EDSFF Servers: Breakthrough Form Factors Enabling Solutions Innovations

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NVMe Form Factor Comparison

- **U.2**
  - Short (without carrier)
  - Size: 7.5mm/15.0mm

- **M.2**
  - Short (without carrier)
  - Size: 22.0mm

- **EDSFF**
  - Short (without carrier)
  - Size: 31.5mm

- **EDSFF**
  - Long (includes carrier)
  - Size: 35.4mm

- **EDSFF**
  - Size: 318.75mm
Why do we need new SSD form factors?

- Higher storage density - more TB per rack unit
- Higher efficiency - thermal and power performance
- Higher capacity – vendor technology competition
- Better cost per GB – vendor price competition
- Storage disaggregation
  - Improved resource management
  - Heavy compute applications (HPC)
  - GPU based applications
What is EDSFF*?

1. A group of 15 companies working together

2. Industry standard connector and form factor optimized for NVMe*

3. Built for increased operational efficiency and dense storage

Intel® SSDs with EDSFF* “ruler”

- E1.L 18mm
- E1.L 9.5mm
- E1.S

*Other names and brands may be claimed as the property of others.
ALL EDSFF* SSDs support the same:

1. **Connector**
   - Drives high volumes

2. **Pinout**
   - Allows interoperability, simplifies backplane design

3. **Base Features**
   - But differentiated by segment and use case

**Systems Designed with Flexibility for Storage and Beyond**

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EDSFF vs. U.2 Storage Chassis Implementation

**2.5" FORM FACTOR**
- Backplane requires cut outs to optimize thermals
- Cables add cost and complicate installation, thermals
- LED controller adds failure point
- Drive cages add cost, failure points

**RULER FORM FACTOR**
- Eliminate the backplane
- Simplified thermal implementation
- No add in cards required
- No cables to SSDs
- Geographic drive mapping for simplified drive management

**Less complicated chassis**
Reduced component cost per SSD
Simple hot swap with high density capabilities
Advantage. Thermal efficiency.

Up to 55% less airflow\(^4\) vs U.2 15mm

Thermal efficiency

Supermicro and Intel Confidential
1U 32-bay NVMe* EDSFF* Server

KEY FEATURES

• 1U Extremely high density/high capacity NVMe* storage server
• Supports 32 NVMe hot-swappable SSDs
• BMC for remote system power on/off and system monitoring
• Dual socket Intel® Xeon® Scalable processor server (SKL & CLX)
• Individual SSD power cycling
• Intel® QuickAssist Technology for HW 100Gb encryption/compression

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CHASSIS DIMENSIONS:
H: 1.71” x W: 17.26” x D: 35.95” (43.6 x 438.4 x 913.1mm)

DRIVE BAYS:
32 x EDSFF long NVMe Hot-swap SSDs
(2 sleds with 16 drives per sled)

SERVER CAPABILITY:
Dual Socket Intel® Xeon® Scalable processor (SKL and CLX)
24 DIMMs for up to 6TB memory
2 M.2 boot drives

I/O:
2x X16 PCIe* slots, 2x 10GbE ports, 1x IPMI ports, 2x USB ports, 1x UID button, 1x Reset button

POWER SUPPLIES:
2x 1600W (N+1) 96% efficient Digital Platinum Level Redundant Power Supplies

COOLING:
8 x 40mm high speed Hot-swappable Fans

APPLICATIONS

• High Throughput Ingest
• High Density Hot Storage
• HPC / Data Analytics
• Media/Video Streaming
• Content Delivery Network (CDN)
• Big Data Top of Rack Storage
1U 32-bay NVME* EDSFF* JBOF (coming soon)

**KEY FEATURES**
- 1U Extremely High Density High Capacity NVMe Storage Enclosure
- Supports 32 NVMe Hot-swappable SSDs
- BMC for Remote System Power on/off and system monitoring
- Tool-less SSD tray
- Flexible to configure up to 8 Hosts
- Individual SSD power cycling
- PCIe* External Cable Spec 0.7 compliant
- Slide Rail included

**APPLICATIONS**
- High Throughput Ingest
- High Density Hot Storage
- HPC / Data Analytics
- Media/Video Streaming
- Content Delivery Network (CDN)
- Big Data Top of Rack Storage

**CHASSIS DIMENSIONS:**
H 1.71” x W 17.26” x D 31.95” (43.6 x 438.4 x 811.7mm)

**DRIVE BAYS:**
32 x EDSFF NVMe* Hot-swap SSDs
(2 sleds with 16 drives per sled)

**HOST SCALEABILITY:**
Supports up to 8 host systems with X16 AOCs

**I/O:**
4x X16 Mini-SAS HD ports, 2x X16 PCIe Slots, 2x IPMI ports, 1x UID button, 1x Reset button

**POWER SUPPLIES:**
2x 1000W (N+1) 96% efficient Digital Titanium Level Redundant Power Supplies

**COOLING:**
8 x 40mm high speed Hot-swappable Fans

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1U 32-bay EDSFF Short Server

**System Specification**

**PROCESSOR SUPPORT**
Dual Intel Xeon Scalable processors (Socket P)
3 UPI Support

**CHIPSET**
Intel® C627 chipset

**MEMORY**
24 DIMM, Up to 6TB ECC 3DS LRDIMM,
768GB ECC RDIMM

Available for EXPANSION
2x PCI-E 3.0 x16 & 1x PCI-E 3.0 x4

**EXTERNAL I/O SUPPORT**
Dual 10Gbase-T and Dedicated IPMI port

**DRIVE BAYS**
32 EDSFF-S NVME bays

**POWER SUPPLY**
Redundant 1600W Power Supplies, 80PLUS Titanium

**KEY FEATURES**
- Up to 32 EDSFF short devices (128TB)
- Up to 6TB Memory (24 DIMM)
- RDMA optimized Configuration for low latency
- Redundant Power Supplies

**Due to the complexity of integration, this product is sold as a completely assembled system only.**
BigTwin™ E1.S SuperServer

- 4 nodes in 2U multi-node server
- 10 E1.S EDSFF drives per node
- Plus 2 M.2 drives per node
- Dual 2nd Gen Intel® Xeon® Scalable processors per node
- Up to 6TB memory in 24 DIMMs per node
- Intel® Optane™ DC persistent memory support
- Performance optimized CPU:drive ratio

Performance Optimized
Thank You

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