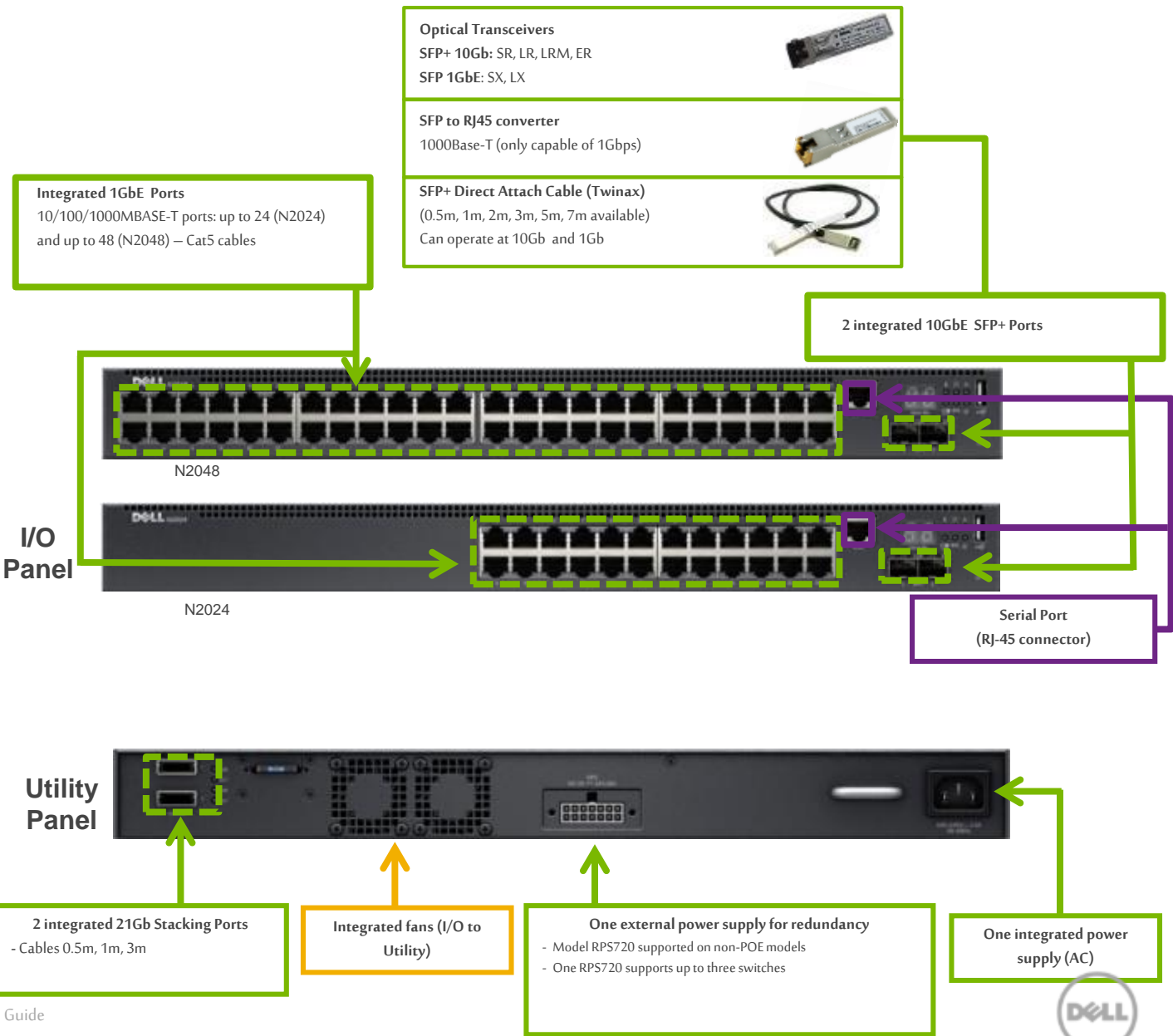
N2024 & N2048

1/10GbE

Adapters & storage



More details in Product Sourcebook



Dell Networking N3000 Series

1 Gigabit Ethernet with advanced Layer 3 capabilities

1/10GbE

Key features and innovations

- Up to 260 Gbps switch fabric capacity
- Supports up to 48 line-rate 1GbE ports per switch and up to 624 1GbE ports in a twelve-unit stack
- Hot swap expansion module supporting dual SFP+ and dual 10GBaseT
- Standard N-Series stacking cables and built-in ports for cost-effective high-performance stacking at up to 84 Gbps.
- Advanced Layer 3 functionality included
- Dual 80PLUS-certified hot swappable power supplies, Energy Efficient Ethernet & lower power PHYs reduce power to inactive ports and idle links
- Tool-less ReadyRails™ significantly reduce rack installation time

Power efficient density for small-scale data center deployments

A power efficient and resilient 1 Gigabit Ethernet switching solution (with 10GbE for uplink ports) for small-scale data center. Dual hot-swappable 80Plus-certified power supplies add resiliency and the capacity to provide up to 48 ports in a 1RU footprint.



Dell Networking N3000



N3000 - 1GbE Top-of-Rack Switch

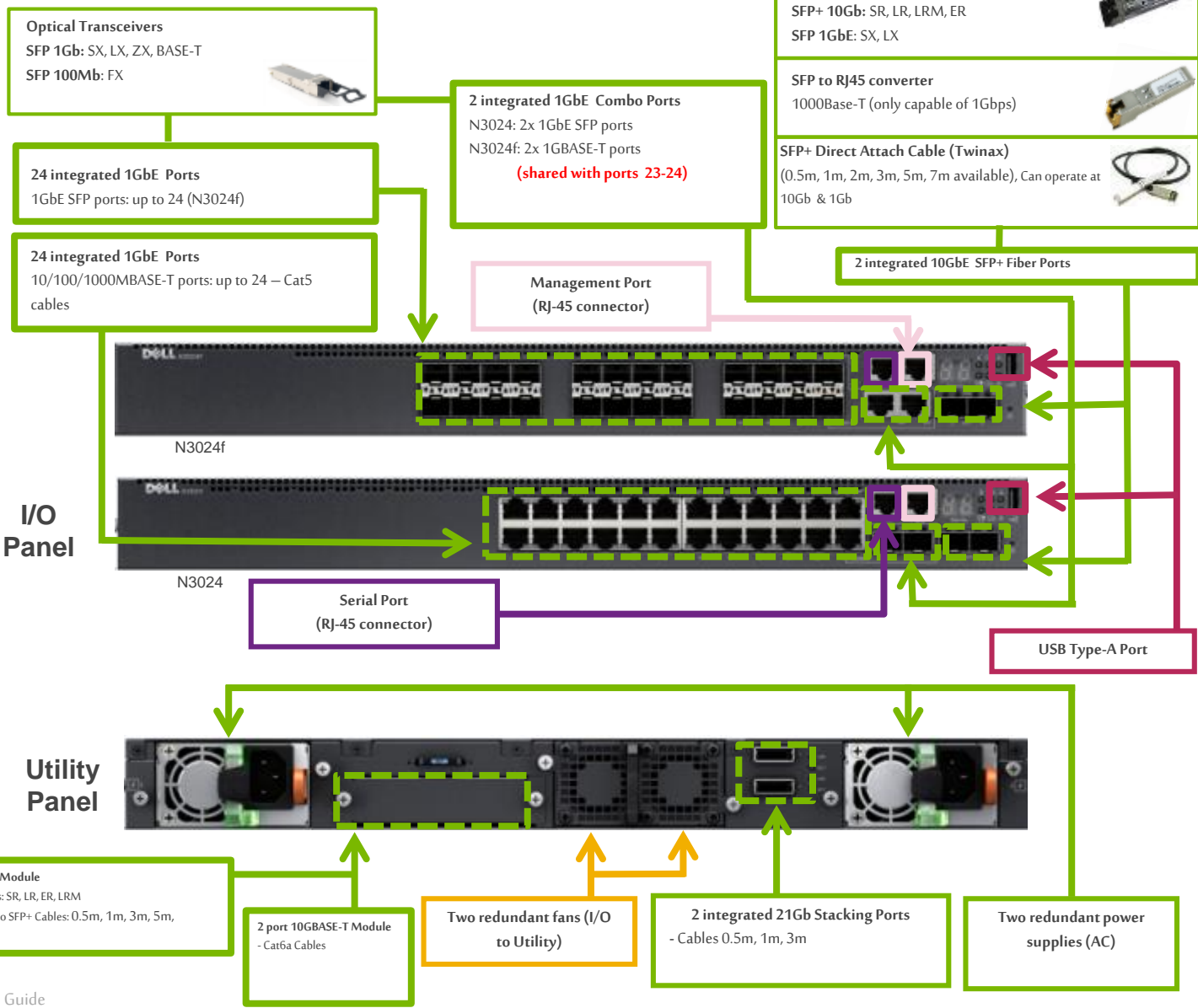
N3024 and N3024f

1/10GbE

Adapters & storage

- EqualLogic PS (iSCSI)

More details in Product Sourcebook



N3000 - 1GbE Top-of-Rack Switch

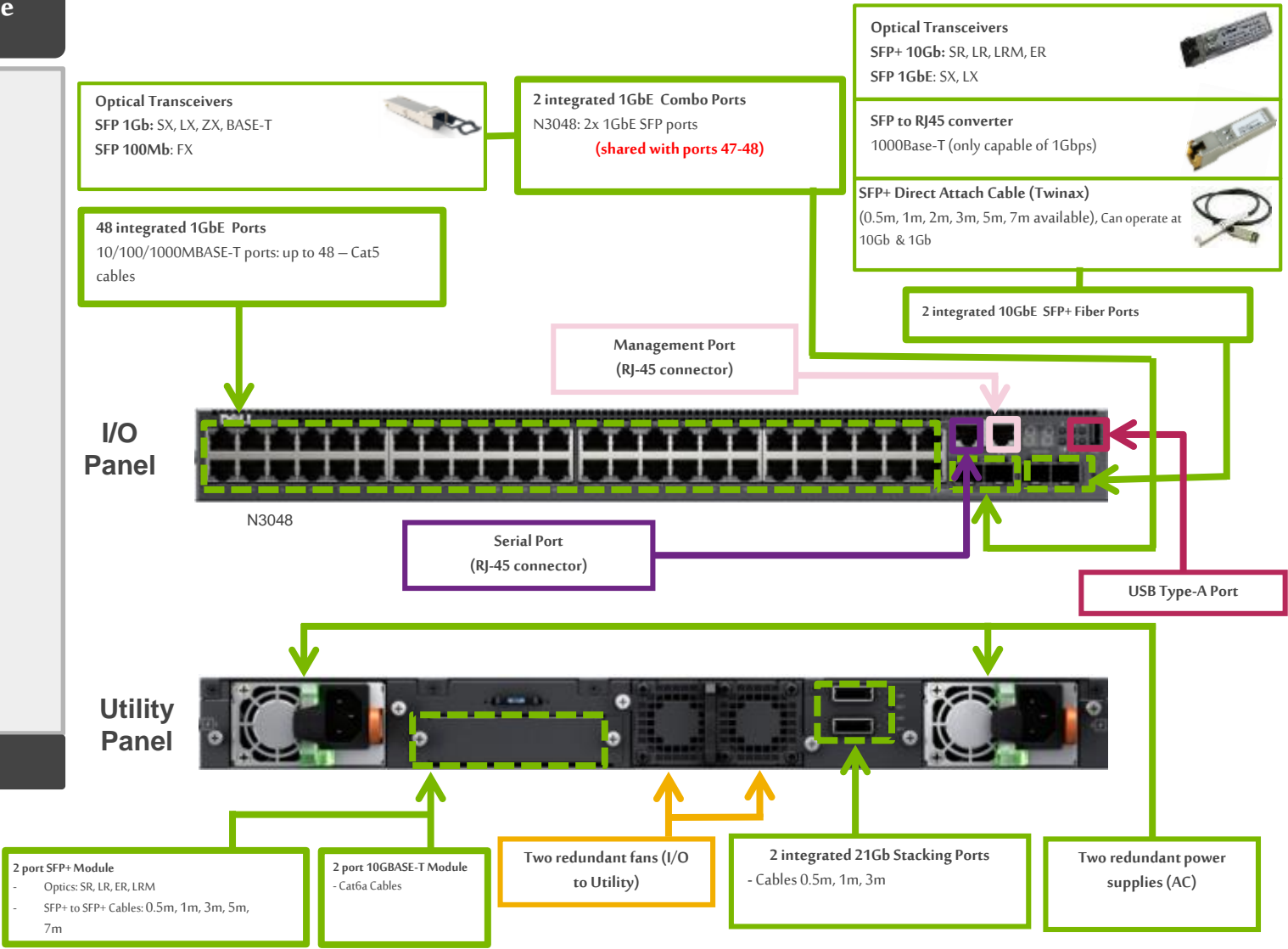
N3048 only

1/10GbE

Adapters & storage

- EqualLogic PS (iSCSI)

More details in Product Sourcebook



Dell Networking S55/S60 Series

1 Gigabit Ethernet with advanced Layer 3 capabilities

Key features and innovations

- Up to 176 Gbps switch fabric capacity
- Low latency switching for high-performance iSCSI SANs
 - S60 offers deep buffer to help further optimize the performance
- Supports up to 48 line-rate 1GbE ports per switch and up to 624 1GbE ports in a twelve-unit stack
- expansion module supporting dual SFP+ and dual/single port 12Gbps Stacking
- Cost-effective high-performance stacking at up to 96 Gbps.
- Advanced Layer 3 functionality included

Power efficient density for small-scale data center deployments

A power efficient and resilient 1 Gigabit Ethernet switching solution (with 10GbE for uplink ports) for small-scale data center. Dual hot-swappable power supplies add resiliency and the capacity to provide up to 48 ports in a 1RU footprint.



Dell Networking S55
Dell Networking S60



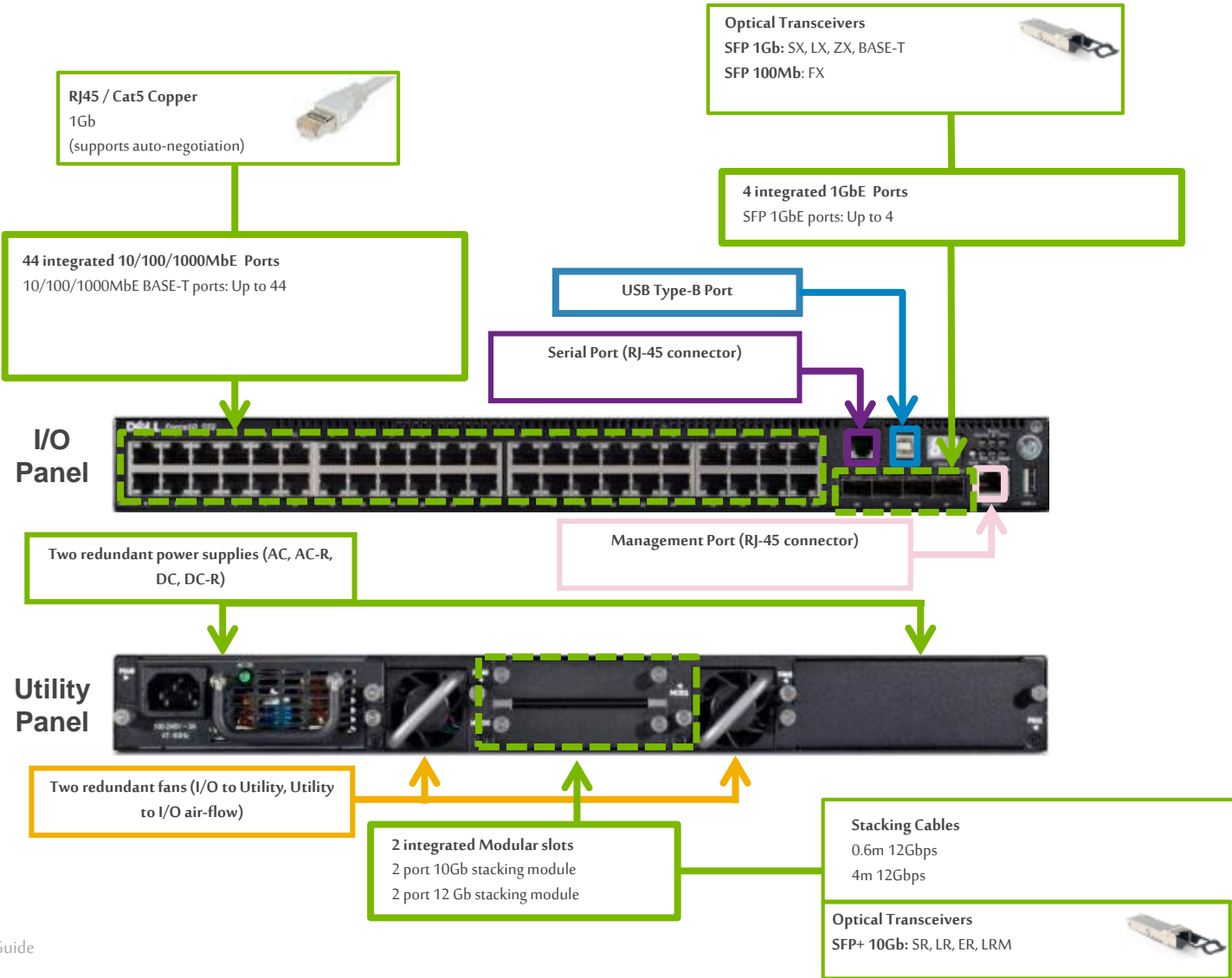
S55 – 1GbE Layer 3 Switch

1/10GbE

Adapters & storage

- EqualLogic PS (iSCSI)

More details in Product Sourcebook



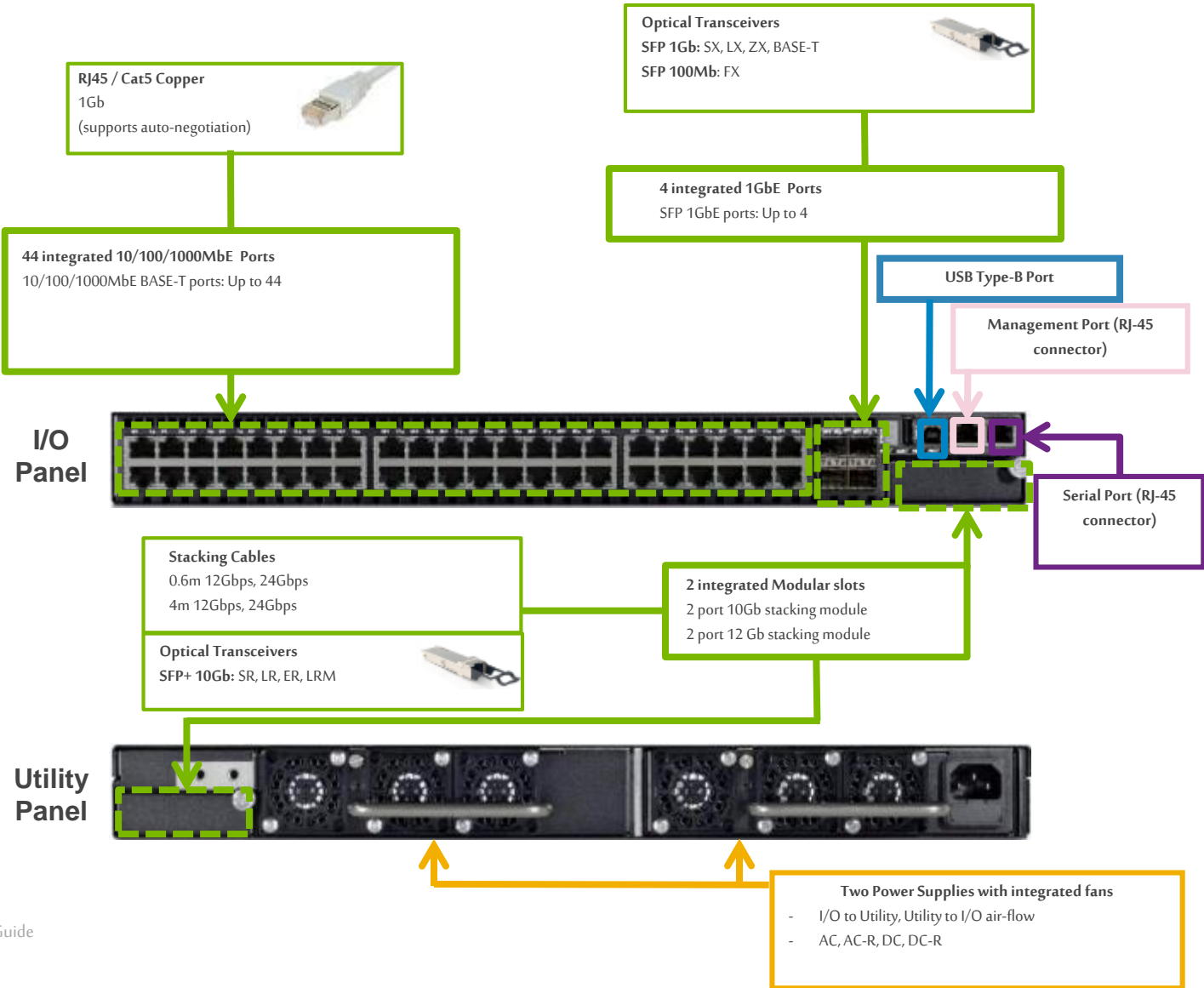
S60 – 1GbE Layer 3 Switch

1/10GbE

Adapters & storage

- EqualLogic PS (iSCSI)

More details in Product Sourcebook



10/40Gb Ethernet iSC & NAS



10/40Gb Switch N4000



10/40Gb Switch S5000*



10/40Gb Switch S4810



10/40Gb Switch S6000



10/40Gb Switch S4820T



10/40Gb
Switch
MXL*

10Gb
Plug & Play
M-IOA*

* Please go to "LAN/SAN converged (FC/FCoE) section for details on these switches.



Dell Networking N4000 Series

10 Gigabit Ethernet with advanced Layer 3 capabilities

Key features and innovations

- Up to 1.2Tbps switch fabric capacity
- Supports up to 64 line-rate 10GbE ports per switch and up to 672 10GbE ports in a twelve-unit stack with user port stacking at up to 320 Gbps
- Hot swap expansion module supporting dual QSFP+ (8 x 10GbE), Quad 10GBaseT, and Quad SFP+
- Plug-and-Play configuration with Dell EqualLogic™ and validated with Dell Compellent™ iSCSI storage arrays
- Energy Efficient Ethernet (EEE) and lower power PHYs reduce power to inactive ports and idle links
- Tool-less rails significantly reduce rack installation time
- *Converged iSCSI with EqualLogic* (supports iSCSI TLV)

Deliver more bandwidth in small-scale data center

A high density, power efficient, and flexible 1/10/40 Gigabit Ethernet switching solution for simple scalability and high density. Resilient stacking architecture delivers reliable network performance and amazing density for demanding network environments. Helps future-proof investments as enterprises migrate from 10GbE core deployments to 40GbE.



Dell Networking N4000

N4000 - 10GbE Top-of-Rack Switch

N4032 and N4032f



Adapters & storage

- EqualLogic PS (iSCSI)

More details in Product Sourcebook

Optical Transceivers SFP+ 10Gb: SR, LR, ER, LRM SFP 1GbE: SX, LX	
SFP to RJ45 converter 1000Base-T (only capable of 1Gbps)	
SFP+ Direct Attach Cable (Twinax) (0.5m, 1m, 2m, 3m, 5m, 7m available) Can operate at 10Gb and 1Gb	

QSFP+ to 4xSFP+ Breakout Cables 5m Passive Copper 40GBASE-CR4 10Gb	
QSFP+ to QSFP+ Direct Attach 1m, and 5m, Passive Copper 40GBASE-CR4 40Gb 1m, 5m, 15m PSM4 MPO Pigtail	
Optical Transceivers QSFP+ 40Gb: SR, ESR, LR4	

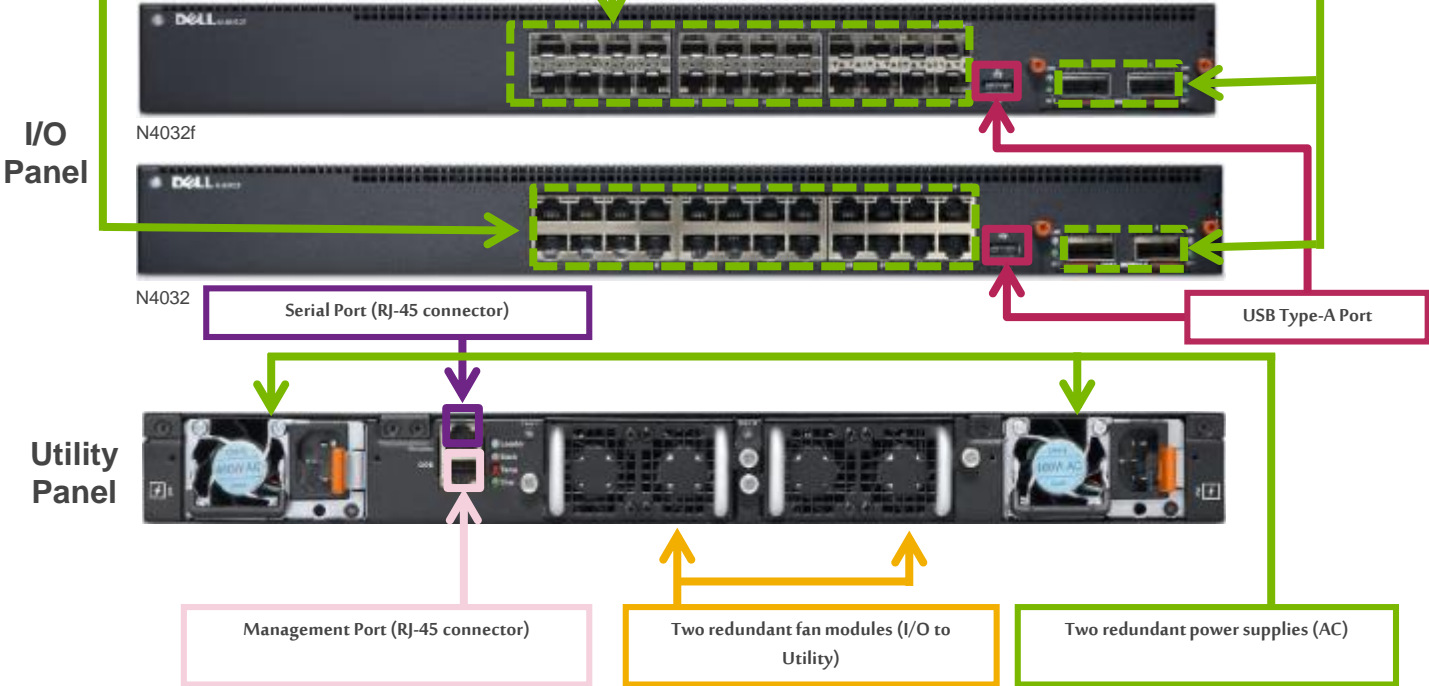
24 integrated 10GbE Ports
1/10GBASE-T ports: up to 24 (N4032) –
Cat6a cables

24 integrated 10GbE Ports
SFP+ 10GbE: Up to 24 (N4032f)

4 port SFP+ Module

4 port 10GBASE-T Module
- Cat6a Cables

2 port QSFP+ Module



N4000 - 10GbE Top-of-Rack Switch

N4064 and N4064f



Adapters & storage

- EqualLogic PS (iSCSI)

More details in Product Sourcebook

Optical Transceivers
SFP+ 10Gb: SR, LR, LRM, ER
SFP 1GbE: SX, LX

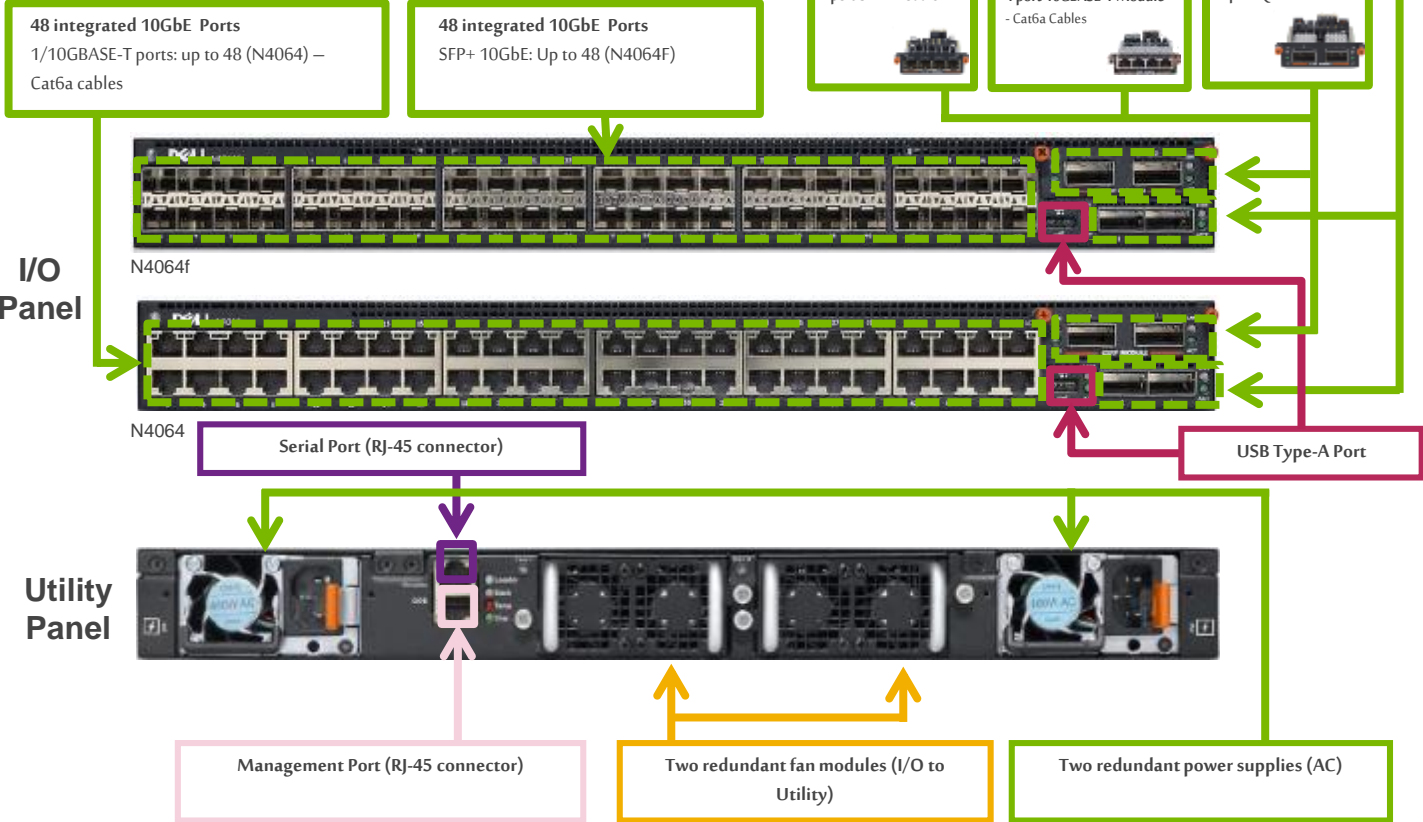
SFP to RJ45 converter
1000Base-T (only capable of 1Gbps)

SFP+ Direct Attach Cable (Twinax)
(0.5m, 1m, 2m, 3m, 5m, 7m available)
Can operate at 10Gb and 1Gb

QSFP+ to 4xSFP+ Breakout Cables
5m Passive Copper
40GBASE-CR4 10Gb

QSFP+ to QSFP+ Direct Attach
1m, and 5m, Passive Copper 40GBASE-CR4
40Gb
1m, 5m, 15m PSM4 MPO cables

Optical Transceivers
QSFP+ 40Gb: SR, ESR, LR4



Dell Networking S4810/20T switch

1/10/40GbE top-of-rack switch

Accelerate 1G to 10GbE migration

- **Dell Networking Operating System 9**
 - 48 x 1/10G
 - 4 x 40G fabric uplinks (or 16 x 10G)
- **Built-in** virtualization support (VMware, Citrix)
- **Open Networking** capable on select models
- **Converged iSCSI with EqualLogic** (supports iSCSI TLV)
- Integrated **Open Automation**, scripting and programmatic management

Dell S4810



Dell 4820T



+



Great with Dell servers & storage

S4810 - 10GbE Top-of-Rack Switch




Adapters & storage


- Broadcom 57840S 4P SFP+ 10G
- Broadcom 57810S 2P SFP+ NIC
- Qlogic QLE8262 SFP+ NIC
- Intel X520 2P SFP+ NIC
- Compellent SC8000 (iSCSI)
- EqualLogic PS (iSCSI)
- Compellent FS8600 (iSCSI)
- EqualLogic FS7610 (iSCSI)
- FluidCache for SAN

More details in Product Sourcebook


Optical Transceivers
SFP+ 10GbE: SR, LR, ER, LRM
SFP 1GbE: SX, LX



SFP to RJ45 converter
1000Base-T




SFP+ Direct Attach Cable (Twinax)
(0.5m, 1m, 3m, 5m, 7m available)
Can operate at 10Gb and 1Gb




48 integrated 10GbE SFP+ Ports
SFP+ 10GbE: Up to 48


Optical Transceivers
QSFP+ 10Gb: SR, eSR, LR4



QSFP+ to 4xSFP+ Breakout Cables
5m Passive Copper
40GBASE-CR4 10Gb



QSFP+ to QSFP+ Direct Attach
1m, 5m Passive Copper
10m, 50m Active Fiber
1m, 5m, 15m PSM MPO Cable



4 integrated 40GbE QSFP+ Ports
QSFP+ 40GbE: Up to 4
Each port can be used as 4x10GbE ports (Breakout cable required)

Serial Port (RJ-45 connector)

I/O Panel



Management Port (RJ-45 connector)

Utility Panel



Two redundant fan modules (I/O to Utility, Utility to I/O air-flow)

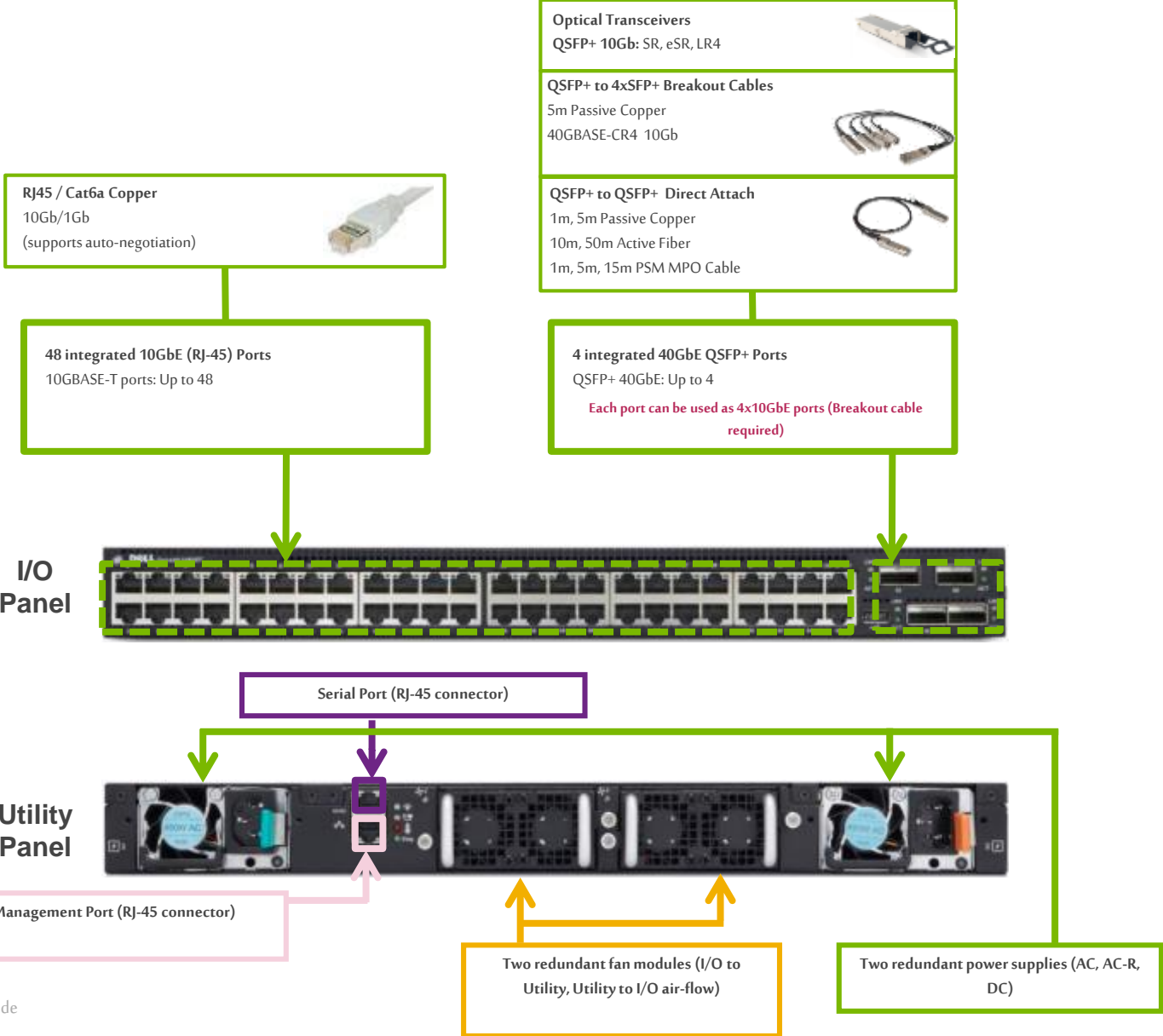
Two redundant power supplies (AC, AC-R, DC)

S4820-T - 10GbE Top-of-Rack Switch

Adapters & storage

- Intel X540 2P NIC
- EqualLogic PS (iSCSI)
- EqualLogic FS7610 (iSCSI)

More details in Product Sourcebook



Dell Networking S6000 high-density switch

Purpose-built for the Virtual Era

- **High-throughput low-latency performance** for demanding workloads
- **Built-in virtualization** features to scale virtual machine deployment
- **Integrated** automation, scripting and programmatic management with **Open Automation Framework**
- **Energy-efficient**, low power solution, Fresh Air capable for chiller-less operation
- **Converged iSCSI with EqualLogic** (supports iSCSI TLV)

***Winner:**

- 2013 Innovative Products & Solutions' award – China Network World
- 2013 Product of the Year' award - It168.com



Dell Networking S6000





S6000 - 40GbE Spine / 10GbE High-density ToR

Adapters & storage

- Broadcom 57840S 4P SFP+ 10G
- Broadcom 57810S 2P SFP+ NIC
- Broadcom 5720 SFP 1G
- Qlogic QLE8262 SFP+ NIC
- Emulex OCe 14102
- Mellanox ConnectX-3 SFP+ 40G
- FluidCache for SAN

More details in Product Sourcebook

<p>Optical Transceivers SFP+ 10Gb: SR, eSR</p> 
<p>QSFP+ to 4xSFP+ Breakout Cables 5m Passive Copper 40GBASE-CR4 10Gb 40GBASE-QSA 1Gb</p> 
<p>QSFP+ to QSFP+ Direct Attach 1m, 5m Passive Copper 10m, 50m Active Fiber</p> 

32 integrated 40GbE QSFP+ Ports
QSFP+ 40GbE: Up to 32
SFP+ 10GbE: Up to 104 (26x 40GbE ports with breakout cables)
Each port can be used as 4x10GbE ports (Breakout cable required)

I/O Panel



USB Type-B Port

Serial Port (RJ-45 connector)

USB Type-A Port

Management Port (RJ-45 connector)

Utility Panel



Three redundant fan modules (I/O to Utility, Utility to I/O air-flow)

Two redundant power supplies (AC, AC-R, DC)

Fibre Channel



8Gb Brocade 300



16Gb Brocade 6505



16Gb Brocade 6510



16Gb Brocade 6520



16Gb
M6505

8Gb
M5424

8Gb
Pass-Through



16Gb Brocade 8510

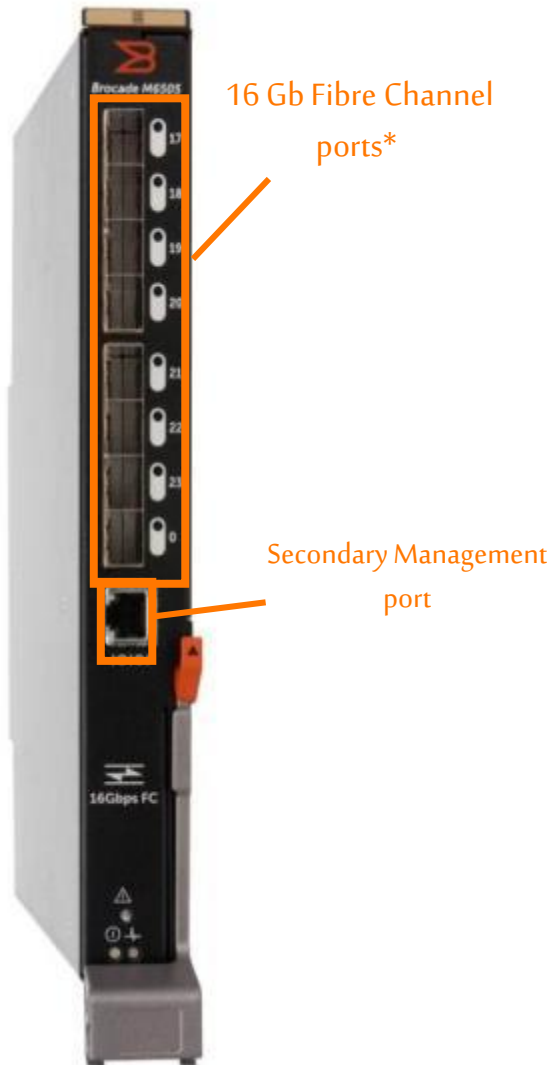
See also the MXL, IOA, and S5000 in the Converged Ethernet section



Brocade M6505

16Gb switch

Fibre Channel



- 24 Fibre Channel ports
 - Up to 16 internal 16/8Gb server ports*
 - Up to 8 external 16/8/4Gb SAN ports**

*The M6505 requires the enhanced midplane 1.1. The M6505 will not function with the original 1.0 midplane.
**For connection to storage devices and/or other FC switches only
- Zero footprint, hot-pluggable design with no additional fans or power supplies
- Complete redundancy, up to 4 switches per chassis
- Dynamic Ports on Demand (PoD) and “pay-as-you-grow” port upgrades for 12-port configurations
- Heterogeneous SAN fabric interoperability
- Access Gateway (NPIV) or fabric switch connectivity
- Auto-sensing and speed-matching connections to 16/8/4 Gbps to Fibre Channel devices



Brocade M6505

16Gb switch

Fibre Channel



Adapters

11G

- Qlogic QME2572 FC8
- Emulex LPe1205-MFC8

12G

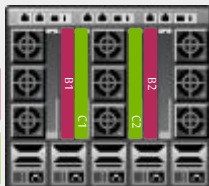
- Qlogic QME2662 FC16
- Emulex LPm16002 FC16
- Qlogic QME2572 FC8
- Emulex LPe1205-MFC8

*The M6505 requires the enhanced midplane (1.1). The switch will not function with the original midplane (1.0).

Does not support 4Gb Mezzanine cards.

More details in
Adapter Portfolio section

Designed for I/O bays



B¹/B²

C¹/C²



Brocade Transceivers
Brocade SWL, LWL or ELWL 16Gb SFP+ Optics
Brocade SWL, LWL or ELWL 8Gb SFP+ Optics
Brocade SWL, LWL or ELWL 4Gb SFP+ Optics

Note: Requires SFP LC connector



Secondary Management Serial Port

Available Models - Brocade M6505

- (16) internal and (8) SFP+ external FC16 ports with (8) FC16 SWL transceivers and Enterprise Performance Pack
- (16) internal and (8) SFP+ external FC16 ports with (4) FC16 SWL transceivers
- (8) internal and (4) SFP+ external FC16 ports with (2) FC16 SWL transceivers (12 port model expands to 24 ports with on-demand license)

Brocade M5424

8Gb switch

Fibre Channel

- 8/4 Gbps Fibre Channel SAN solution
- Provides up to 24 8/4Gb FC ports
 - Up to 16 internal 8/4Gb server ports
 - Up to 8 external 8/4Gb SAN ports*
*For connection to storage devices and/or other FC switches only
- One management console port
- Configurable as Brocade full fabric switch or Access Gateway Mode (NPIV) for multi-vendor interoperability
- Auto-negotiates between 4Gbps and 8Gbps based on linked mezzanine cards and top-of-rack switches
- Supports future FOS features and upgrades



Brocade M5424

8Gb switch

Fibre Channel



Adapters



11G

- Qlogic QME2572
- Emulex LPe1205

12G

- Qlogic QME2572
- Emulex LPe1205-M
- Qlogic QME2662 (at FC8 speeds)
- Emulex LPm16002 (at FC8 speeds)

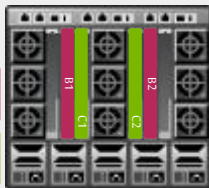
FC4 Mezzanine cards are also supported with this switch at 4Gbps.

More details in
Adapter Portfolio section

Designed for I/O bays

B¹/B²

C¹/C²



Brocade Transceivers
Brocade SWL or LWL 8Gb SFP+ Optics
Brocade SWL, LWL or ELWL 4Gb SFP+ Optics

Note: Requires SFP LC connector

Cables



**Secondary
Management Serial
Port**

Available Models - Brocade M5424

- (16) internal and (8) SFP+ external FC8 ports with (8) FC8 SWL transceivers and Enterprise Performance Pack
- (16) internal and (8) SFP+ external FC8 ports with (4) FC8 SWL transceivers
- (8) internal and (4) SFP+ external FC8 ports with (2) FC8 SWL transceivers
(12 port model expands to 24 ports with on-demand license)



Dell 8/4Gbps FC Pass-Through

- 16 ports correspond to 16 server blades
- 8, 4, or 2 Gbps connections
- Transparent connection between SAN and server blades
- As an alternative to this FC8 Pass-Through, the **M IOA populated with FC Flex IO Modules** (NPIV aggregator) provides the simplicity of a pass-through with the aggregation/redundancy benefits of a switch.





Dell 8/4Gbps FC Pass-Through

Adapters



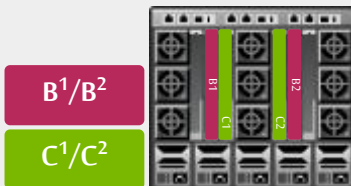
11G
 - Qlogic QME2572,
 - Emulex LPe1205

12G
 - Qlogic QME25722
 - Emulex LPe1205-M

*FC4 Mezzanine cards will function with this pass-through. Doing so will cause the pass-through to run at 4Gbps rather than the full-capability 8Gbps.

More details in
 Adapter Portfolio section

Designed for I/O bays



Brocade Transceivers
 16 pre-installed 8Gbps SWL SFP+ transceivers (one per port)



Brocade 300

8Gb switch

Fibre Channel



- Affordable, flexible foundation for entry-level SAN
 - Enables “pay-as-you-grow” scalability from 12 to 24 ports
 - Delivers 40 percent higher performance at a comparable cost compared to 10 GbE
- A simpler way to build your SAN
 - Installs in three easy steps using Brocade EZSwitchSetup
 - Leverages Brocade Access Gateway for simple server connectivity and SAN scalability
- Enterprise features at an entry-level price
 - Leverages Fibre Channel technology that is proven in 90 percent of Fortune 1000 data centers
 - Features enhanced diagnostics and RAS functionality to help minimize downtime
 - Maximizes availability with redundant, hot-pluggable components and non-disruptive software upgrades



Brocade 300



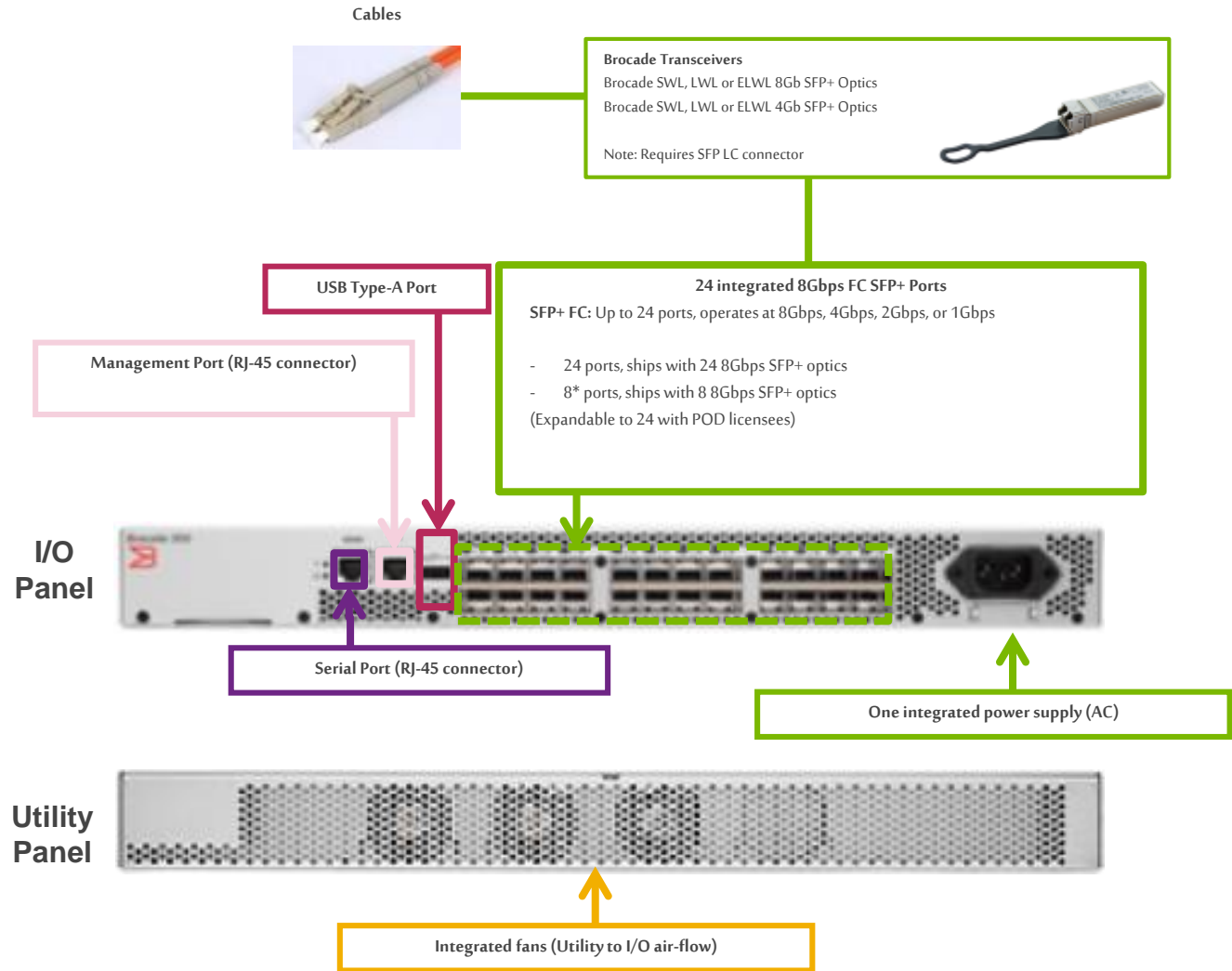


300 - 8Gbps Fibre Channel Fabric Switch

Adapters

- Brocade 815/825 8GB HBA
- Qlogic 2460/2462 4Gb HBA
- Qlogic 2560/2562 8GB HBA
- Emulex 12000/12002 8Gb HBA
- Compellent SC8000 (FC)
- Compellent SC4020 (FC)
- PoowerVault MD (FC)

More details in Product Sourcebook



Brocade 6505

16Gb switch

Fibre Channel



- Flexibility to grow your business on your terms
 - Enables “pay-as-you-grow” scalability from 12 to 24 ports
- A simpler way to build your SAN
 - Installs in three easy steps using Brocade EZSwitchSetup
 - Leverages Brocade Access Gateway for simple server connectivity and SAN scalability
- Enterprise features at an entry-level price
 - Leverages Fibre Channel technology that is proven in 90 percent of Fortune 1000 data centers
 - Features enhanced diagnostics and RAS functionality to help minimize downtime
 - Maximizes availability with redundant, hot-pluggable components and non-disruptive software upgrades



Brocade 6505



6505 - 16Gbps Fibre Channel Fabric Switch

Adapters

- Brocade 815/825 8GB HBA
- Qlogic 2460/2462 4Gb HBA
- Qlogic 2560/2562 8GB HBA
- Emulex 12000/12002 8Gb HBA
- Emulex 16000/16002 16Gb HBA
- Compellent SC8000 (FC)
- Compellent SC4020 (FC)
- PoowerVault MD (FC)

More details in Product Sourcebook

Cables



Brocade Transceivers

- Brocade SWL, LWL or ELWL 16Gb SFP+ Optics
- Brocade SWL, LWL or ELWL 8Gb SFP+ Optics
- Brocade SWL, LWL or ELWL 4Gb SFP+ Optics

Note: Requires SFP LC connector



24 integrated 16Gbps FC SFP+ Ports

SFP+ FC: Up to 24 ports, operates at 16Gbps, 8Gbps, 4Gbps, or 2Gbps

- 24 ports, ships with 24 16Gbps SFP+ optics
- 12* ports, ships with 12 16Gbps SFP+ optics
- 12* ports, ships with 12 8Gbps SFP+ optics (Expandable to 24 with POD licenses)

Management Port (RJ-45 connector)

USB Type-A Port

I/O Panel

Serial Port (RJ-45 connector)

Utility Panel

Two redundant power supplies with integrated fans (AC)

- Utility to I/O air-flow
- Ships with one power supply



Brocade 6510

16Gb switch

Fibre Channel



- Flexibility to grow your business on your terms
 - Enables “pay-as-you-grow” scalability from 24 to 48 ports
 - Multi-tenancy features such as virtual fabrics, QoS, and zoning
 - Small footprint for flexible deployments
- A simpler way to build your SAN
 - Installs in three easy steps using Brocade EZSwitchSetup
 - Easily connects servers to the fabric with automatic recognition and provisioning
 - Cable and optics diagnostics
- Optimized SAN Performance for CloudApps
 - Optimized for emerging workloads – VDI, shared storage, and SSD arrays
 - Configurable ports for 10Gbps metro optical connectivity
 - Industry-leading 128Gbps ISL Trunk
 - Extended distance support of native Fibre Channel up to 7500km at 2Gbps



Brocade 6510





6510 - 16Gbps Fibre Channel Fabric Switch

Adapters

- Brocade 815/825 8GB HBA
- Qlogic 2460/2462 4Gb HBA
- Qlogic 2560/2562 8GB HBA
- Emulex 12000/12002 8Gb HBA
- Emulex 16000/16002 16Gb HBA
- Compellent SC8000 (FC)
- Compellent SC4020 (FC)
- PoowerVault MD (FC)

More details in Product Sourcebook

Cables



Brocade Transceivers

- Brocade SWL, LWL or ELWL 16Gb SFP+ Optics
- Brocade SWL, LWL or ELWL 8Gb SFP+ Optics
- Brocade SWL, LWL or ELWL 4Gb SFP+ Optics

Note: Requires SFP LC connector

48 integrated 16Gbps FC SFP+ Ports

SFP+ FC: Up to 48 ports, operates at 16Gbps, 8Gbps, 4Gbps, or 2Gbps

- 48 ports, ships with 48 16Gbps SFP+ optics
- 24* ports, ships with 24 16Gbps SFP+ optics
- 24* ports, ships with 24 8Gbps SFP+ optics (Expandable to 48 with POD licensees)

Management Port (RJ-45 connector)

USB Type-A Port

I/O Panel

Serial Port (RJ-45 connector)

Utility Panel

Two redundant power supplies with integrated fans (AC)

-Utility to I/O air-flow, I/O to utility air-flow



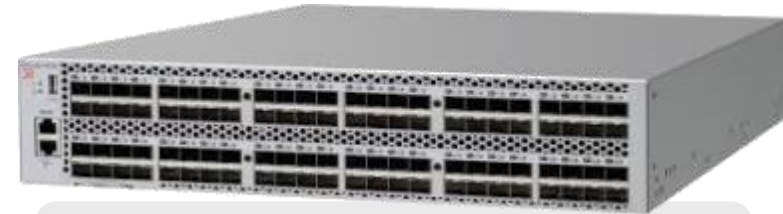
Brocade 6520

16Gb switch

Fibre Channel



- Flexibility to grow your business on your terms
 - Enables “pay-as-you-grow” scalability from 48 to 96 ports
- A simpler way to build your SAN
 - Simplifies management through Brocade Fabric Vision technology, reducing operational costs and optimizing application performance
 - Leverages Brocade Access Gateway for simple server connectivity and SAN scalability
- Enterprise features at an entry-level price
 - Leverages Fibre Channel technology that is proven in 90 percent of Fortune 1000 data centers
 - Features enhanced diagnostics and RAS functionality to help minimize downtime
 - Maximizes availability with redundant, hot-pluggable components and non-disruptive software upgrades



Brocade 6520





6520 - 16Gbps Fibre Channel Fabric Switch

Adapters

- Brocade 815/825 8GB HBA
- Qlogic 2460/2462 4Gb HBA
- Qlogic 2560/2562 8GB HBA
- Emulex 12000/12002 8Gb HBA
- Emulex 16000/16002 16Gb HBA
- Compellent SC8000 (FC)
- Compellent SC4020 (FC)
- PoowerVault MD (FC)

More details in Product Sourcebook

Cables

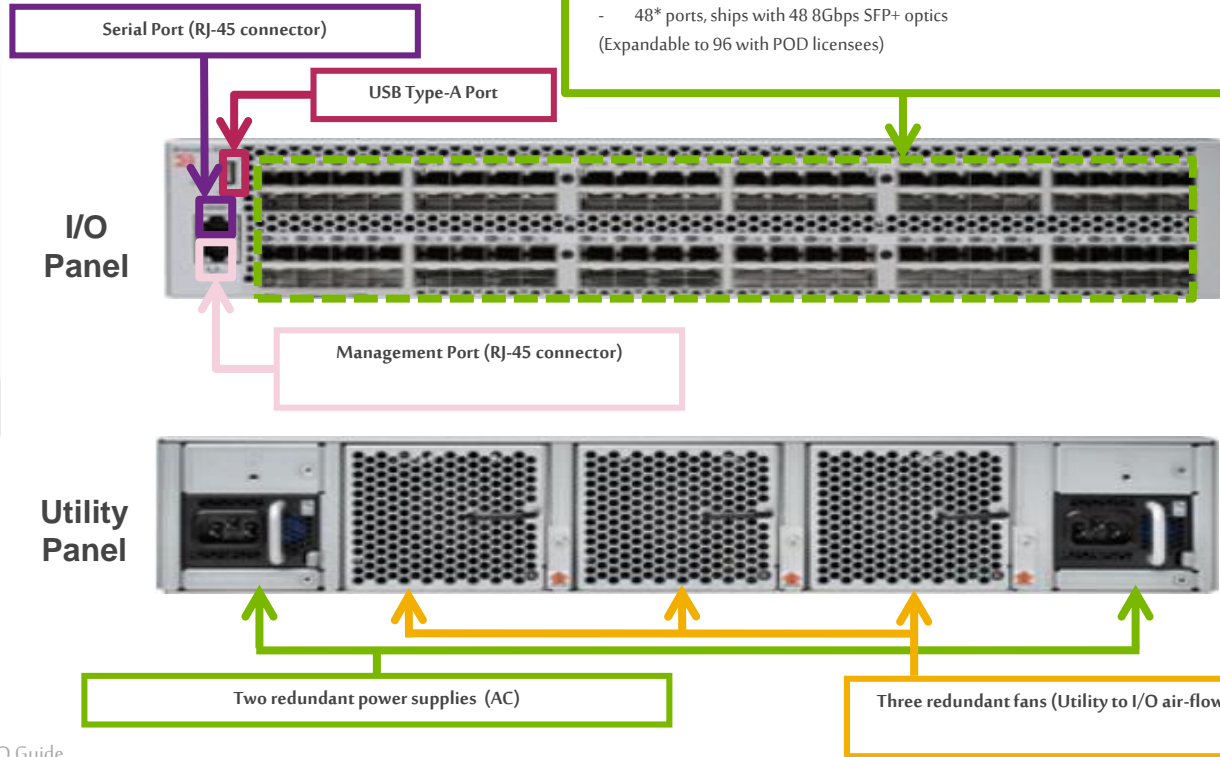


- Brocade Transceivers**
- Brocade SWL, LWL or ELWL 16Gb SFP+ Optics
 - Brocade SWL, LWL or ELWL 8Gb SFP+ Optics
 - Brocade SWL, LWL or ELWL 4Gb SFP+ Optics
- Note: Requires SFP LC connector

96 integrated 16Gbps FC SFP+ Ports

SFP+ FC: Up to 96 ports, operates at 16Gbps, 8Gbps, 4Gbps, or 2Gbps

- 96 ports, ships with 96 16Gbps SFP+ optics
 - 48* ports, ships with 48 16Gbps SFP+ optics
 - 48* ports, ships with 48 8Gbps SFP+ optics
- (Expandable to 96 with POD licenses)



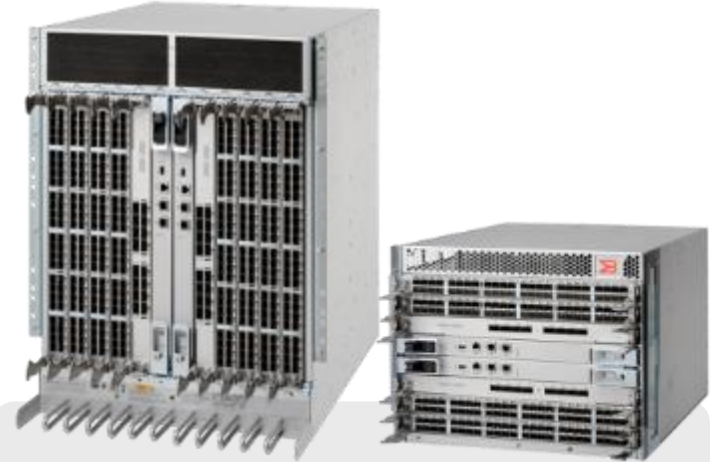
Brocade 8510

16Gb switch

Fibre Channel



- Industry's most powerful SAN infrastructure
 - Reduce network complexity, management, and costs by enabling flatter, low-latency chassis connectivity
 - Integrated metro and global SAN extension enables flexible, high-speed business continuity and disaster recovery solutions
- A simpler way to build your SAN
 - Installs in three easy steps using Brocade EZSwitchSetup
 - Leverages Brocade Access Gateway for simple server connectivity and SAN scalability
- Enterprise features at an entry-level price
 - Leverages Fibre Channel technology that is proven in 90 percent of Fortune 1000 data centers
 - Features enhanced diagnostics and RAS functionality to help minimize downtime
 - Maximizes availability with redundant, hot-pluggable components and non-disruptive software upgrades



Brocade 8510



8510- 16Gbps Fibre Channel Director

Fibre Channel

Adapters

Brocade Transceivers
 Brocade SWL, LWL or ELWL 16Gb SFP+ Optics
 Brocade SWL, LWL or ELWL 8Gb SFP+ Optics
 Brocade SWL, LWL or ELWL 4Gb SFP+ Optics
 Note: Requires SFP LC connector

Cables

Cables (operates at 16Gbps, 8Gbps, or 4Gbps)
 QSFP (MPO/MTP) to QSFP (MPO/MTP) cable: 1m, 3m, 20m, 50m
 QSFP (MPO/MTP) to 4x SFP+ (LC): 1m, 3m, 20m, 50m

Brocade Transceivers
 Brocade SWL, LWL or ELWL 8Gb SFP+ Optics
 Brocade SWL, LWL or ELWL 4Gb SFP+ Optics

32 port 16Gbps Blade



48 port 16Gbps Blade



64 port 16Gbps Blade



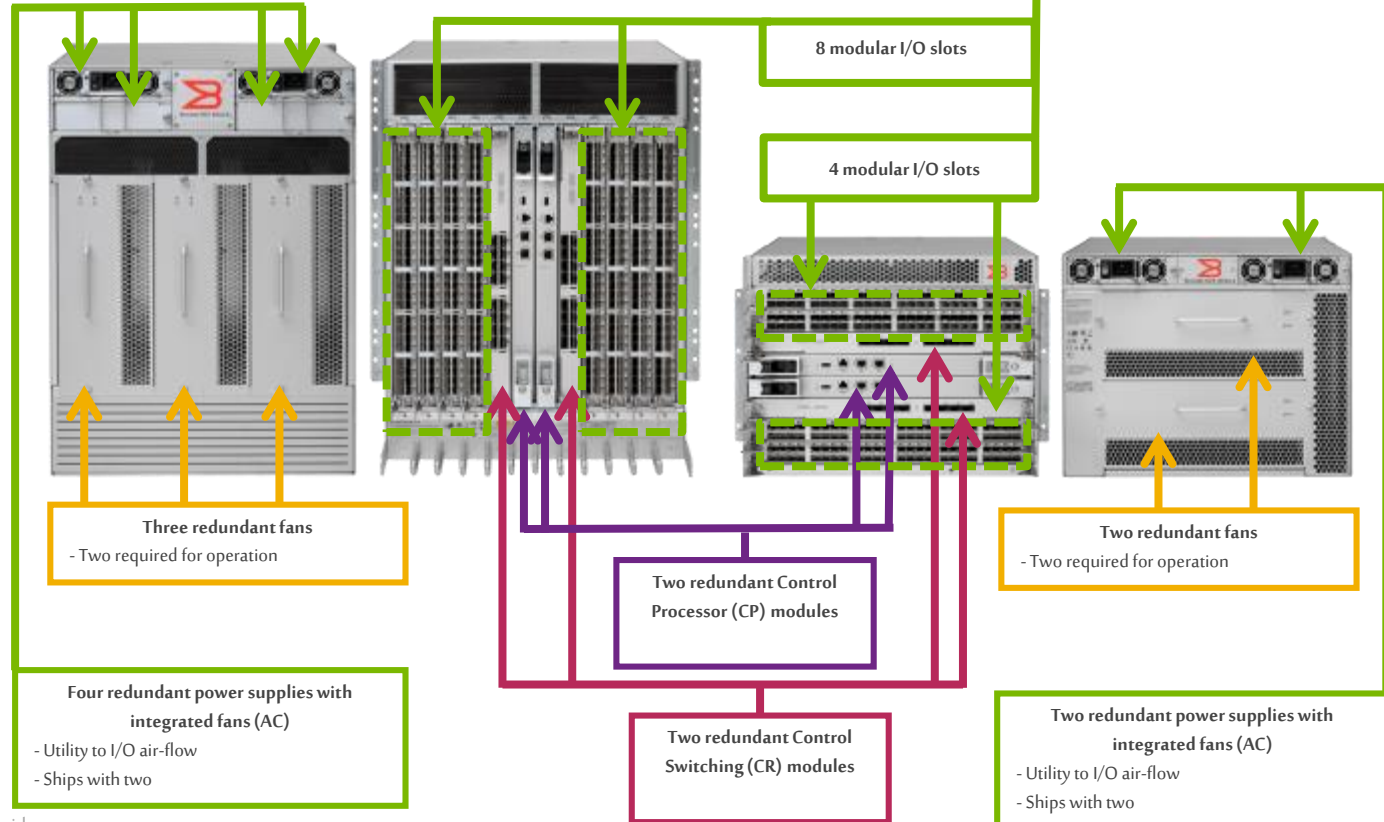
64 port 8Gbps Blade



- Brocade 815/825 8GB HBA
- Qlogic 2460/2462 4Gb HBA
- Qlogic 2560/2562 8Gb HBA
- Emulex 12000/12002 8Gb HBA
- Emulex 16000/16002 16Gb HBA

- Compellent SC8000 (FC)
- Compellent SC4020 (FC)
- PoowerVault MD (FC)

More details in
Product Sourcebook



Storage Arrays Guide



Dell XC



Dell MD3



Dell SC8000



Dell SC4020



Dell SC2000



Dell FS8600



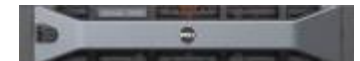
Dell PS6210



Dell PS61x0/41x0



Dell PS6510/6500



Dell FS76x0



Dell Storage SC8000



Enterprise storage for virtualized data centers and the cloud

- Ultra-efficient, **easy to manage** storage solution optimizes drive utilization dynamically
- **Dual controller** system based on a 2U rack chassis with integrated Dell Remote Access Controller (iDRAC)
- **Scales up** to 960 SAS drives per dual controller system, **scales-out** to multiple systems across multiple sites
- **Dell's auto-tiering** enables multiple high-performance SSD tiers leveraging the best attributes of both right-intensive (SLC) and read-intensive (MLC) drives



Dell Storage SC8000

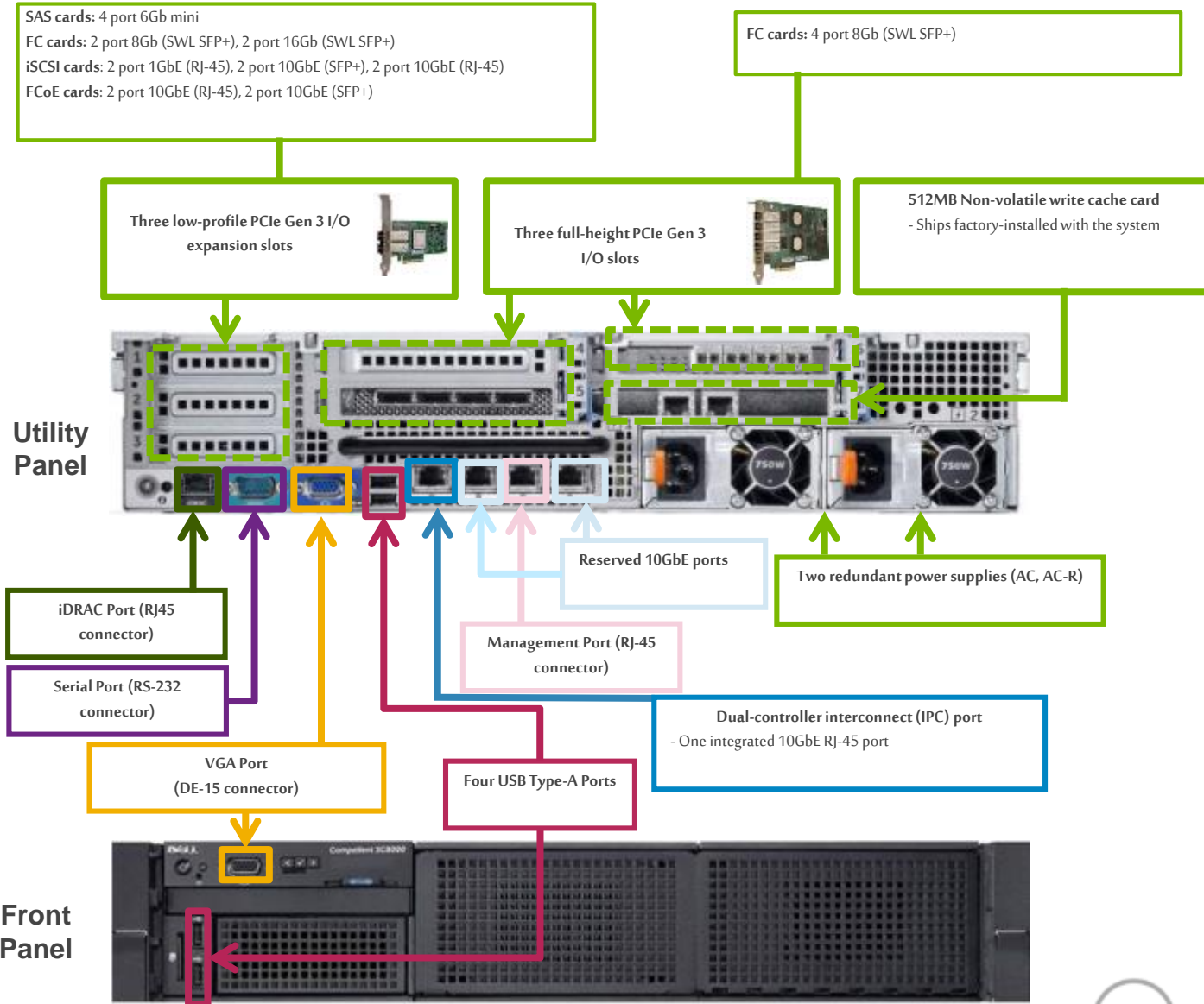
SC8000 – Multi-protocol Storage Array



Networking

- Brocade 300 (FC)
- Brocade 6505 (FC)
- Brocade 6510 (FC)
- Brocade 6520 (FC)
- Brocade 8510 (FC)
- Brocade M5424 (FC)
- Brocade M6505 (FC)
- Brocade M8428-k (iSCSI, FC)
- Dell S5000 (iSCSI, FC with HBA and CNA)
- Dell S4810 (iSCSI)
- Dell S6000 (iSCSI)
- MXL/IOA (iSCSI)
- Dell N3000 (iSCSI)
- Dell N4000 (iSCSI)

More details in
Dell Storage Compatibility Matrix



Dell Storage SC4020



Intelligent, self-optimizing array in affordable, all-in-one form factor

- Extends the benefits of **enterprise storage** to small and mid-sized deployments
- Dual redundant controllers, 24 internal drive slots, and **multi-protocol** with support for iSCSI and Fibre Channel
- Expands beyond 24 drives by adding SC200 or SC220 enclosures for **over 400TB total raw capacity**
- **Dell's auto-tiering** enables multiple high-performance SSD tiers leveraging the best attributes of both right-intensive (SLC) and read-intensive (MLC) drives



Dell Storage SC4020



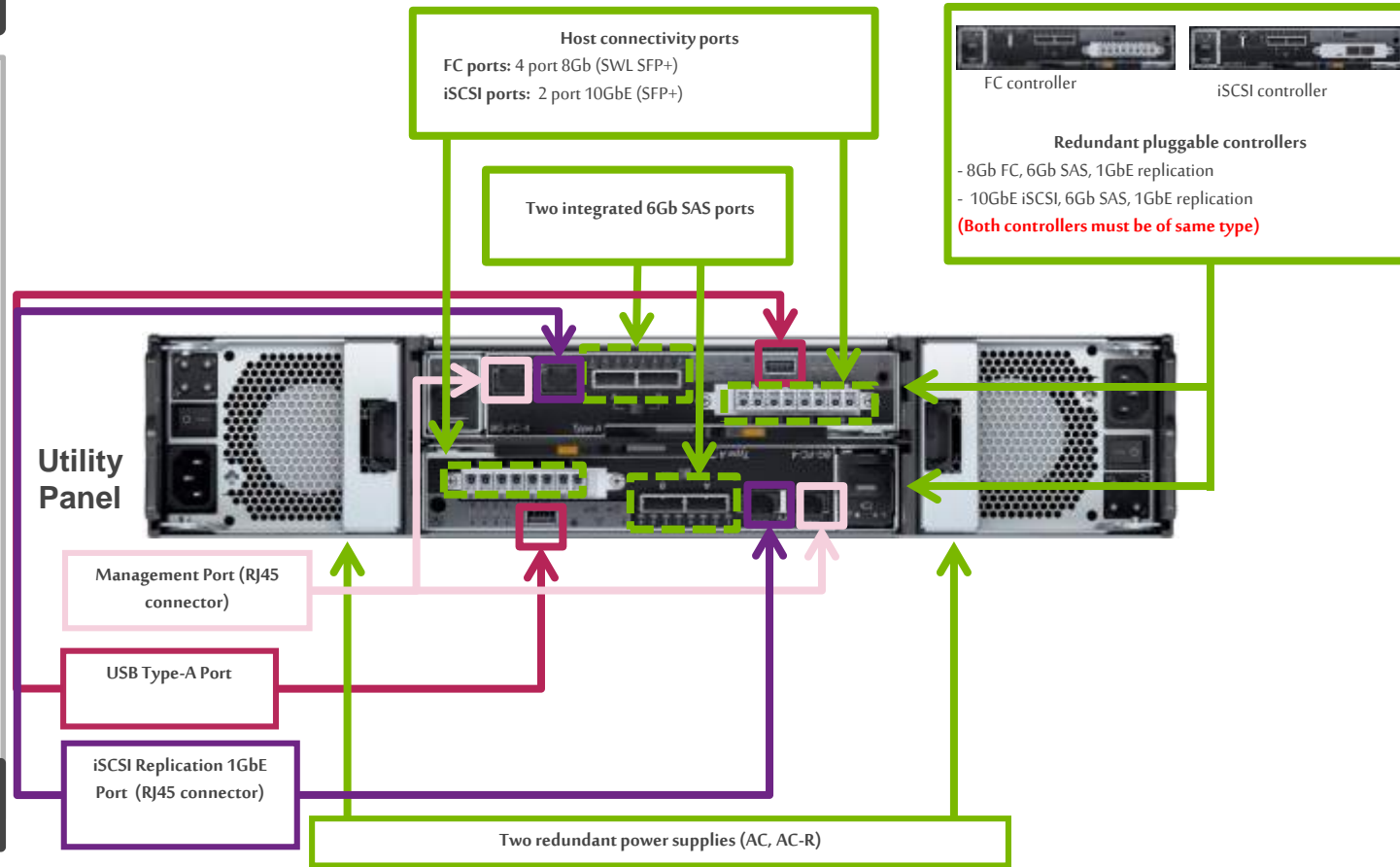
SC4020 – Multi-protocol all-in-one Storage



Networking

- Brocade 300 (FC)
- Brocade 6505 (FC)
- Brocade 6510 (FC)
- Brocade 6520 (FC)
- Brocade 8510 (FC)
- Brocade M5424 (FC)
- Brocade M6505 (FC)
- Brocade M8428-k (iSCSI, FC)
- Dell S5000 (iSCSI, FC with HBA and CNA)
- Dell S4810 (iSCSI)
- Dell S6000 (iSCSI)
- MXL/IOA (iSCSI)
- Dell N3000 (iSCSI)
- Dell N4000 (iSCSI)

More details in
Dell Storage Compatibility Matrix



Front Panel



Dell Storage SCv2000



Intelligent, entry-level solution providing better value in single-tier environments

- Extends the **SC series of SAN arrays** to entry-level customers
- **High performance**, superior performance for entry level storage
- **Future flexibility**, migrate data within SCv2000 series
- **Data protection**, exceptional number of snapshots and replication
- **Common Storage Center Management**, remote and local data protection, & Phone Home Services



Dell Storage SCv2000



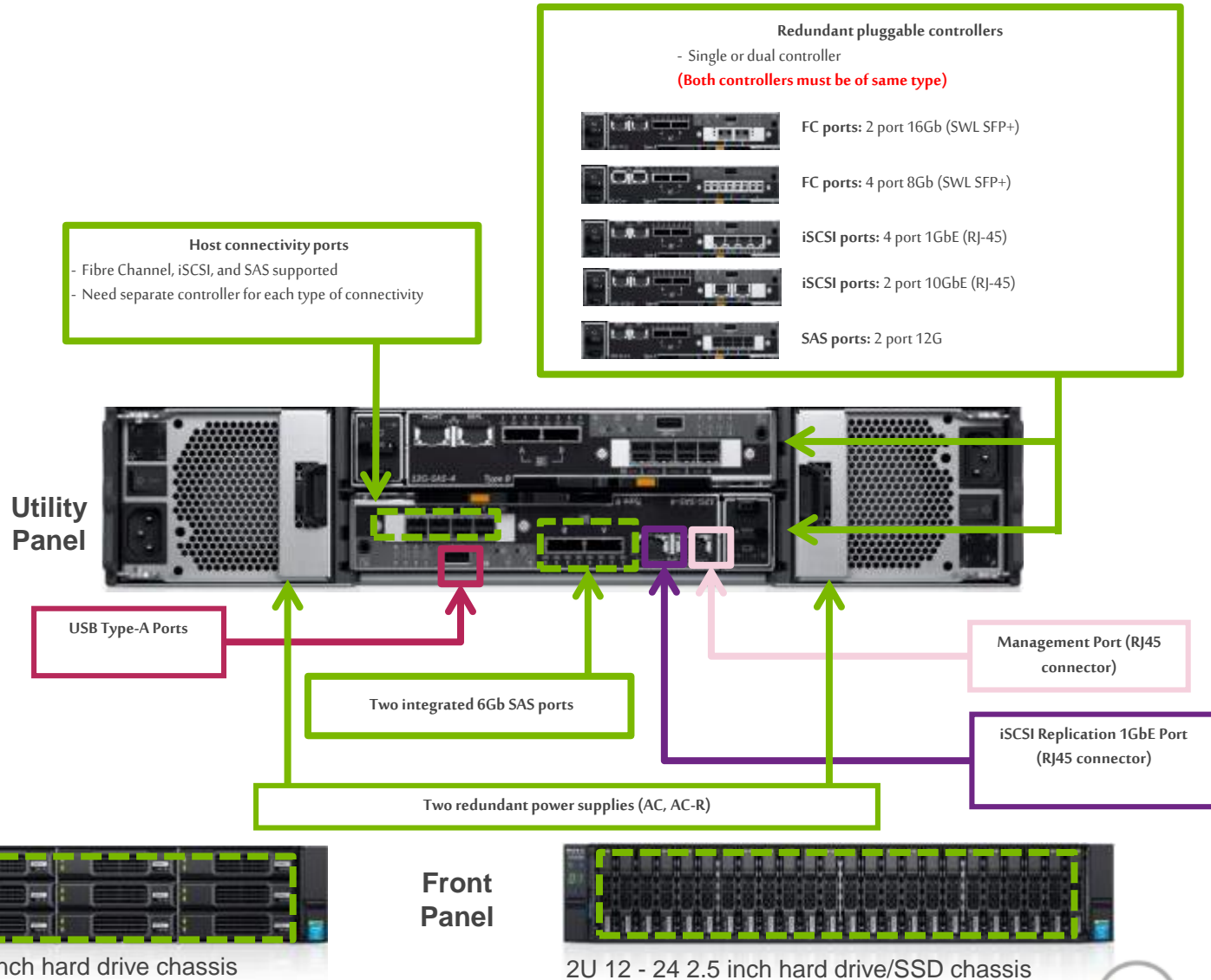
SCv2000 & SCv2020 – Entry-level SC series storage



Networking

- Brocade 300 (FC)
- Brocade 6505 (FC)
- Brocade 6510 (FC)
- Brocade 6520 (FC)
- Brocade 8510 (FC)
- Brocade M5424 (FC)
- Brocade M6505 (FC)
- Brocade M8428-k (FC)
- Dell S5000 (iSCSI, FC with HBA and CNA)
- Dell S4820T (iSCSI)
- MXL/IOA (iSCSI)
- Dell N3000 (iSCSI)
- Dell N4000 (iSCSI)

More details in
Dell Storage Compatibility Matrix





SCv2080 – Entry-level SC series storage


Networking

- Brocade 300 (FC)
- Brocade 6505 (FC)
- Brocade 6510 (FC)
- Brocade 6520 (FC)
- Brocade 8510 (FC)
- Brocade M5424 (FC)
- Brocade M6505 (FC)
- Brocade M8428-k (FC)
- Dell S5000 (iSCSI, FC with HBA and CNA)
- Dell S4820T (iSCSI)
- MXL/IOA (iSCSI)
- Dell N3000 (iSCSI)
- Dell N4000 (iSCSI)

More details in
Dell Storage Compatibility Matrix

Redundant pluggable controllers

- Dual controller only
- (Both controllers must be of same type)**

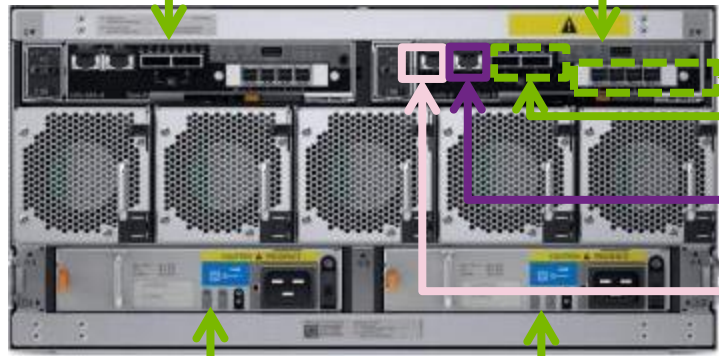


- FC ports: 2 port 16Gb (SWL SFP+)
- FC ports: 4 port 8Gb (SWL SFP+)
- iSCSI ports: 4 port 1GbE (RJ-45)
- iSCSI ports: 2 port 10GbE (RJ-45)
- SAS ports: 2 port 12G

Host connectivity ports

- Fibre Channel, iSCSI, and SAS supported
- Need separate controller for each type of connectivity

Utility Panel



Two integrated 6Gb SAS ports

iSCSI Replication 1GbE Port (RJ45 connector)

Management Port (RJ45 connector)

Two redundant power supplies (AC, AC-R)

Front Panel



5U, 42 - 84 3.5 inch hard drive chassis



Dell Storage XC Series



Built on the principles of web-scale

- Converge compute and storage
- **All intelligence in software**
- Distribute everything, Self Healing system
- Automation and rich analytics
- No single point of failure, always-on
- Linear, **predictable scale-out**
- Simple to deploy, maintain and manage
- **Multi-hypervisor support** – ESXi, Hyper-v, KVM
- Web-scale technology built in the Nutanix architecture
 - Apache Casandra – Distributed meta-data store with Paxos
 - Apache Zoo-keeper – Cluster configuration
 - MapReduce – cluster management and clean-up, tiering, deduplication
 - Data-Locality and Flash – Provides high performance



Dell Storage XC Series



Dell XC730XD – web-scale converged appliance



Networking

- Dell S4810
 - Dell S5000
 - Dell S6000 (10GbE with breakout cables only)
 - Dell N4000
- Adapters
- Intel i350 + X520 dual 1G + dual 10G SFP+
 - Intel X520 dual 10G SFP+
 - Intel i350 + X540 dual 1G + dual 10G Base-T
 - Intel X540 dual 10G Base-T
- Optics
- Intel branded SFP+ optics only
- Cables
- All Dell TwinAx cables
 - Standard Category 6 Ethernet cables



Intel X520*

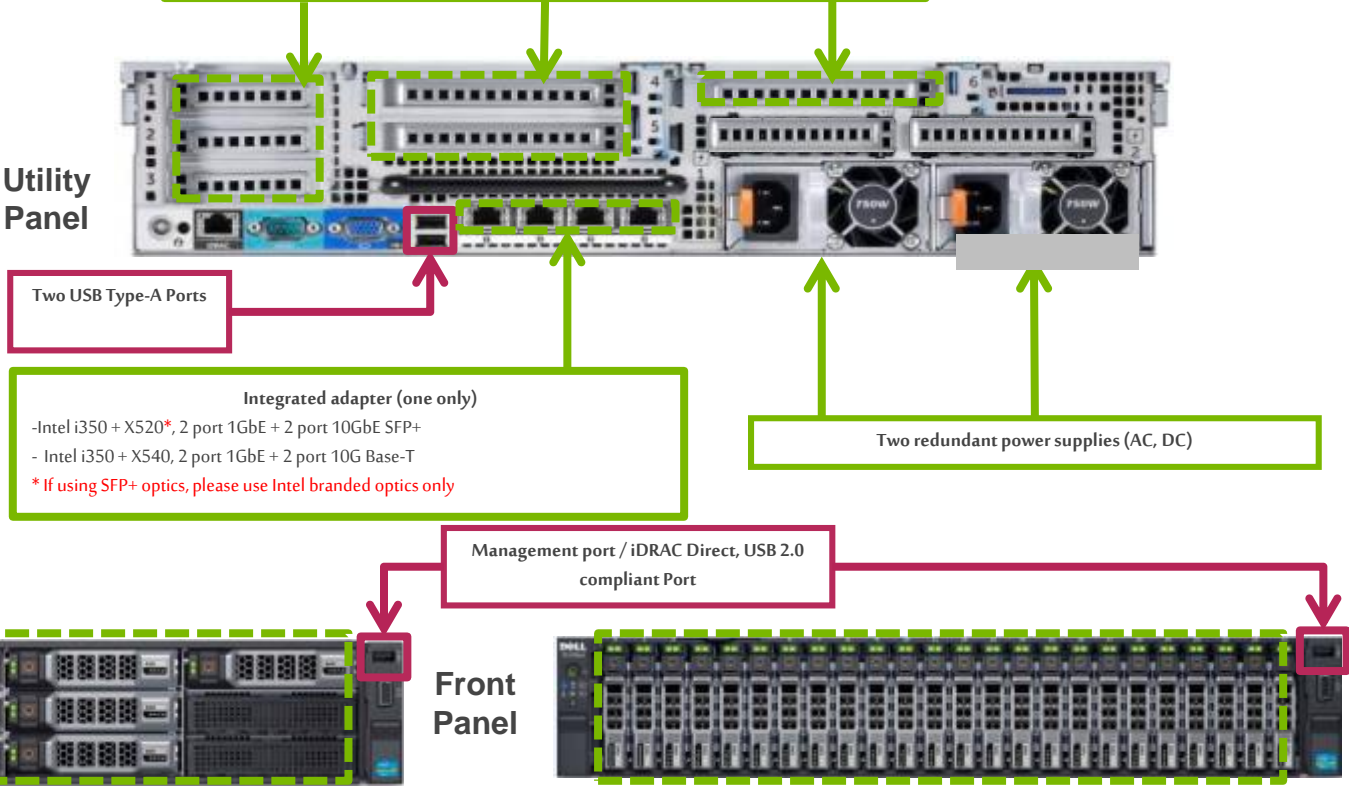
Intel X540

One optional 2-port 10GbE NIC

- Intel X520*, 2 port 10GbE SFP+
- Intel X540, 2 port 10G Base-T

(Low profile or full height in any supporting slot)

** If using SFP+ optics, please use Intel branded optics only*



3.5 inch hard drive chassis



2.5 inch hard drive/SSD chassis





Dell XC630 – web-scale converged appliance

Networking

- Dell S4810
- Dell S5000
- Dell S6000 (10GbE with breakout cables only)
- Dell N4000

Adapters

- Intel i350+ X520 dual 1G + dual 10G SFP+
- Intel X520 dual 10G SFP+
- Intel i350 + X540 dual 1G + dual 10G Base-T
- Intel X540 dual 10G Base-T

Optics

- Intel branded SFP+ optics only

Cables

- All Dell TwinAx cables
- Standard Category 6 Ethernet cables

Intel X520* **Intel X540**

One optional 2-port 10GbE NIC

- Intel X520*, 2 port 10GbE SFP+
- Intel X540, 2 port 10G Base-T

(Low profile or full height in any supporting slot)

** If using SFP+ optics, please use Intel branded optics only*

Utility Panel



Two USB Type-A Ports

Integrated adapter (one only)

- Intel i350 + X520*, 2 port 1GbE + 2 port 10GbE SFP+
 - Intel i350 + X540, 2 port 1GbE + 2 port 10G Base-T
- * If using SFP+ optics, please use Intel branded optics only*

Two redundant power supplies (AC, DC)

Management port / iDRAC Direct, USB 2.0 compliant Port

Front Panel



2.5 inch hard drive/SSD chassis



Dell Storage FS8600



Intelligent, self-optimizing array in affordable, all-in-one form factor

- **Unifies block and file storage** on one Compellent platform
 - Shared back-end infrastructure eliminates need to carve spindles separately
 - Single platform avoids the added cost and complexity of separate solutions
- **Extends efficiency of Compellent architecture** to NAS environment
 - Data Progression lowers costs by migrating inactive data to less expensive drives
 - Dynamic Capacity enables space-efficient over allocation of NAS capacity
 - Policy-driven dedupe and compression
- **Provides customers with a scale-out NAS** solution
 - 2PB Single namespace scales non-disruptively across up to four appliances
 - Load-balancing continually optimizes performance as FS8600 system scales



Dell Storage FS8600

FS8600 – Dell Fluid File System Appliance



Networking

- Brocade 300 (FC)
- Dell S5000 (iSCSI, FC with HBA and CNA)
- Dell S4810 (iSCSI)
- Dell N4000 (iSCSI)

More details in
Dell Storage Compatibility Matrix

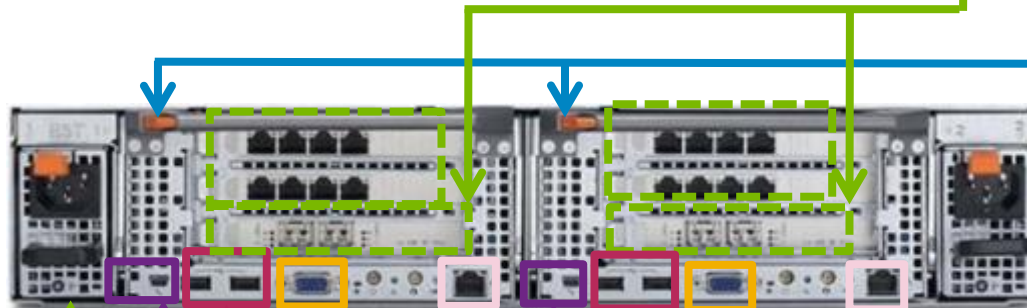
Adapters for Frontend and Interconnect connectivity

- 1GbE: 2x quad-port (RJ-45) NIC in each controller
- 10GbE: 2x dual-port 10GbE (SFP+) NIC in each controller

Adapters for Backend connectivity

- Fibre Channel: 1x 2 port 8Gb HBA (SWL SFP+) in each controller
(Direct connect to SAN is not supported)
- iSCSI: 1x 2 port 10GbE (SFP+) NIC in each controller
- iSCSI: 1x 2 port 10GbE (RJ-45) NIC in each controller

Utility Panel



Two active-active, hot-swappable controllers

Serial Port (mini-USB connector)

Two USB Type-A Ports

VGA Port (DE-15 connector)

Two redundant power supplies (AC, AC-R)

Management Port (RJ45 connector)

Front Panel



Dell EqualLogic PS6210 arrays



Higher performance for virtual and data-intensive environments

- Next-generation **10GbE arrays**
- Faster, redesigned controller unlocks the power of flash
 - 16GB of memory/controller
 - 2 active 10GbE ports
 - Either SFP+ or 10GBASE-T
 - Can auto-negotiate to 1GbE with 10GBASE-T
- **24 hot-pluggable drives**, including SSD, SAS, NL-SAS and SED (2.5" or 3.5")
- Up to 96TB per array
- **Streamlined management** with Array Software 7.0
- New battery backup for cache-to-flash



Dell EqualLogic PS6210



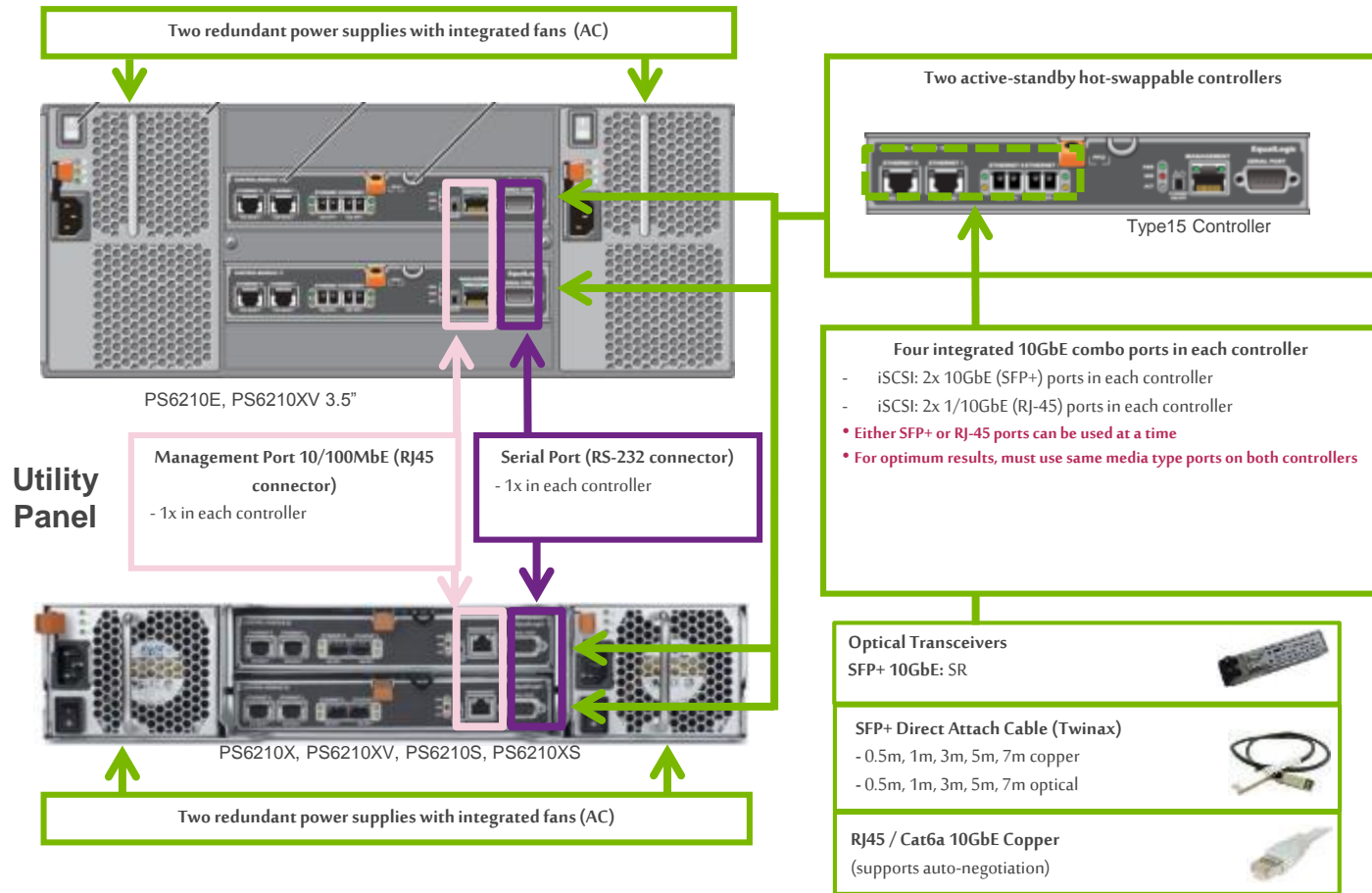
PS6210 – Dell EqualLogic Arrays



Networking

- Dell N3000 (1GbE only)
- Dell N2000 (1GbE only)
- Dell S55/S60 (1GbE only)
- PowerConnect 8024-k
- PowerConnect 8428-k
- MXL
- Dell S5000
- Dell S4810
- Dell S4820T
- Dell S6000
- Dell Z9500
- Dell N4000

More details in
Dell Storage Compatibility Matrix



Front Panel



PS6210X, PS6210XV, PS6210S, PS6210XS

Dell Storage Networking I/O Guide



PS6210E, PS6210XV 3.5"



Dell EqualLogic PS61x0/PS41x0 arrays

Exceptional density and capacity with 10GbE and 1GbE throughput

- Next-generation **10GbE and 1GbE arrays** that make the most of your SAN investment
- Choose either 10GBASE-T or traditional SFP+ port on 10GbE arrays
- **Streamlined management** with Array Software 7.0
- Leverage all-inclusive software, peer scalability and **ease-of-use**
- Scale capacity and performance



Dell EqualLogic PS61x0/PS41x0

PS61x0 – Dell EqualLogic Arrays

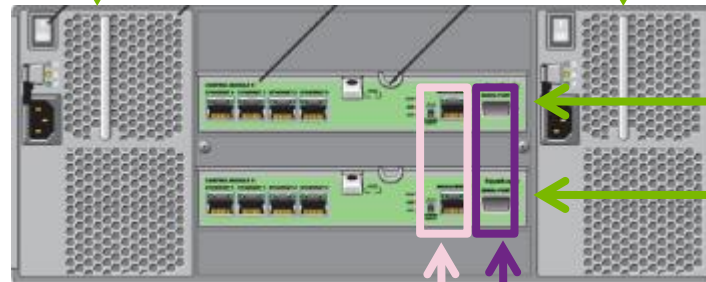


Networking

- Dell N3000 (PS4100)
- Dell N2000 (PS4100)
- Dell S55/S60 (PS4100)
- PowerConnect 8024-k (PS4110)
- PowerConnect 8428-k (PS4110)
- MXL (PS4110)
- Dell S5000 (PS4110)
- Dell S4810 (PS4110)
- Dell S4820T (PS4110)
- Dell S6000 (PS4110)
- Dell Z9500 (PS4110)
- Dell N4000 (PS4110)

More details in
Dell Storage Compatibility Matrix

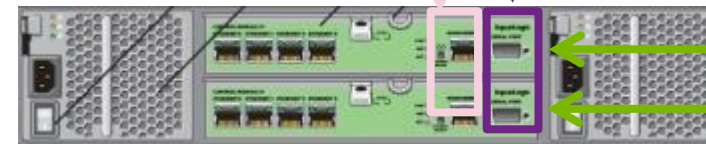
Two redundant power supplies with integrated fans (AC)



PS6100E, PS6100XV 3.5"

Utility Panel

- Management Port 10/100MbE (RJ45 connector) - 1x in each controller
- Serial Port (RS-232 connector) - 1x in each controller



PS6100X, PS6100XV, PS6100S, PS6100XS, PS4100E

Two redundant power supplies with integrated fans (AC)

Four integrated 1000BASE-T ports in each controller

- iSCSI: 4x 1GbE (RJ-45 connector) ports in each controller

Two active-standby hot-swappable controllers

Type11 Controller

- Same controller is used in all models of PS6100 arrays

Two active-standby hot-swappable controllers

- Same controller is used in all models of PS6110 arrays

Two integrated 10GbE combo ports in each controller

- iSCSI: 1x 10GbE (SFP+ connector) ports in each controller
- iSCSI: 1x 10GbE (RJ-45 connector) ports in each controller
- Either SFP+ or RJ-45 ports can be used at a time
- For optimum results, must use same media type ports on both controllers

Front Panel



PS6100X, PS6100XV, PS6100S, PS6100XS



PS6100E, PS6100XV 3.5"

- Optical Transceivers
- SFP+ 10GbE: SR
- SFP+ Direct Attach Cable (Twinax)
- 0.5m, 1m, 3m, 5m, 7m copper
 - 0.5m, 1m, 3m, 5m, 7m optical
- RJ45 / Cat6a 10GbE Copper

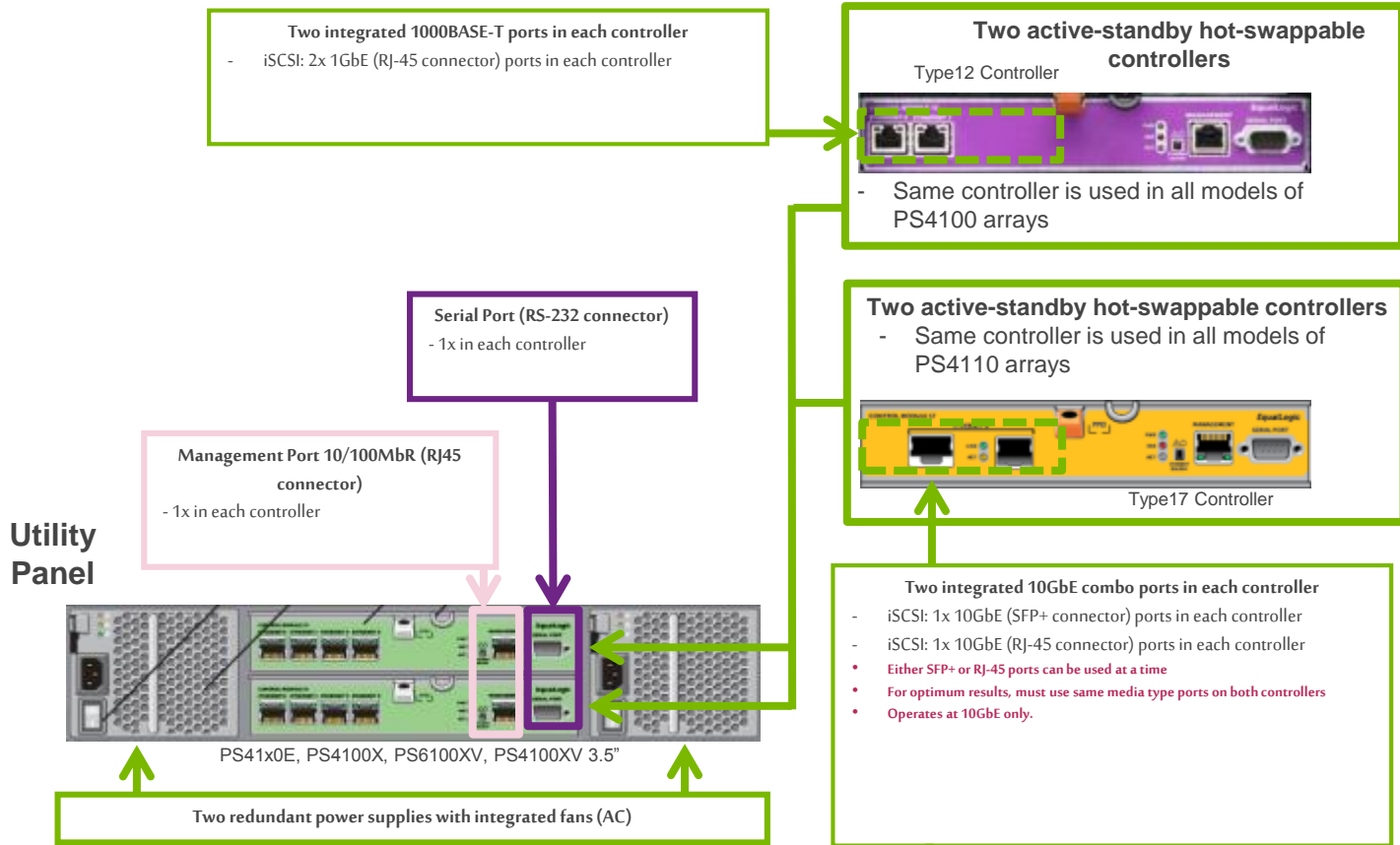
PS41x0 – Dell EqualLogic Arrays



Networking

- Dell N3000 (PS4100)
- Dell N2000 (PS4100)
- Dell S55/S60 (PS4100)
- PowerConnect 8024-k (PS4110)
- PowerConnect 8428-k (PS4110)
- MXL (PS4110)
- Dell S5000 (PS4110)
- Dell S4810 (PS4110)
- Dell S4820T (PS4110)
- Dell S6000 (PS4110)
- Dell Z9500 (PS4110)
- Dell N4000 (PS4110)

More details in Dell Storage Compatibility Matrix



Front Panel



PS41x0E, PS41x0X, PS41x0XV, PS41x0XV 3.5"

Optical Transceivers
SFP+ 10GbE: SR

SFP+ Direct Attach Cable (Twinax)
- 0.5m, 1m, 3m, 5m, 7m copper
- 0.5m, 1m, 3m, 5m, 7m optical

RJ45 / Cat6a 10GbE Copper

Dell EqualLogic PS6510/6500 arrays



Consolidate multiple workloads within a single, powerful array

- **Highly available and** reliable storage for capacity-demanding deployments
- Virtualized scale-out architecture, ideal for server virtualization and storage consolidation
- Increased throughput performance from **10GbE technology** on the PS6510
- Robust backup and recovery through application integration and automation
- Scalable, **self-managing storage** that grows your business
- Enhanced security with Self-Encrypting Drives (SEDs)
- **Streamlined management** with Array Software 7.0



Dell EqualLogic PS6510/6500



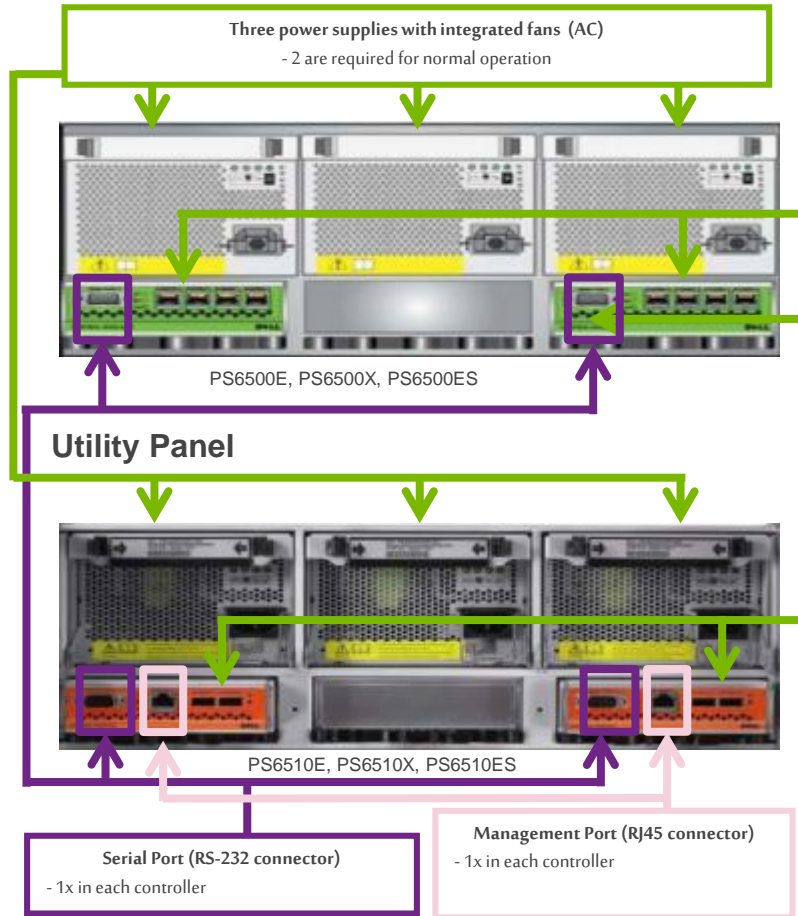
PS65x0 – Dell EqualLogic Arrays



Networking

- MXL (PS6510)
- PowerConnect 8024-k (PS6510)
- PowerConnect 8248-k (PS6510)
- Dell N3000 (PS6500)
- Dell N2000 (PS6500)
- Dell S55/S60 (PS6500)
- Dell S5000 (PS6510)
- Dell S4810 (PS6510)
- Dell S4820T (PS6510)
- Dell S6000 (PS6510)
- Dell Z9500 (PS6510)

More details in
Dell Storage Compatibility Matrix



Four integrated 1000BASE-T ports in each controller
- iSCSI: 4x 1GbE (RJ-45 connector) ports in each controller

Two active-standby hot-swappable controllers
Type 7 Controller

Same controller is used in all models of PS6500 arrays

Two active-standby hot-swappable controllers
- Same controller is used in all models of PS6510 arrays

Type 10 Controller

Two integrated 10GbE ports in each controller
- iSCSI: 2x 10GbE (SFP+ connector) ports in each controller
- Operates at 10GbE only

- Optical Transceivers
SFP+ 10GbE: SR
- SFP+ Direct Attach Cable (Twinax)
- 0.5m, 1m, 3m, 5m, 7m copper
- 0.5m, 1m, 3m, 5m, 7m optical
- RJ45 / Cat6a 10GbE Copper
-

Front Panel



PS6500E, PS6500X, PS6500ES, PS6510E,
PS6510X, PS6510ES



Dell EqualLogic FS76x0 NAS Appliances



Scale-out unified storage

- Consolidates application servers and Windows/Linux file servers on a **single unified storage platform**
- Enables file storage via CIFS/NFS protocols in addition to iSCSI block storage via PS Series arrays
- Expands as your needs grow: **scale capacity and/or performance** without disruption
- Provides management interface to manage file and block storage
- Utilizes **1GbE and 10GbE connectivity**
- Offers deduplication and compression with FluidFS v3, reducing the capacity required for common data by 48%*
- Growing ecosystem of **third-party certifications**



Dell EqualLogic FS76x0



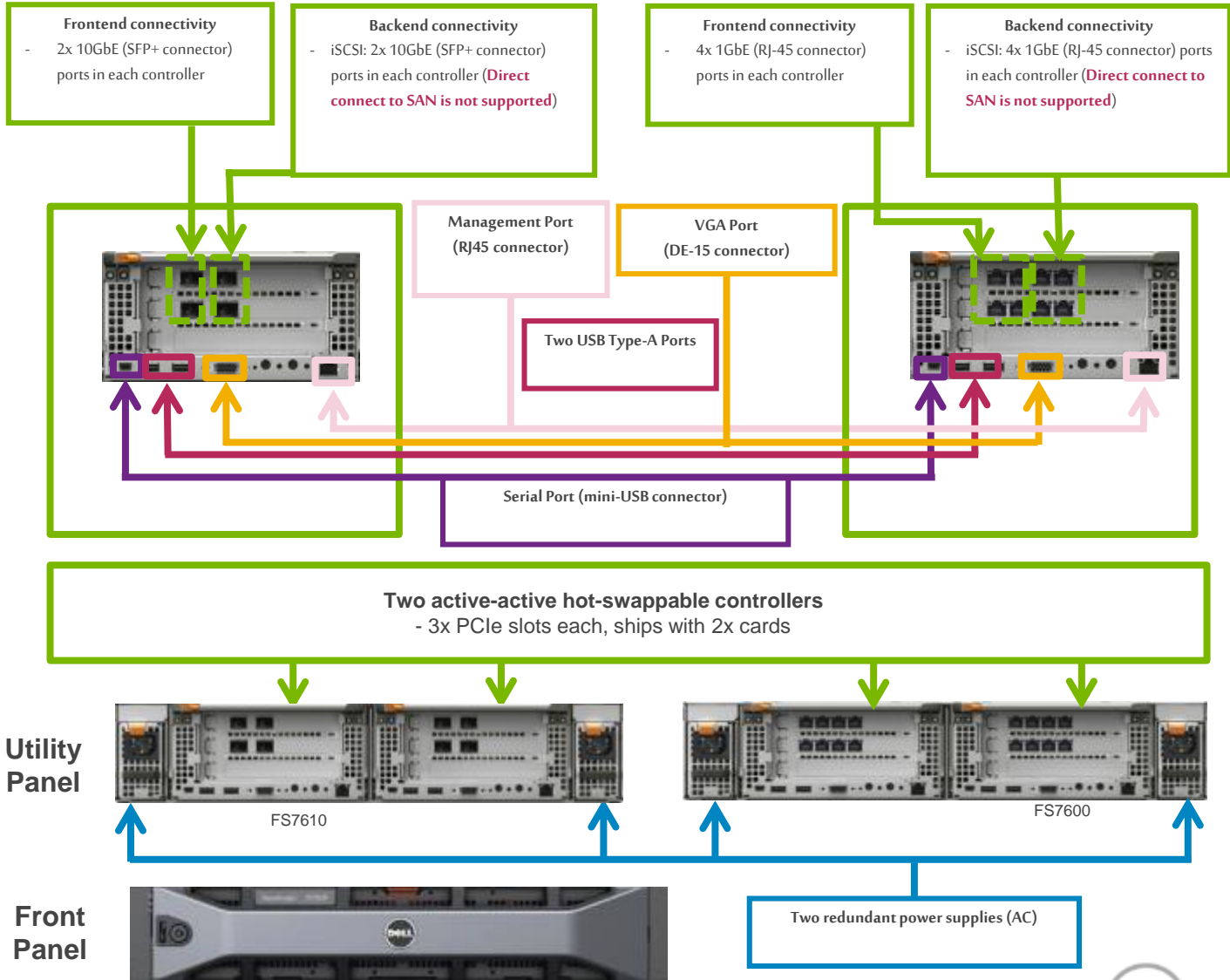
FS76x0 – Dell Fluid File System Appliance



Networking

- Dell S4810 (FS7610)
- Dell S4820T (FS7610)
- Dell N4000 (FS7610)
- Dell N3000 (FS7600)

More details in
Dell Storage Compatibility Matrix



Dell PowerVault MD3 storage arrays



Delivering the latest technology

- Affordable storage
 - Modular design allows for flexible and custom design with sacrificing performance
 - Designed to scale as your business grows
 - Enterprise-class capabilities
- Reliable data protection
 - Proven track record of reliable storage
 - Dynamic Disk Pools provides a simple option to standard RAID configuration
 - Premium features offer software and firmware data protection options
- Versatile options
 - Choose what you want, when you want it
 - Non-disruptively scale to meet application demands
 - Software licenses that you can try for 90 days before you purchase



Dell PowerVault MD3 Storage



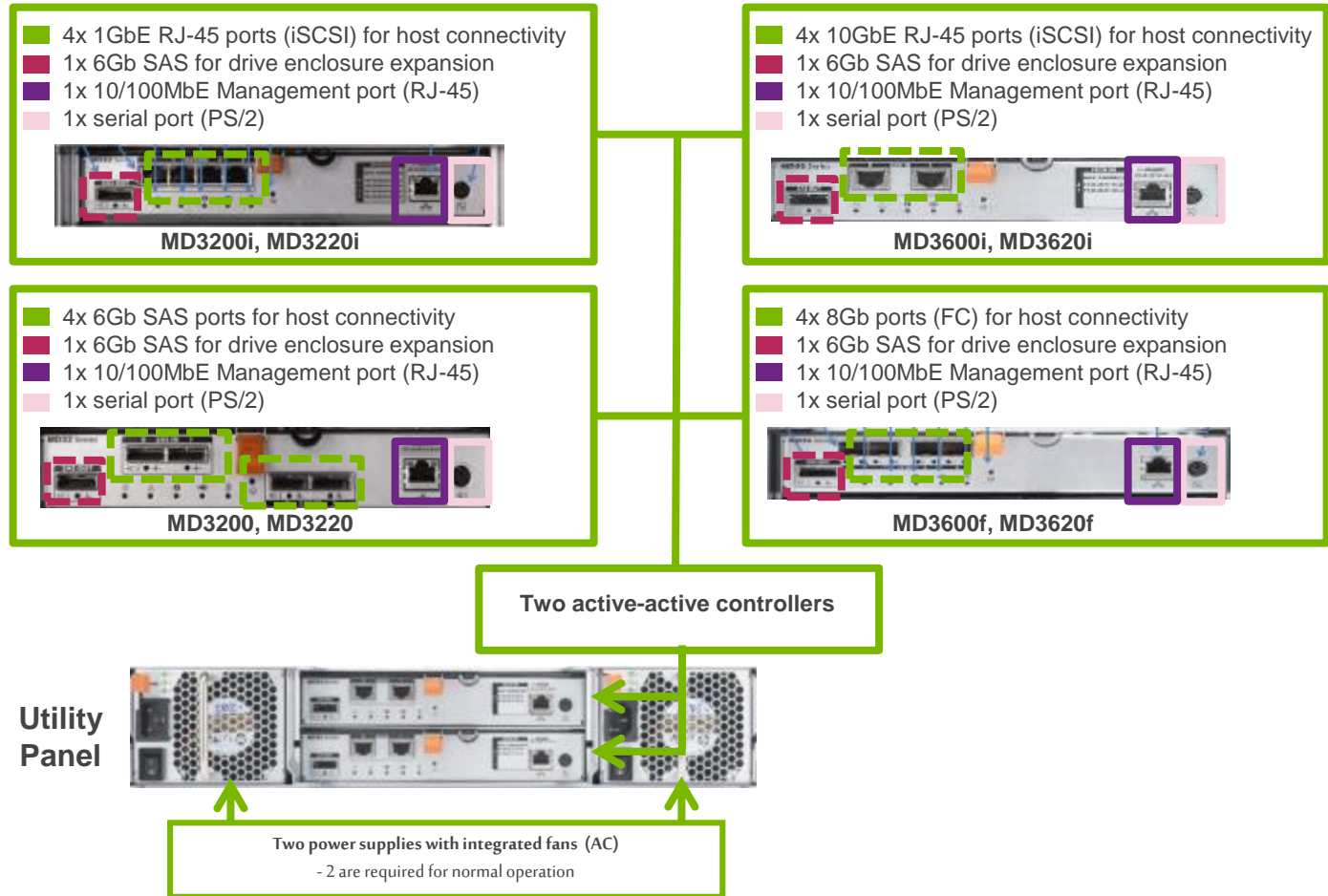
MD32xx/36xx 2U – Dell PowerVault Arrays



Networking

- Brocade 300 (FC)
- Brocade 6505 (FC)
- Brocade 6510 (FC)
- Brocade 8510 (FC)
- Brocade M5424 (FC)
- Brocade M6505 (FC)
- Dell B/4Gbps FC Pass through (FC)
- Dell S5000 (FC)

More details in
Dell Storage Compatibility Matrix



MD3200, MD3200i, MD3600i, MD3600f,
MD3400, MD3800i, MD3800f

Front Panel



MD3220, MD3220i, MD3620i, MD3620f,
MD3420, MD3820i, MD3820f



MD34xx/38xx 2U – Dell PowerVault Arrays



Networking

- Brocade 300 (FC)
- Brocade 6505 (FC)
- Brocade 6510 (FC)
- Brocade 6520 (FC)
- Brocade 8510 (FC)
- Brocade M5424 (FC)
- Brocade M6505 (FC)
- Dell B/4Gbps FC Pass through (FC)
- Dell S5000 (FC)

More details in
Dell Storage Compatibility Matrix

- 4x 12Gb SAS ports for host connectivity
- 2x 12Gb SAS ports for drive enclosure expansion
- 1x 100/1000MbE Management port (RJ-45)
- 1x serial port (PS/2)
- Reserved ports

MD3400, MD3420

- 2x 10GbE RJ-45 ports (iSCSI) for host connectivity
- 2x 12Gb SAS ports for drive enclosure expansion
- 1x 100/1000MbE Management port (RJ-45)
- 1x serial port (PS/2)
- Reserved ports
- 2x 12Gb SAS ports for host connectivity

MD3800i, MD3820i

- 4x 16Gb ports (FC) for host connectivity
- 2x 12Gb SAS for drive enclosure expansion
- 1x 10/100 Management port (RJ-45)
- 1x serial port (PS/2)
- Reserved ports
- 2x 12Gb SAS ports for host connectivity

MD3800f, MD3820f

Two active-active controllers

Utility
Panel



Two power supplies with integrated fans (AC)
- 2 are required for normal operation

Front
Panel



MD3200, MD3200i, MD3600i, MD3600f,
MD3400, MD3800i, MD3800f

MD3220, MD3220i, MD3620i, MD3620f,
MD3420, MD3820i, MD3820f





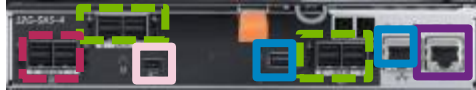
MD34xx/38xx 4U – Dell PowerVault Arrays

Networking

- Brocade 300 (FC)
- Brocade 6505 (FC)
- Brocade 6510 (FC)
- Brocade 6520 (FC)
- Brocade 8510 (FC)
- Brocade M5424 (FC)
- Brocade M6505 (FC)
- Dell 8/4Gbps FC Pass through (FC)
- Dell S5000 (FC)


More details in
Dell Storage Compatibility Matrix

- 4x 12Gb SAS ports for host connectivity
- 2x 12Gb SAS ports for drive enclosure expansion
- 1x 100/1000MbE Management port (RJ-45)
- 1x serial port (PS/2)
- Reserved ports




MD3400, MD3420

- 2x 10GbE RJ-45 ports (iSCSI) for host connectivity
- 2x 12Gb SAS ports for drive enclosure expansion
- 1x 100/1000MbE Management port (RJ-45)
- 1x serial port (PS/2)
- Reserved ports
- 2x 12Gb SAS ports for host connectivity



MD3800i, MD3820i

- 4x 16Gb ports (FC) for host connectivity
- 2x 12Gb SAS for drive enclosure expansion
- 1x 10/100 Management port (RJ-45)
- 1x serial port (PS/2)
- Reserved ports
- 2x 12Gb SAS ports for host connectivity



MD3800f, MD3820f

Two active-active controllers

Utility Panel



Two redundant power supplies

Two fan modules

Front Panel



MD3460, MD3860i, MD3860f





MD32xx/36xx 4U – Dell PowerVault Arrays

Networking

- Brocade 300 (FC)
- Brocade 6505 (FC)
- Brocade 6510 (FC)
- Brocade 6520 (FC)
- Brocade 8510 (FC)
- Brocade M5424 (FC)
- Brocade M6505 (FC)
- Dell 8/4Gbps FC Pass through (FC)
- Dell S5000 (FC)

More details in
Dell Storage Compatibility Matrix

■ 4x 6Gb SAS ports for host connectivity
■ 1x 6Gb SAS ports for drive enclosure expansion
■ 1x 100/1000MbE Management port (RJ-45)
■ 1x serial port (PS/2)

MD3260

■ 2x 1GbE RJ-45 ports (iSCSI) for host connectivity
■ 1x 6Gb SAS ports for drive enclosure expansion
■ 1x 100/1000MbE Management port (RJ-45)
■ 1x serial port (PS/2)

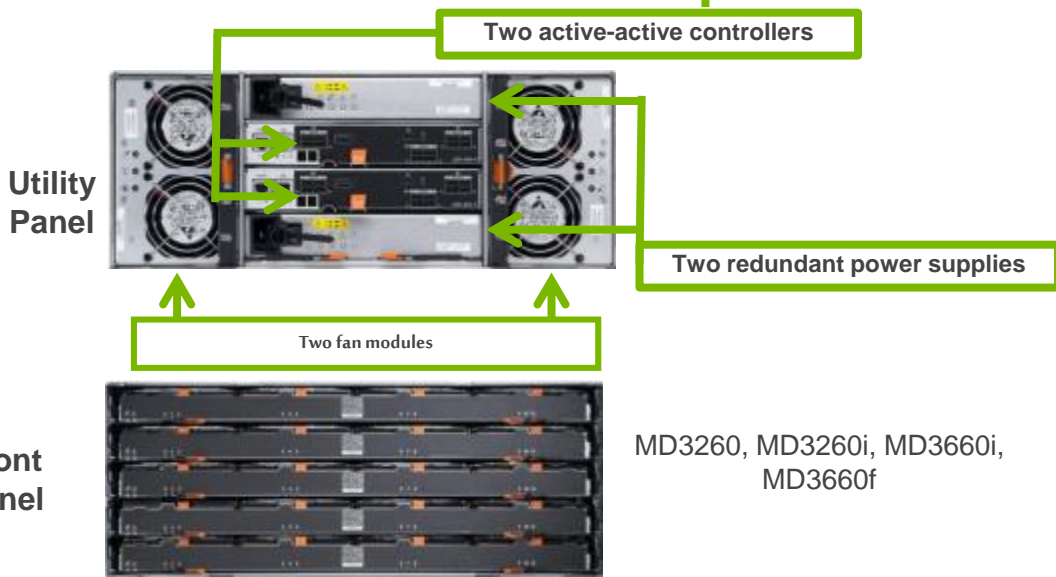
MD3260i

■ 2x 10GbE RJ-45 ports (iSCSI) for host connectivity
■ 1x 6Gb SAS ports for drive enclosure expansion
■ 1x 100/1000MbE Management port (RJ-45)
■ 1x serial port (PS/2)

MD3660i

■ 4x 8Gb ports (FC) for host connectivity
■ 1x 6Gb SAS for drive enclosure expansion
■ 1x 10/100 Management port (RJ-45)
■ 1x serial port (PS/2)

MD3660f



Dell Storage Networking I/O Interoperability guide



Dell Storage Networking I/O Interoperability



		Dell Block Storage Arrays					Dell File Sharing Appliances		Dell FluidCache	
Connectivity Type	Product	PowerVault MD3		Compellent		EqualLogic	Compellent	EqualLogic	FCFS	
		iSCSI	FC	iSCSI	FC	iSCSI	FS8600 (Back-end Network)	FS76x0 (Back-end Network)	Cache Network	
Dell Storage Networking Switches	40G	S6000	N/A	N/A	N/A	N/A	N/A	N/A	Supported	
	10G	Z9500	N/A	N/A		N/A	Supported		Supported	N/A
		S6000	N/A	N/A	Supported	N/A	Supported		Supported	N/A
		S5000	N/A	N/A	Supported	N/A	Supported	Supported	Supported	Supported
		S4810	N/A	N/A	Supported	N/A	Supported	Supported	Supported	Supported
		S4820T				N/A	Supported		Supported	N/A
		N4000			Supported	N/A	Supported		Supported	N/A
		MXL/IOA			Supported		Supported		Supported	N/A
		PCT-8100			Supported	N/A	Supported		Supported	N/A
		FN-IOA	NCV	NCV	NCV	NCV	NCV	N/A	N/A	N/A
	1G	N2000	N/A	N/A	N/A	N/A	Supported	N/A	Supported	N/A
		N3000	N/A	N/A	Supported	N/A	Supported	N/A	Supported	N/A
		S25/S50	N/A	N/A	N/A	N/A	Supported	N/A	Supported	N/A
		S55	N/A	N/A	N/A	N/A	Supported	N/A		N/A
		S60	N/A	N/A	N/A	N/A	Supported	N/A	Supported	N/A
		PCT 6200	N/A	N/A	N/A	N/A	Supported	N/A		N/A
		PCT 7000	N/A	N/A	Supported	N/A	Supported	N/A	Supported	N/A
	8Gbps	S5000	Supported	Supported		Supported		Supported		N/A



Dell Storage Networking I/O Interoperability



		Dell Block Storage Arrays					Dell File Sharing Appliances		
Dell Storage Networking Switches	Connectivity Type	Product	PowerVault MD3		Compellent		EqualLogic	Compellent	EqualLogic
			iSCSI	FC	iSCSI	FC	iSCSI	FS8600 (Back-end Network)	FS76x0 (Back-end Network)
			16Gbps FC	M6505	N/A	Supported	N/A	Supported	N/A
	6505	N/A	Supported	N/A	Supported	N/A	N/A	N/A	
	6510	N/A	Supported	N/A	Supported	N/A	N/A	N/A	
	6520	N/A	Supported	N/A	Supported	N/A	N/A	N/A	
	8510	N/A	Supported	N/A	Supported	N/A	N/A	N/A	
	8Gbps FC	S5000	N/A	Supported	N/A	Supported	N/A	Supported	N/A
		M5424	N/A	Supported	N/A	Supported	N/A	N/A	N/A
		MXL (FC FlexIO)	N/A	Roadmap	N/A	Roadmap	N/A	N/A	N/A
		IOA (FC FlexIO)	N/A	Roadmap	N/A	Roadmap	N/A	N/A	N/A
		M8428-k	N/A	N/A	N/A	Supported	N/A	N/A	N/A
		300	N/A	Supported	N/A	Supported	N/A	Supported	N/A
	8Gbps FC (NPIV Proxy Gateway ¹)	S5000	N/A	Supported	N/A	Supported	N/A	N/A	N/A
		MXL (FC FlexIO)	N/A	Supported	N/A	Supported	N/A	N/A	N/A
		IOA (FC FlexIO)	N/A	Supported	N/A	Supported	N/A	N/A	N/A
		FN-IOA	N/A	Roadmap	N/A	Roadmap	N/A	N/A	N/A

Supported: Certified by Dell storage or Dell networking (in the case of NPIV Proxy Gateways)

N/A: The combination is not possible

NCV: Not a commercially viable solution

Empty cells: Valid connectivity option but not tested

Notes:

1. NPIV Proxy Gateway (NPG) test and validation is performed by Dell Networking. Dell Storage certification is only applicable to directly connected switches. Since NPG switches typically do not connect to storage arrays directly (there must be a fabric switch between NPG switches and storage array), direct certification of NPG is not mandatory for storage arrays. As long as NPG switch and storage array are certified with the fabric switch, the fabric will be supported.

Deployment and Technical Guides





Deployment & Technical Guides

Detailed guides to help you get connected

WorkLoads and Applications

Product Focus	Document Title	Tags
M820, SC8000., MXL, M8024-k, M6505	Accelerating Oracle OLTP with Compellent Flash Optimized Array	Oracle RAC, FC, blade
R820, SC8000, 6505	High Performance SQL Server with Storage Center All Flash Array	Microsoft SQL, FC, Rack
R620, SC4020, 300	Dell Compellent Storage Center 6.5 SC4020 4,500 Mailbox Exchange 2013 Resiliency Storage Solution	Microsoft Exchange, FC, HA
R620, SC4020, 300	Dell Compellent Storage Center 6.5 SC4020 10,000 Mailbox Exchange 2013 Resiliency Storage Solution	Microsoft Exchange, FC, HA
R730xd, MD1400, H830, S4810, S5000	Microsoft Exchange 2013 on Dell PowerEdge R730xd 3.5" Chassis and Dell PowerVault MD1400	Microsoft Exchange, DAS
M820, M620, R620, PC6248, PC7048, S4810, PS6210X	Best Practices for EqualLogic in an OpenStack Private Cloud	OpenStack, iSCSI, Private cloud
R630, N4000, PC7024P, W-3200 controller, W-AP135	Dell Unified Communication Solution with Microsoft Lync Server 2013	Microsoft Lync 2013, Microsoft SQL, Hhyper-V,
R630, PS6210, S4810	Microsoft Sharepoint Server 2013 on Dell PowerEdge R630 with Microsoft Windows Server 2012R2 Hyper-V	Microsoft SharePoint 2013, Microsoft Hyper-V
M620, MXL, PS-M4110XS,	VDI with Citrix XenDesktop and Vmware vSphere on Dell EqualLogic PS-M4110XS Hybrid Blade Storage Arrays	Vmware vSphere, vCenter, Citrix XenDesktop, Microsoft SQL, VDI
XC, Wyse, Horizon View	Dell XC web-scale converged appliance for Vmware Horizon View	VDI, XC, SDS, Vmware Horizon View
XC, Wyse, vWorkSpace	Dell XC web-scale converged appliance for Wyse vWorkspace	VDI, XC, SDS, vWorkspace
XC, Wyse, Citrix	Dell XC web-scale converged appliance for Citrix XenDesktop	VDI, XC, SDS, Citrix XenDesktop





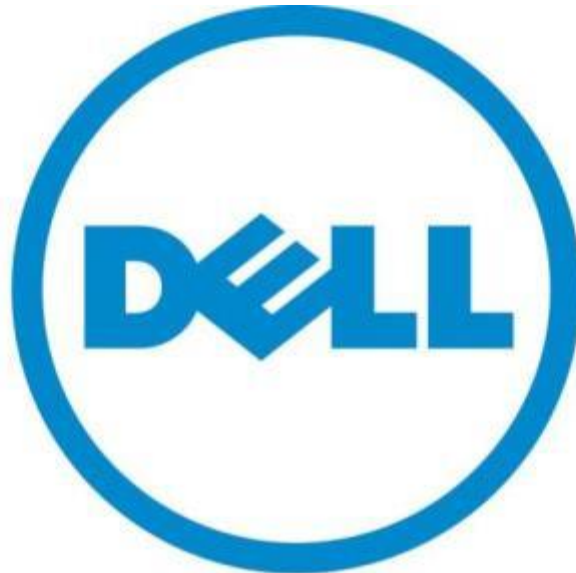
Deployment & Technical Guides

Detailed guides to help you get connected

Infrastructure

Product Focus	Document Title	Tags
R720, S5000, SC8000, 6505	Dell Networking S5000: Deployment of a Converged Infrastructure with FCoE	FCoE, FC, NPG
M1000e, R620, MXL, FC FlexIOM, S6000, SC8000, 6505	Dell Networking FC Flex IOM: Deployment of FCoE with Dell FC Flex IOM, Brocade FC switches, and Dell Compellent Storage Array	FCoE, NPG, CNA, FC
SC8000, SC4020, S5000	Dell Networking S5000 Switch Configuration Guide for Compellent iSCSI SAN	iSCSI
S4810, PS-series	Dell Networking S4810 and Dell Force10 S4810 Switch Configuration Guide for EqualLogic iSCSI SANs	iSCSI
R720, S5000, SC8000, SC4020	Dell Networking S5000: 3-Step Deployment (Full Fabric Mode)	FCoE, FC, FCF
M620, S5000, MXL, MD3660f	Dell S5000 w/ MXL Blade Switch and PowerEdge Blade Servers – Full Fabric Mode Example with Configs	FCoE, FC, FCF
R620, S5000, PS6110	Dell Networking S5000 Switch Configuration Guide	iSCSI
M1000e, MXL, FC FlexIOM	Dell Networking MXCL and M IOA FC FlexIO Direct Connect Storage Deployment Guide	FCoE, FC, F_Port
M1000e, MXL, M-IOA, FC FlexIOM	Deploying Dell Networking MXL and PowerEdge M IOA with FC FlexIO module in a Cisco MDS Environment	FCoE, NPG, CNA, FC, MDS
FX2, FN2210S	Configuring FC/FCoE with PowerEdge FX2 and FN2210S	FCoE, NPG, CNA, FC
FX2, FN410S	Configuring FCoE (FIP Snooping Bridge) with PowerEdge FX2 and FN410S IO Aggregator	FCoE, FSB, CNA





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