Today's Dell

Welcome to the world's largest startup.

DELL

The power to do more

Kim, Jukwan
Enterprise Solution Group
January 2015 | Dell International

Dell PowerEdge Server

Server Portfolio

Home Office	Small Business	Remote & Branch Offices	Small Datacenters	Medium to Large Datacenters	Hyperscale

영업점 및 중소기업 최적화

T110 II | T320 | T420 | T430 | T620 | T630

Entry

1S & 2S

Scalable 2S

타워 서버군

R320,
SMB 1S (1U)

SMB & Storage Optimized
R530

R430, SMB 2S (1U)

R220
Entry 1S

R420xr, Harsh Environment

데이터센터 및 클라우드 환경 최적화 솔루션

M630 | M420, M520, M620, M820, M910 | M1000e | VRTX | FX Series

Dense 2S to Scalable 4S

Shared Infrastructure

블레이드 서버군

R720,R720xd R730,R730xd
Scalable 2S/2U

R820
Scalable 4S /2U

R920
Highly Scalable 4S

R620 R630
Dense 2S/1U

PowerEdge C

C5220,C6220, C8000 series / Cloud & multi-node optimized

랙 서버군

PowerEdge VRTX

Dell PowerEdge Server

Shared Infrastructure 통합 환경을 위한 IT 솔루션

- 강력한 성능: 최대 4개 노드
- 풍부한 스토리지: 최대 48TB
- 빠른 네트워킹: 8개의 1Gb 이더넷 포트 또는 10GbE 옵션
- 완벽하게 확장 가능한 입력/출력: PCIe 슬롯 8개
- 높은 가용성과 신뢰성: 이중화 전원 공급 장치 및 팬
- 단순하고 사용하기 쉬운 관리: "Express" 및 "Enterprise"
- 사무실 수준 저소음 및 전력: 벽에 연결만으로 해결

데스크사이드

12인치

12인치

원하는 방식으로 사용하도록 설계

랙 타입(5U)

현재의 환경: 복잡하고 비효율적이며 경직

PowerEdge VRTX
간단하고 효율적이며 다용도로 활용 가능

Dell PowerEdge Server

VRTX Server

LCD Display Panel

KVM Ports

Shared Storage 25 2.5" or 12 3.5"

8 External PCIe Slots

Remote Management "CMC" Ports

Locking Front Cover

Internal low latency, fast storage

Hot Plug Redundant Blowers & PSUs

Shared DVD

Up to 4 PowerEdge M-Series Servers

8 External RJ45 ports

Server Node

Up to 2 Hot Swappable Hard Drives

Blade Rails – eliminate the need for slotted guides, allowing for greater flexibility

iDRAC & vFlash Remote Management & Redundant Hypervisors

Easy Access Handle

Up to 2 Processors

Up to 24 Memory DIMM Slots (M620)

Fabric Connectors
• VRTX PCIe Connections

VRTX Server Nodes

M520 and M620 – Servers that your customers are familiar with.

M620

- Intel SandyBridge E5-2600 Series (2P)
- 24 DIMMS (768GB)
- 2 HDD (SAS/SSD/NLSAS/ExpressFlash)
- Redundant SD Flash for Hypervisor
- 1 x 2 Port 10GbE SNA (Intel or Broadcom)

PowerEdge M620

M520

- Intel SandyBridge E5-2400 Series (2P)
- 12 DIMMS (384GB)
- 2 HDD (SAS/SSD/NLSAS/ExpressFlash)
- Redundant SD Flash for Hypervisor
- 4 x 1 GbE LOM's

PowerEdge M520

Two factory storage options

25 x 2.5" HDD's Chassis

Max 25TB
25 x 1TB 7.2k NL SAS

Or

Max 30TB
25 x 1.2TB 10k SAS

Or

Max 10TB
25 x 400GB SAS SSD

Plus others

12 x 3.5" HDD's Chassis

Max 48TB
12 x 4TB 7.2k NL SAS

Or

Max 7.2TB
12 x 600GB 15k SAS

Plus others

Supported drives

SSD 2.5"

200GB SAS SSD 2.5‖
400GB SAS SSD 2.5‖

15k SAS 3.5"

300GB 15k SAS 3.5‖
450GB 15k SAS 3.5‖
600GB 15k SAS 3.5‖

7.2k NL SAS 2.5"

500GB 7.2k NLSAS 2.5‖ HDD
1TB 7.2k NLSAS 2.5‖ HDD

7.2k NL SAS 3.5"

1TB 7.2k NLSAS 3.5‖
2TB 7.2k NLSAS 3.5‖
3TB 7.2k NLSAS 3.5‖
4TB 7.2k NLSAS 3.5‖

10k SAS 2.5"

600GB 10k SAS 2.5‖
900GB 10k SAS 2.5‖
1.2TB 10k NLSAS 2.5‖ HDD

15k SAS 2.5"

146GB 15k SAS 2.5‖
300GB 15k SAS 2.5‖

DELL PartnerDirect

Simplified VRTX Block Diagram
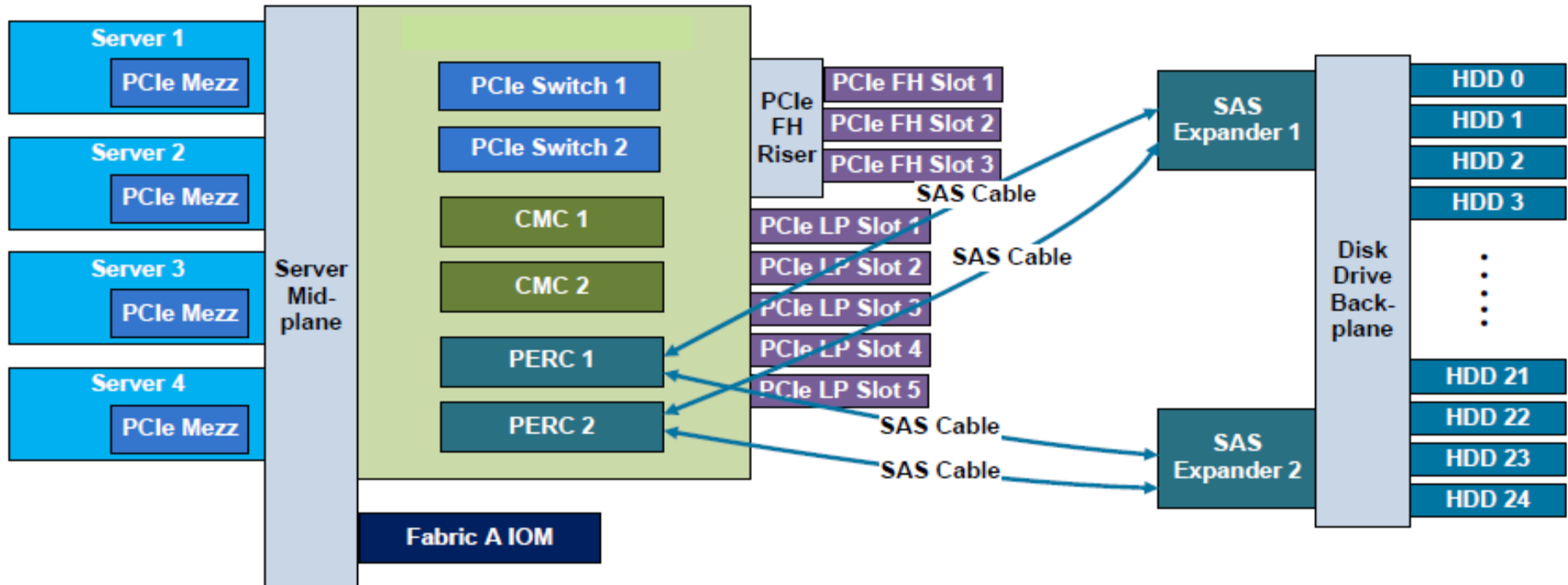
Figure 1.   Simplified VRTX Block Diagram

Shared Storage

Slot 1
Slot 2
Slot 3
Slot 4

Fabric B

Virtual Adapter 1
Virtual Adapter 2
Virtual Adapter 3
Virtual Adapter 4

Perc 8

| Disk1 |
| Disk2 |
| Disk3 |
| Disk4 |
| Disk5 |
| Disk6 |
| Disk7 |
| Disk8 |
| Disk9 |
| Disk10 |
| Disk11 |
| Disk12 |
| Disk13 |
| Disk14 |
| Disk15 |
| Disk16 |
| Disk17 |
| Disk18 |
| Disk19 |
| Disk20 |
| Disk21 |
| Disk22 |
| Disk23 |
| Disk24 |
| Disk25 |

Slot 1
Slot 2
Slot 3
Slot 4

Disk1

Disk25

DELL PartnerDirect
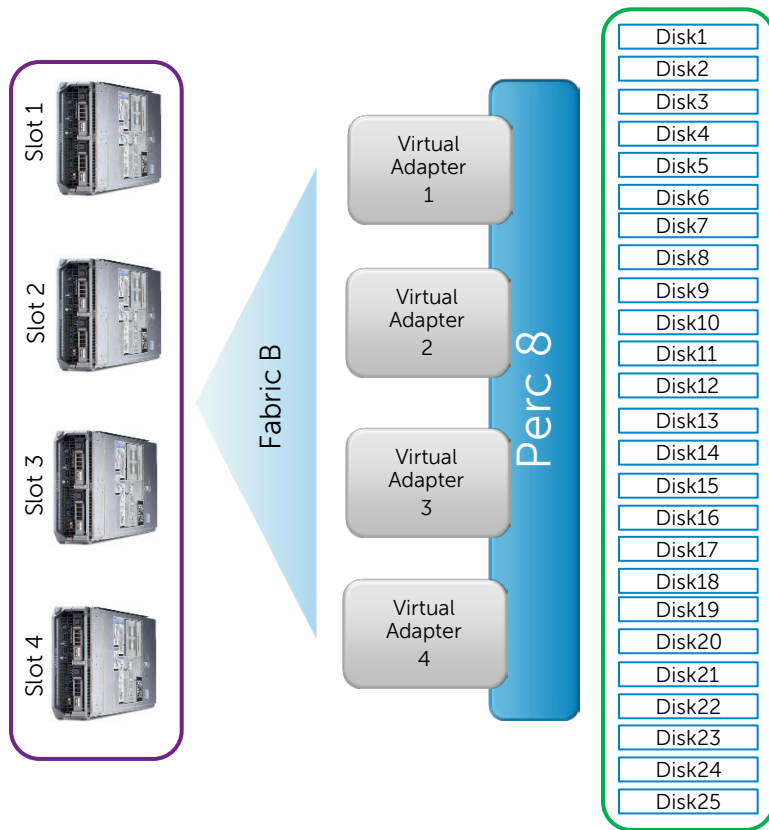
VRTX simplifies networking and I/O

- **Simplified networking**
  - Integrated networking ports and industry-standard PCI slots reduce costs, to fit small business budgets

- **8 Flexible PCIe slots**
  - 3 full height/full length PCI slots
    - Support GPUs (single-wide and double-wide)
  - 5 small form factor slots
  - Slot management
  - Up to 4 PCIe slots assignable to a specific node

- **I/O options**
  - 1GbE internal switch module comes standard
    - Linked to M620 Select Network Adapter and/or
      M520 LOM
    - Supports aggregation for up to 8Gb bandwidth
  - Optional Pass-Thru Module with 8 port 1GbE ports
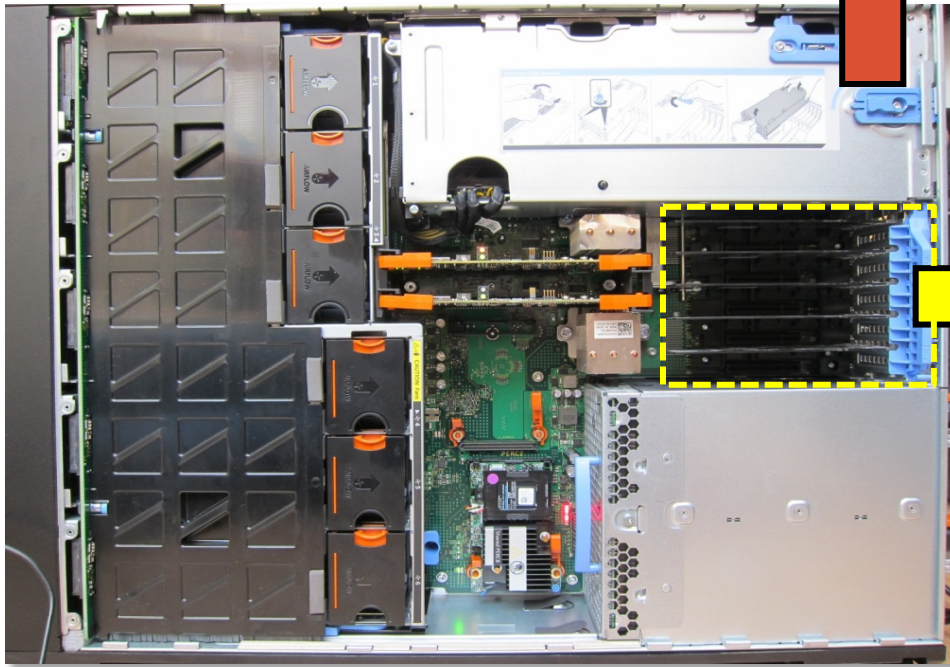
PowerEdge VRTX rear view
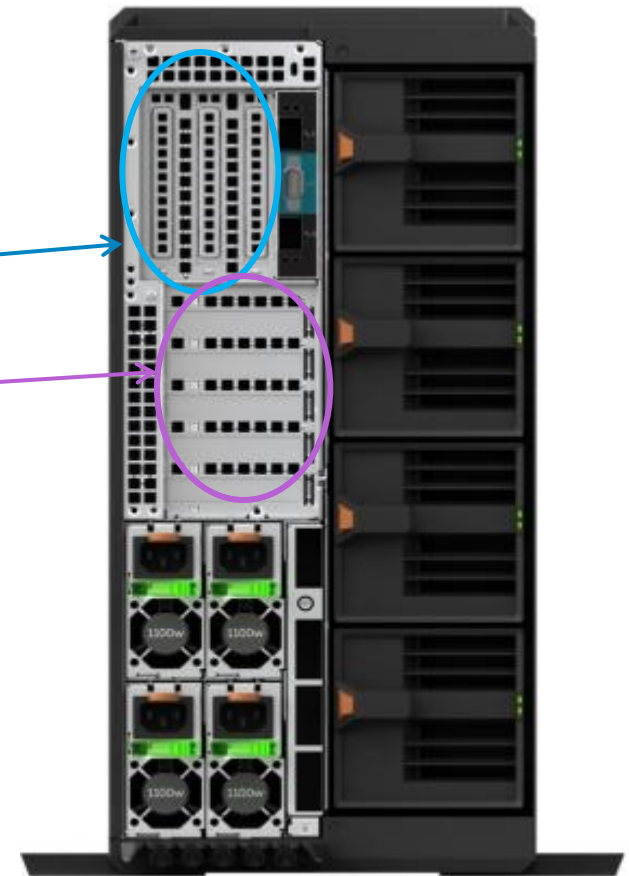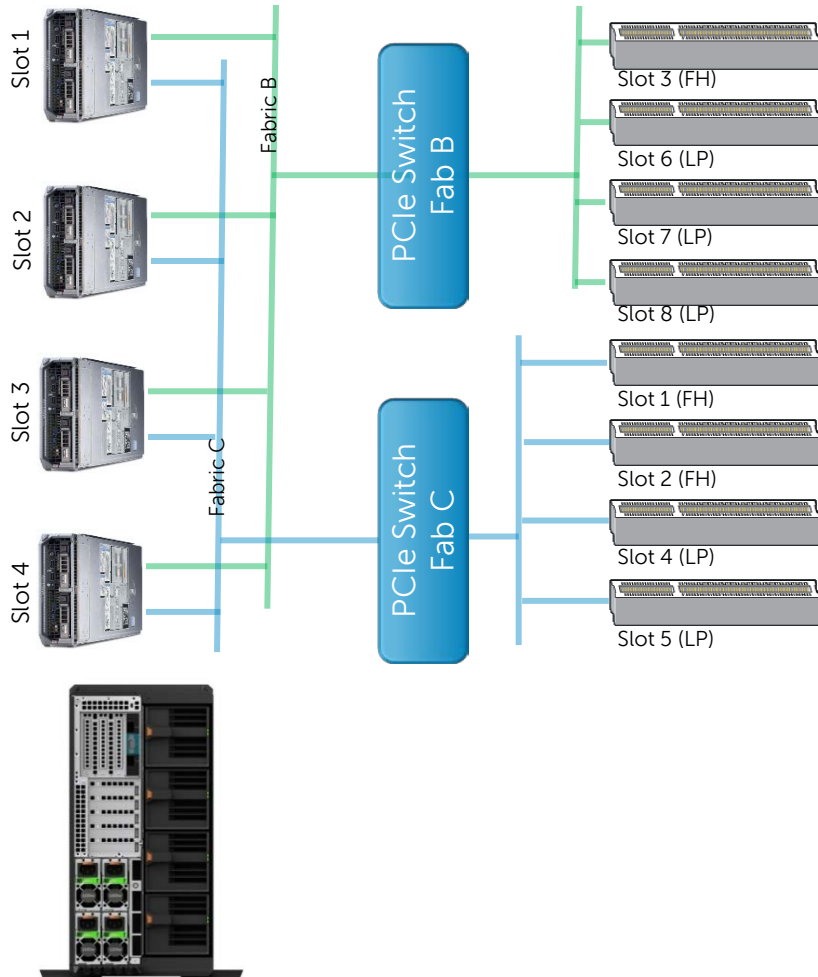
VRTX I/O

Top view
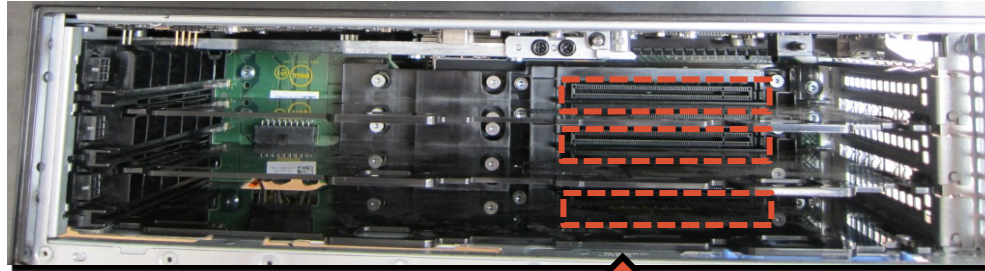
Full height, full length

PCIe x8

PCIe x8

Side view – Front
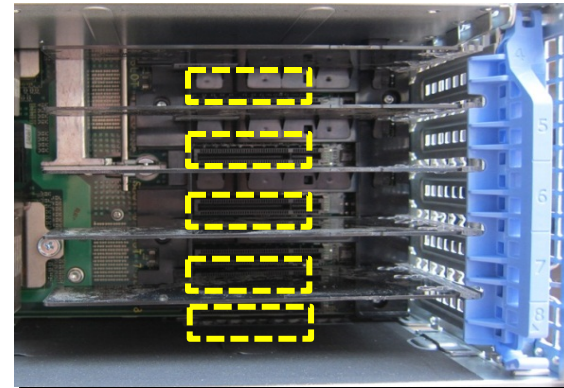
Low profile

Assigning the PCIe sockets
PCIe Status

Copyright © 2015 Dell International Co., Ltd. All rights Reserved
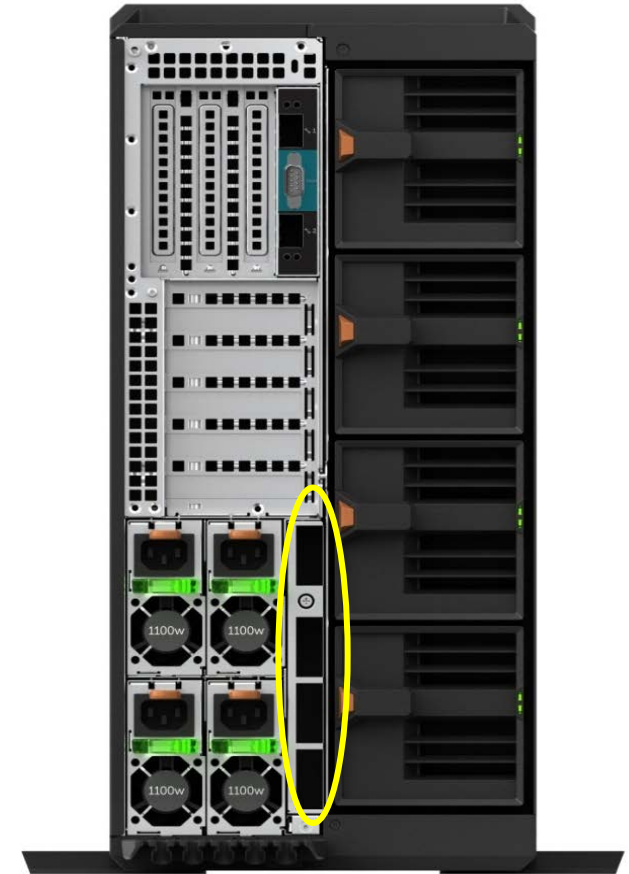
VRTX Network I/O

- **I/O options**

  - 24 port 1Gb Ethernet switch comes standard
  - 8 external / 16 internal
    - Layer 2 switch
      - M620 Select Network Adapter and/or M520 LOM
   - Supports aggregation for up to 8Gb bandwidth

    Or

 - 24 port 1Gb pass-through also available
  - 8 external / 16 internal
  - Pass-Through Card is design/defined as **having no single points of failure** at the Ethernet signal level. Maximum Ethernet signal pass-through is limited to 8 lanes due to the bulkhead limit of 8 RJ-45.

PowerEdge VRTX rear view

Network IO 1GB Switch Module

Copyright © 2015 Dell International Co., Ltd. All rights Reserved
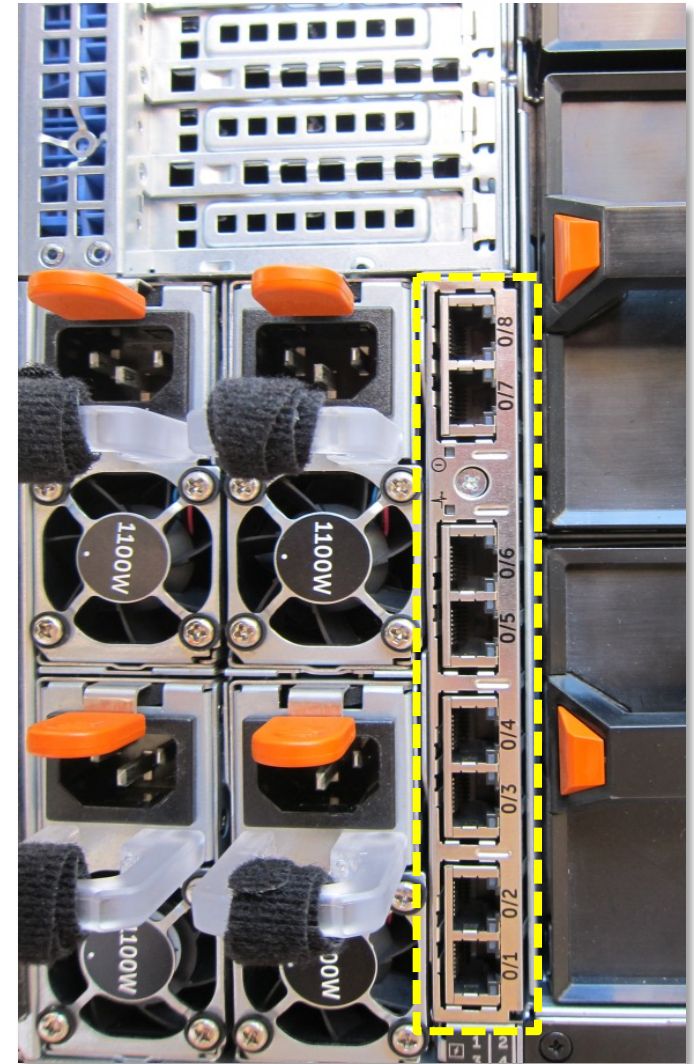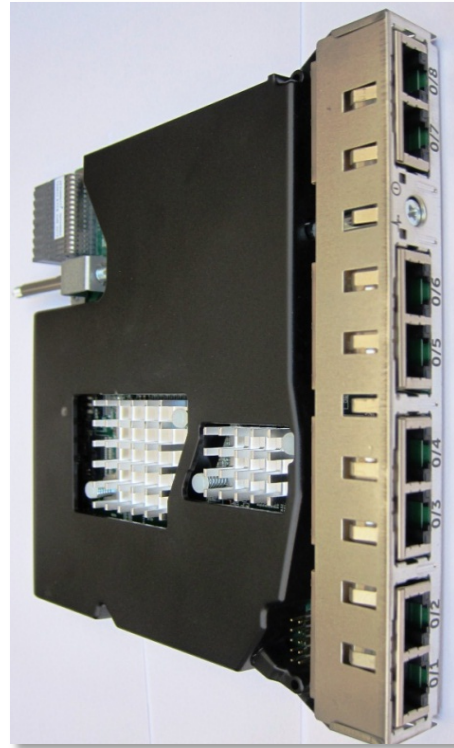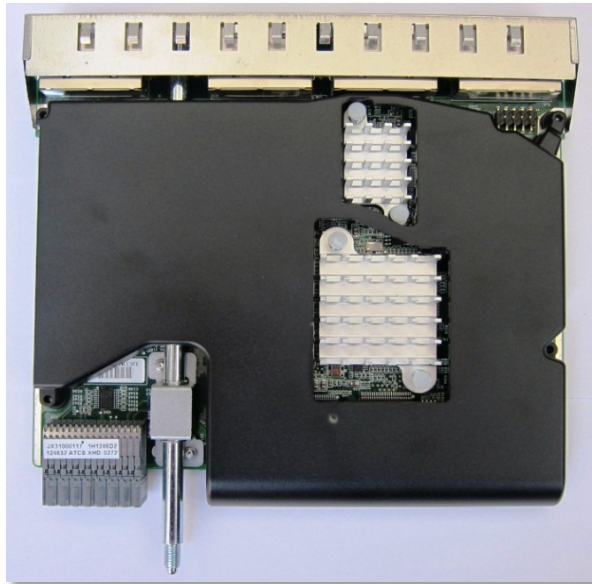
M520 Blades in a Pass-through configuration
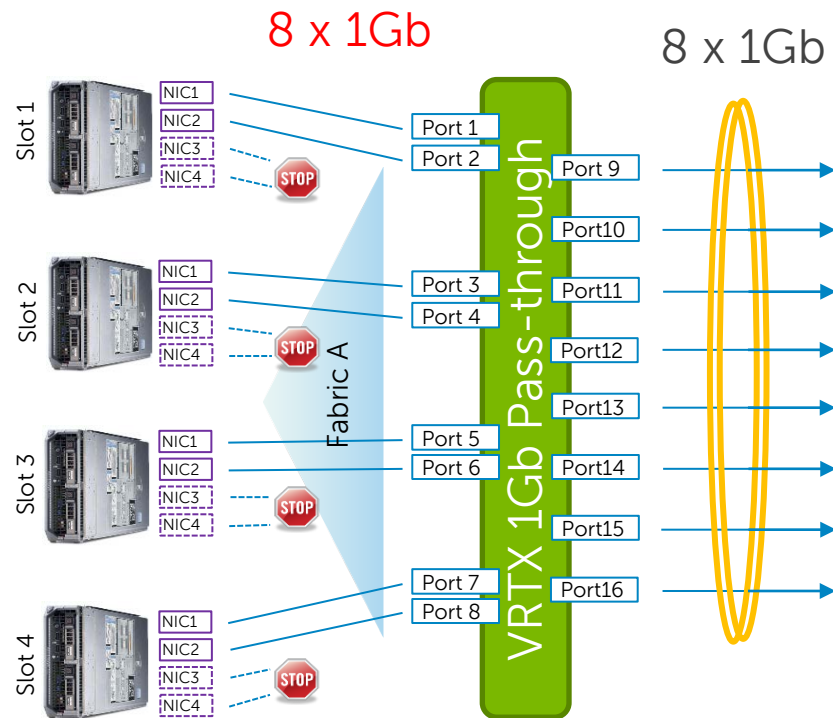
- M520 – 4 x 1Gb Nic's (Fabric A) per Server blade

- 2 NIC's per server blade wasted in this configuration

- Option for attaching to third party networking equipment

Dell PowerEdge Server

Value measured at your ears		Equivalent familiar noise experience
LpA, dBA, re 20 µPa	Loudness, sones	
90	80	Loud concert
75	39	Data center, vacuum cleaner, voice must be elevated to be heard
60	10	Conversation levels
45	4	Whispering, open office layout, normal living room
35	2	Quiet office
30	1	Quiet library
20	0	Recording studio

PowerEdge VRTX with Standard M620

PowerEdge VRTX with "Enhanced Acoustics" M620 and/or all M520s

PowerEdge T620

PowerEdge
FX Series

Dell Server Launching Schedule

Q3(FY15)			Q4(FY15)			Q1(FY15)		
8월	9월	10월	11월	12월	1월	2월	3월	4월

WAVE 1   **WAVE 2**   **WAVE 3**

랙
- ◆ R730 (2S/2U)
- ◆ R730xd (2S/2U)
- ◆ R630 (2S/1U)
- ◆ R530 (2S/2U)
- ◆ R430 (2S/1U)

타워
- ◆ T630 (2S-R)
- ◆ T430 (2S-R)

블레이드
- ◆ M630 (2S-R/HH)
- ◆ M830 (4S)

FX 모듈
- ◆ FC630 (2S/H 너비)
- ◆ FM120x4
- ◆ FC830- (4S)
- ◆ FC430- (2S/Q 너비)
- ◆ FS332 (스토리지)

DELL PartnerDirect

PowerEdge FX: a full converged portfolio

PowerEdge FX2

A 2U converged enclosure sharing power, cooling, management and PCI connectivity capable of integrating a mix of server, storage and networking solutions

2U

Flexible solutions for every workload

PowerEdge FC630

- 2S half width ideal for solutions such as dense virtualization
- Up to 4 per FX2 enclosure

PowerEdge FC430

- 2S quarter width ideal for solutions such as dense compute, HPC and light virtualization
- Up to 8 per FX2 enclosure

PowerEdge FM120x4

- 1S Atom half width ideal for solutions such as static web pages
- Up to 16 servers (4 nodes) per FX2 enclosure

PowerEdge FC830

- 4S full width ideal for solutions such as OLTP or database
- Up to 2 per FX2 enclosure

PowerEdge FD332

- Half width direct attach storage with up to 16 drives per module
- Up to 3 nodes per FX2 enclosure

PowerEdge FN IOA

- Designed for simple, integrated networking solutions
- Up to 2 nodes per FX2 enclosure

DELL   PartnerDirect

FX Architecture – PowerEdge FX product

유연한 서버 및 스토리지 구성 및 외부 확장성

FC630

FM120x4

FC430

FM430
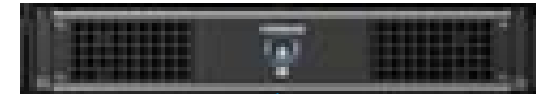
Front View (half-width configuration)
Bays for Compute or Storage Blocks

Power Button Diagnostics

Slot1

Slot2

Slot3

Slot4
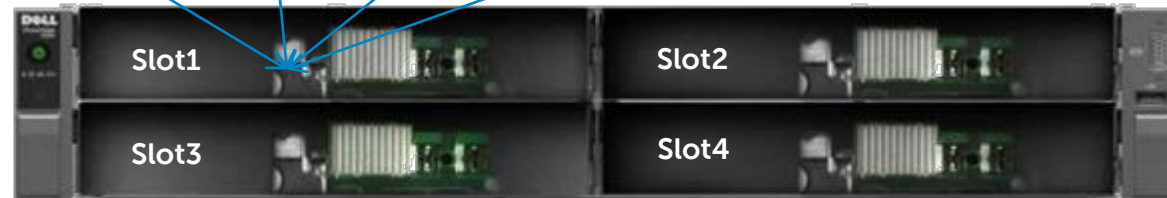
VGA/USB
Simple KVM Switch

Latch

Rear View of FX2s
Power, I/O, Management and Fabrics

Consolidated Management
Ports (1Gb Ethernet & Serial)

Redundant Ethernet Fabrics
(Pass-through 1Gb, 10Gb,)
10GE IO Aggregator

1   2   3   4   5   6   7   8

8 x Low Profile PCIe Slots
Individually serviceable from rear
Re-assignable

2x Hot Swap PSUs
Same as PE portfolio

PowerEdge FX2 Optimize Workloads

Unparalleled agility with almost limitless possibilities
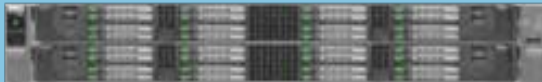
Traditional	Hosting	SDS
FC630 (4X 2S)	FM120x4 (4X 4X1S) (1S Micro-servers/16 in 2U)	FC630 (2 x 2S) + Storage
FC830 (2 x 4S)	FC430 (8x 2S)	FC430 (4 x 2S) + Storage
FC830 (1 x 4S) + 2x	FC430 (8 x 2S)	FC630 (1 X 2S) + Storage

DELL   PartnerDirect

The PowerEdge FC630 server

A single FC630 server block with two 2.5" drives

A single FC630 server block with eight 1.8" drives

4 FC630 server blocks in a fully loaded FX2 enclosure each with 8 1.8" SSDs

PowerEdge FC630
A shared infrastructure workhorse

The PowerEdge FC630 is a converged infrastructure workhorse, with powerful processors and a huge memory footprint.

Virtualization environment
- Run large virtualization environments with the FC630's huge memory footprint and powerful processing
- Run 4 times the VMs in the same 2U space as the competition

Collaboration
- Run multiple virtual instances of Exchange

Video/Audio streaming
- Scale your streaming to quickly answer increased customer demand
- Use SAN-based media sources more rapidly by leveraging Fluid Cache for SAN

ERP
- Rapidly deploy and scale critical business analytics when you need them
- Grow even your largest critical business functions quickly and incrementally

Financial analysis (but not low latency)
- Get fast distributed processing with small failure domains for non-time-critical financial analysis

Features

Processor:	2S 18-core Intel Xeon E5-2600v3	
Memory:	Up to 24 DIMMs of memory	
Storage:	2 X 2.5" HDD/SSD or 8 X 1.8"SSD Supports up to 2 Express Flash drives	
Networking:	Dual and quad-port 10Gb SNA, quad-port 1Gb SNA, dual-port CNA	
IO Expansion:	Access to 2 PCIe expansion slots	

2U Capacities
- Up to 4 half width FC630s/2U
- 144 cores/2U
- 96 DIMMs/2U
- 8 x 2.5" HDDs/2U

- Choice of chassis or server level management
- High availability via small failure domain

PowerEdge FM120x4 microserver

A single FM120 x4 microserver block with four 2.5" drives

A single FM120 x4 microserver block with eight 1.8" drives

4 FM120 micro-server blocks in a fully loaded FX2 enclosure each with eight 1.8" SSDs

PowerEdge FM120 microserver (4 per block)
World's first enterprise class microserver

The PowerEdge FM120x4 block runs the low power Intel® Atom™ C2000 processors . Its System on a Chip (SoC) design lets it pack 4 processors in each half width sled, providing a high density, low cost solution, ideal for web serving and dedicated hosting.

4 FM120x4 sleds in an FX2 enclosure with 2.5" drives

Web services
- Get quick response for web services even in spiky demand periods
- Save cost on real-time scheduling services with impressive performance per dollar
- Save energy costs on front-end web servicing with great performance per watt.

Light Analytics
- Get fast, highly available distributed processing for non-time-critical analysis
- Off load non-time-critical analysis to cost saving, low power solution

Dedicated Hosting
- Host more clients in less space with the FM120's higher density
- Offer lower entry cost for hosted clients.
- Provide higher availability (smaller failure domains) for Xaas infrastructure services

Features

Processor: 1S Intel® Atom™ C2000 processor (SoC) 2/4/8 core options

Memory: Up to 2 DIMMs of memory/server

Storage: 2 X 1.8" SATA SSD/server or 1 X 2.5" HDD/SSD/server

Networking: 1Gb NIC on the chip

IO Expansion: **No** PCIe support

2U Capacities
- Up to 4 half-width FM120s/2U
- 16 microservers/2U
- 128 cores/2U
- 32 DIMMs/2U
- 32 x 1.8" SSDs/2U

- Management: iDRAC8 Enterprise w/LC
- Choice of chassis or server level management
- Optional dual SD cards for redundant hypervisor

PowerEdge FN IO Aggregator
No-fuss installation and simple network integration

The FN IO Aggregator - purpose built for the FX2 - simplifies network deployment, offers cost-effective 10GbE performance, while enabling and simplifying LAN/SAN convergence in the datacenter

Simplify Network Deployment

- Simplifying cabling complexity through server port aggregation
- The unique plug-and-play networking switch gives the server admin access layer ownership.
- Zero touch deployment with many pre-configured features included.

Optimize FX2 Performance

- Takes full advantage of high performance 10GbE throughput with the FN IOA.
- Optimizes "East-West" traffic within the FX2 enclosure, ensuring superior performance and cost savings vs. competitive offerings.

Enable LAN/SAN Convergence

- Full DCB, FCoE, and iSCSI optimization, enabling converged data and storage traffic.
- Easily connects to the Dell S-Series platform, connecting to the S5000 for Fibre Channel breakout.

Features

- 2 IOAs per FX2
- 3 SKU options:
    - 4 x 10GbE SFP+
    - 4 x 10GbE Base-T
    - 2 x 10GbE SFP+ and 2 x 2/4/8G Fibre Channel Combo
- All SKUs have 8 x 10GbE internal ports

- L2 only
- Uplink LAG
- Virtual Link Trunking (VLT)
- CMC management
- Automatic/Zero-touch mode
- Customizations using CLI mode

- DCB
- FCoE Snooping Bridge (FSB)
- NPIV Proxy Gateway (NPG)
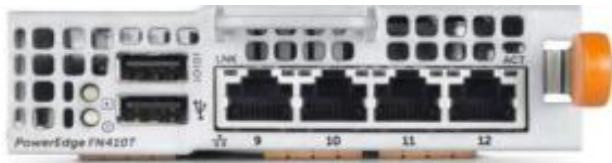- iSCSI TLV

IOAggregator
Three options

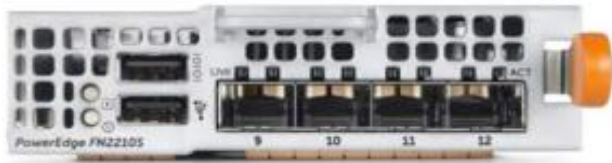These three IOA versions address typical LAN, LAN + IP storage, LAN + iSCSI SAN and LAN + FCoE traffic

FN410S
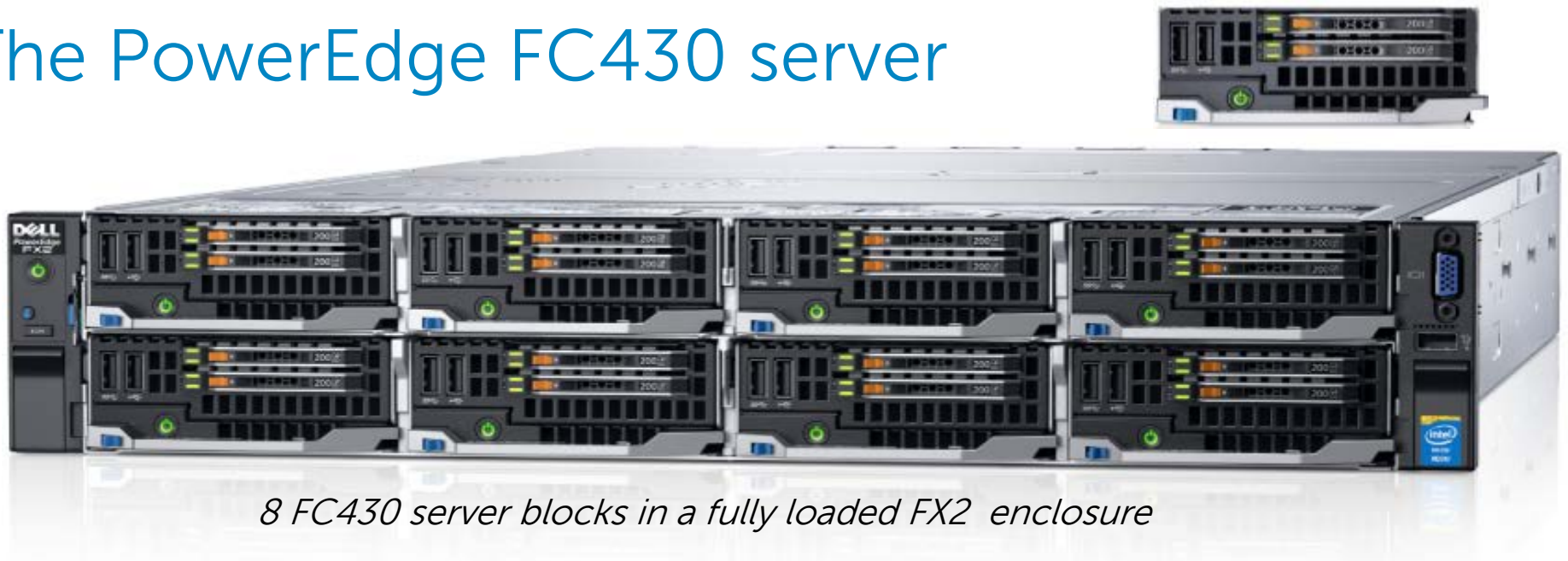Provides 4 ports SFP+ connectivity. Supports optical and DAC cable media.

FN410T
Provides 4 ports 10GBASE-T connectivity. Supports copper media up to 100m.

FN2210S
Provides two ports native Fibre Channel (NPG mode*) and 2 ports SFP+ connectivity. Able to provide 4 ports SFP+ with reboot.

28

The PowerEdge FC430 server

8 FC430 server blocks in a fully loaded FX2 enclosure

PowerEdge FC430 server
The ultimate in shared infrastructure density

The PowerEdge FC430 is a quarter width, half height server that combines powerful processors, great memory capacity and tremendous IO throughput. It is best suited for web serving and dedicated hosting, and can also be configured for low latency HPC workloads. Its small failure domain makes it a great choice for distributed environments that require higher reliability.
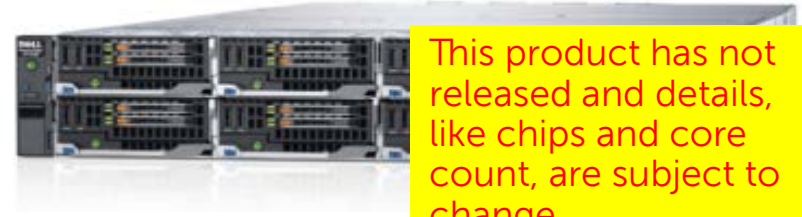
This product has not released and details, like chips and core count, are subject to change

High performance hosting and web server
- Run highly available web services with lots of memory and processing power
- The FC420's 10 GbEcapabilty provides faster overall performance for web services

Dedicated hosting
- Host more clients per square foot with the FC420's high density footprint
- Offer hosted clients higher levels of service with the FC420's small failure domain.

"Light" virtualization farms
- Run lightweight applications virtually with the FC420's high processor core and memory density.

HPC
- Drive HPC applications with the front access Infiniband connection configuration for low latency and greater processing density

Features

Processor: 2S (up to 14 core) Intel Xeon E5-2600v3
Memory: Up to 8 DIMMs of memory
Storage: 2 X 1.8" SATA SSD (w/1 PCIe access)
                 or 1 X 1.8"SSD (w/ IB mezz port)
Networking: Dual-port 10Gb or 1Gb LOM
IO Expansion: Access to 1 PCIe expansion slots

2U Capacities
- Up to 8 qtr width FC430s/2U
- 224 cores/2U
- 64 DIMMs/2U
- 16 x 1.8" SSDs/2U

- Management: iDRAC8 Enterprise w/LC
- Choice of chassis or server level management
- Optional dual SD cards for redundant hypervisor
- High availability via small failure domain

The PowerEdge FC830 server

1 FC830 server blocks with eight 2.5" drives

2 FC830 server blocks (each with 16 1.8" SSDs) in a fully loaded FX2 enclosure

The PowerEdge FD332 storage block

A half-width FD332 storage block

PowerEdge FD332

Overview

A direct attached storage block that can be combined with the FC630, FC430 and FC830 servers to build highly flexible, scale out computing solutions.

Displayed: FC630 and 3 x FS332 (Up to 48 drives)

- Up to 16 direct attach (DAS) SFF storage devices

- Up to 3 FD332s per FX2 chassis (with an FC630 server) = 48 additional storage devices in 2U space

- Optional dual PERC9 RAID controllers

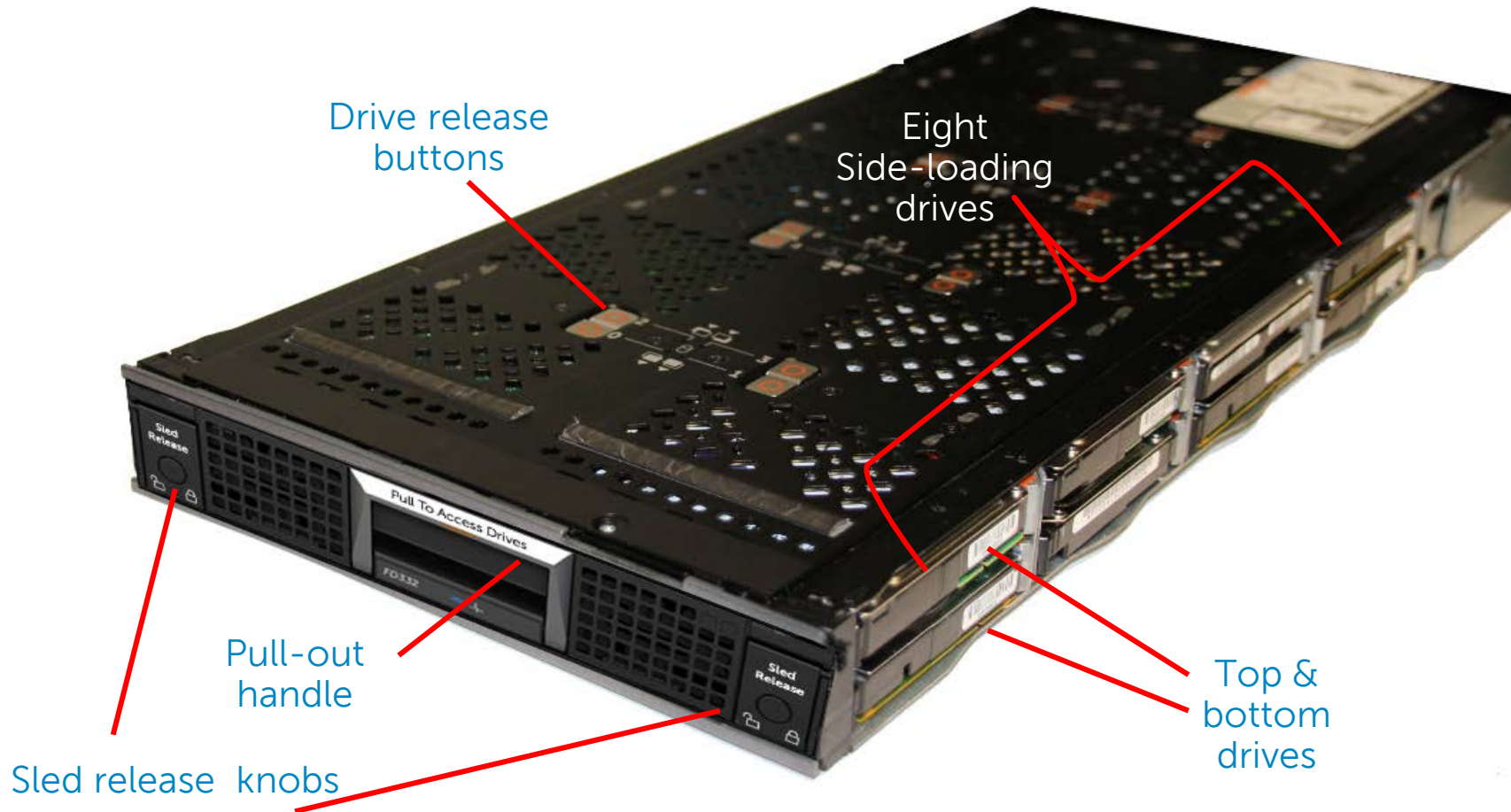- Mix and match pass-thru & RAID I/O option

- Block access can optionally be split by 2 servers – assigning 8 drives to each.

- Drives on the FD332 can be serviced while other components in an FX2 chassis continue to operate.

Performance	Availability	Expandability
• 12Gb/s SAS 3.0 and 6Gb/s SATA 3.0	• Hot plug HDD • PERC9 RAID, Pass-thru I/O, Single or Dual SAS controllers, mix and match for dual controllers – RAID/non-RAID	• Up to 16 Small Form Factor SSDs/HDDs , both SATA and SAS

FD332 full sled

Drive release buttons

Eight Side-loading drives

Pull-out handle

Top & bottom drives

Sled release knobs

DELL

The power
to do more