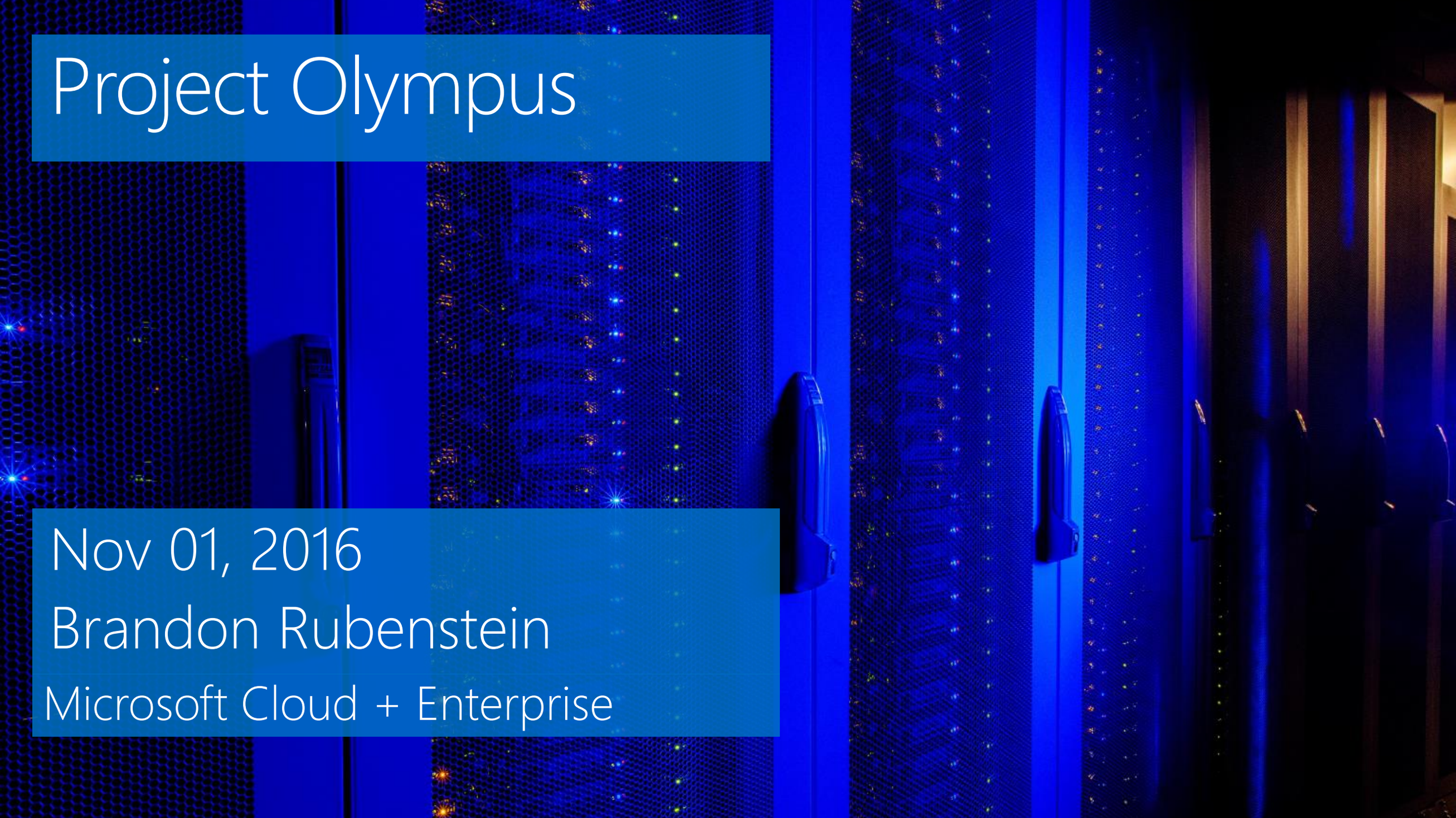


Project Olympus

Nov 01, 2016

Brandon Rubenstein

Microsoft Cloud + Enterprise

Project Olympus Goals for OCP

Standardization of Universal motherboard

- Reduce fragmentation within OCP community
- Supports side-by-side high-performance CPUs over 200W
- BOM and Firmware minimization for robust qualification

Flexible, Modular Design for use across OCP

- Adaptable to different server node chassis designs and racks
- Different Data Center environmental and usage models

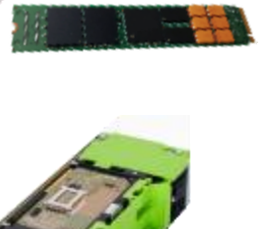
Agility to adapt to new technologies

- Larger form factor, more I/O slots more adaptable

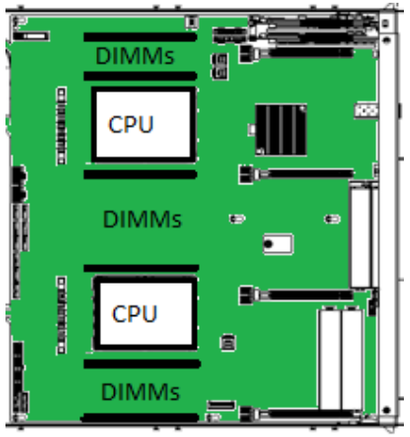
Cost Reduction across full lifecycle

- Lowest bare bones costs for empty chassis cost and transportation
- Lower solution costs

OCP Components

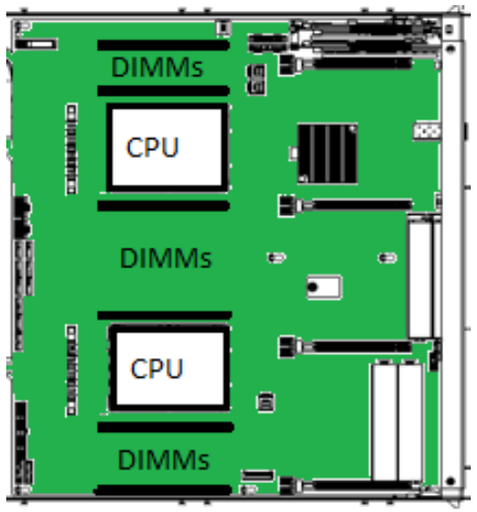


Project Olympus

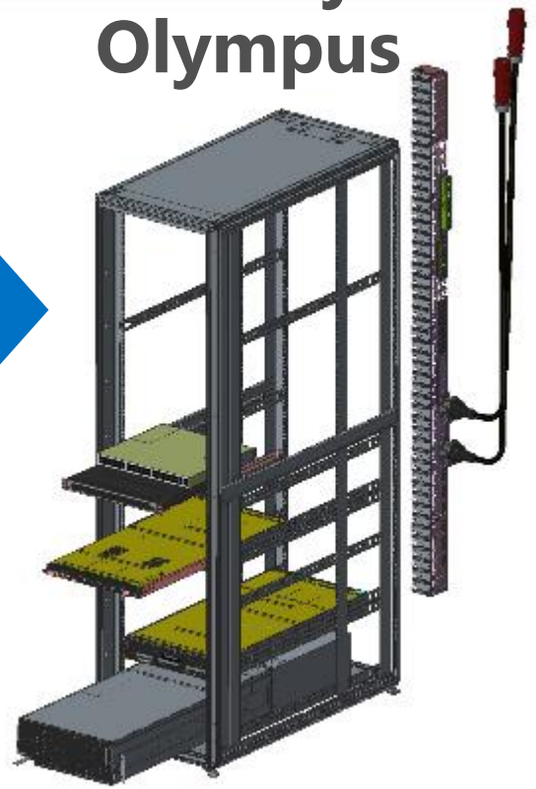


Choose the components you need

Universal Motherboard

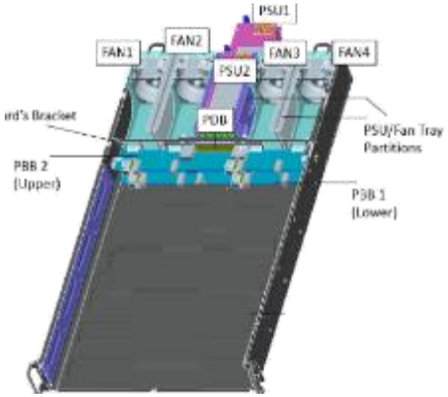


OCS Project Olympus



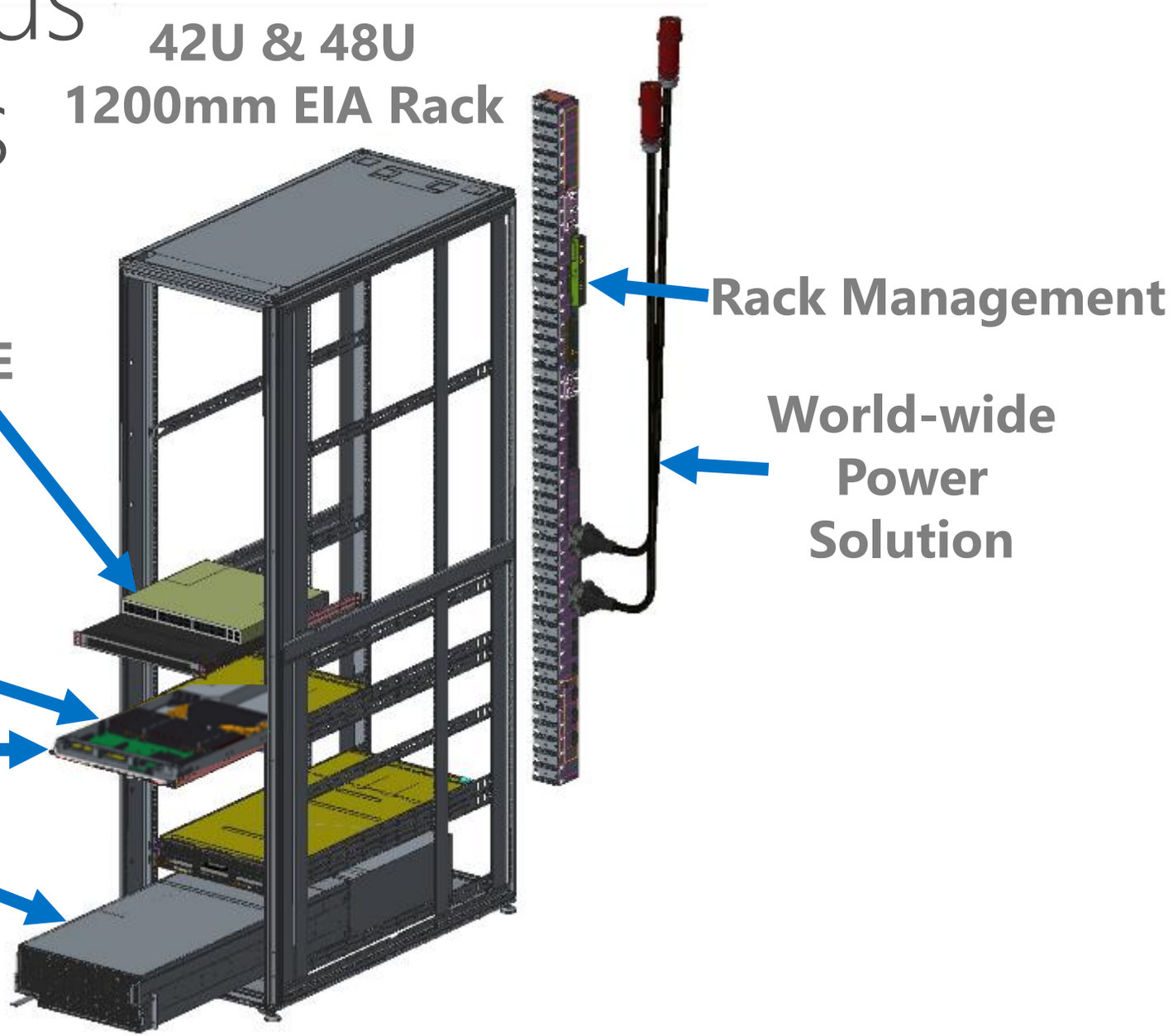
Open Rack

EIA 19”



Other 19”/21”

Project Olympus – Components



Universal Motherboard

Optimized for Performance, I/O flexibility

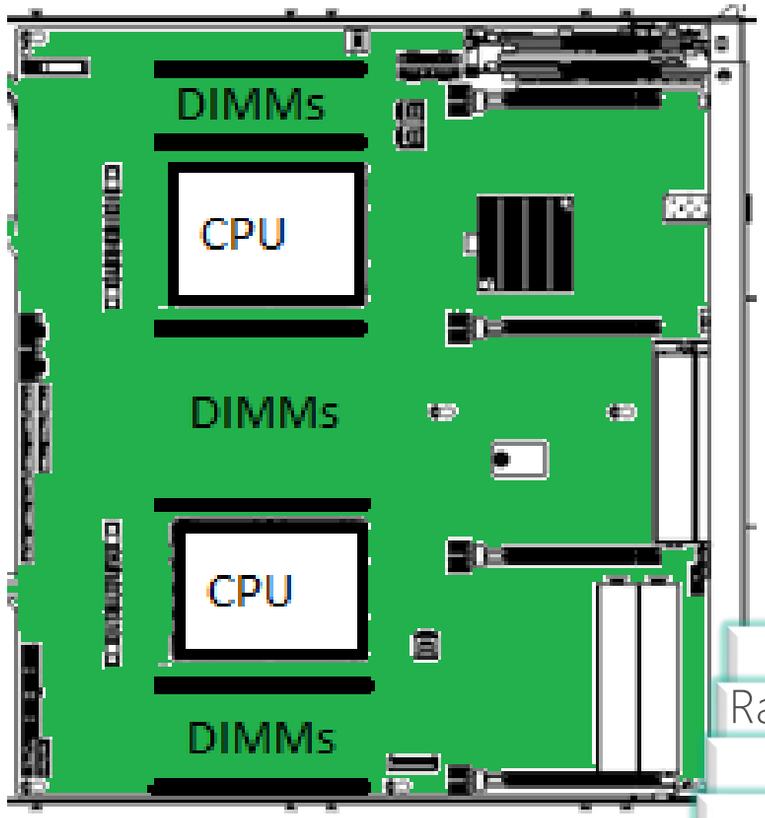
- High-performance CPUs, up to 32 DIMMs
- Three Standard PCI-Express Gen3 slots
  - OCP Mezzanine on card carrier
- Up to 16 CloudSSD M.2 NVMe Flash cards

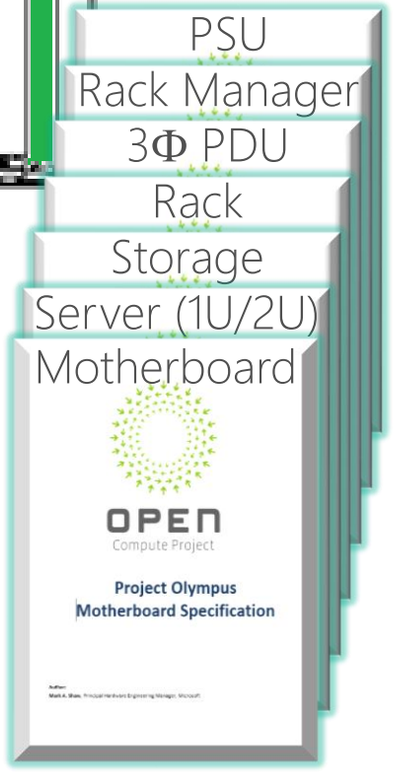
Management flexible to meet your needs

- BMC Gigabit Ethernet (Redfish or IPMI)
- NCSI side-band through OCP Mezz
- KVM enabled on motherboard

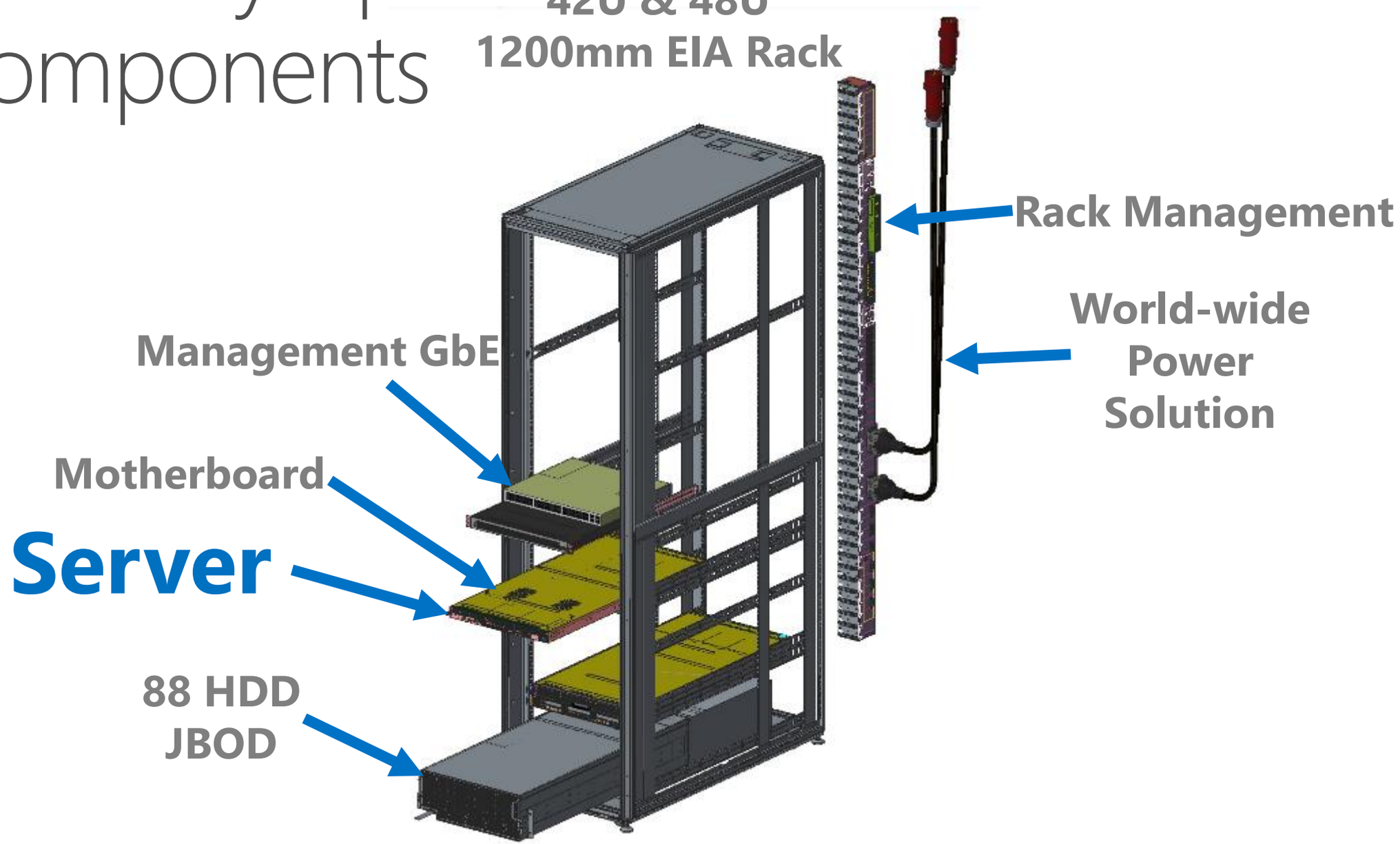
Power and Thermal

- Cabled power connector adapts to the chassis
- Side-by-side CPUs for lower fan power





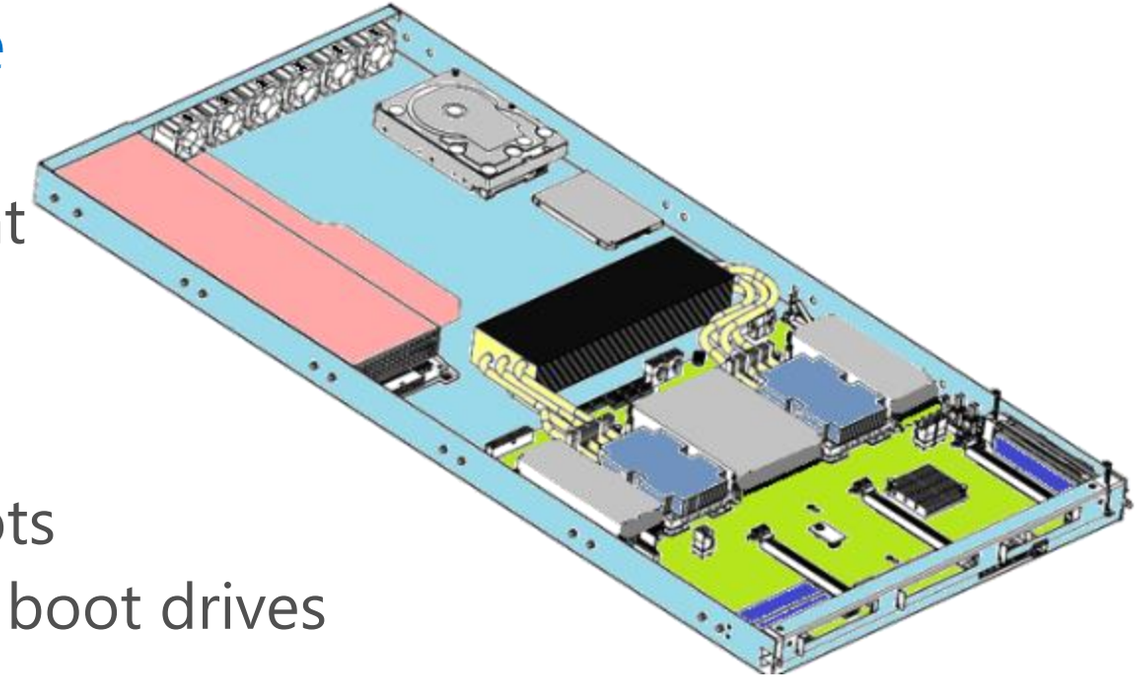
Project Olympus – Components



Server

Front Cabled I/O and Cold Aisle Service

- Three PCIe x16 slots
- Blind mate rear power and management
- Latching at the chassis, pull to release



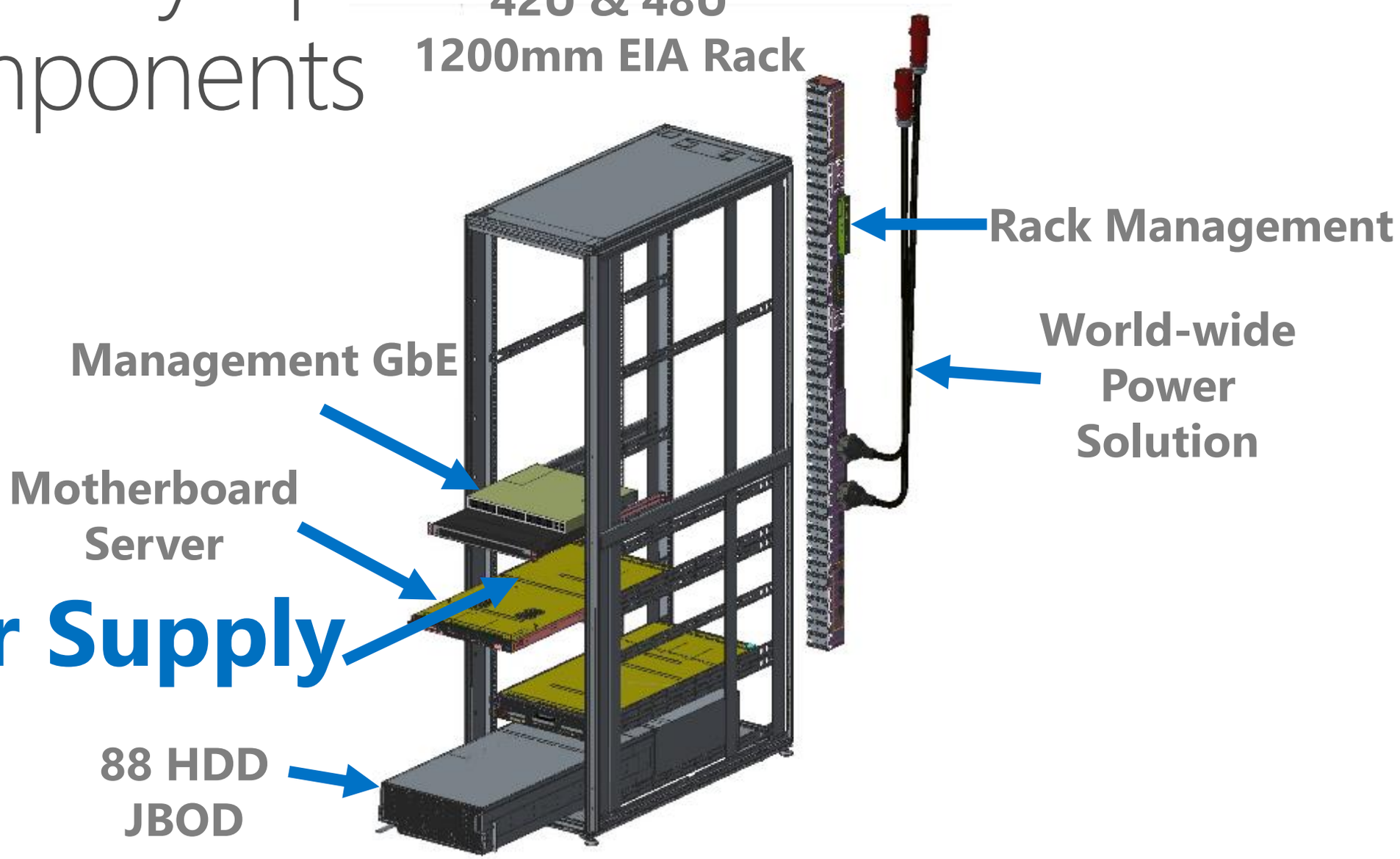
CloudSSD Optimized Storage

- Up to 16 CloudSSD M.2 NVMe Flash slots
- LFF and SFF slots intended for low-cost boot drives

Embedded PSU and Fans

- 680W PSU: Dual-feed, three-phase, N+1 high availability solution (1020W total)
- Six N+2 fans for high-availability, lower per rack CFM
- Customized high-performance vapor chamber remote heatsink

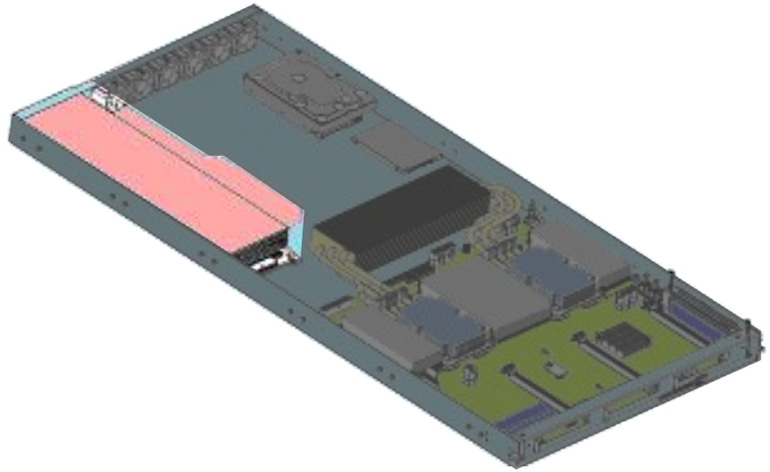
Project Olympus – Components



680W High Availability Power Supply

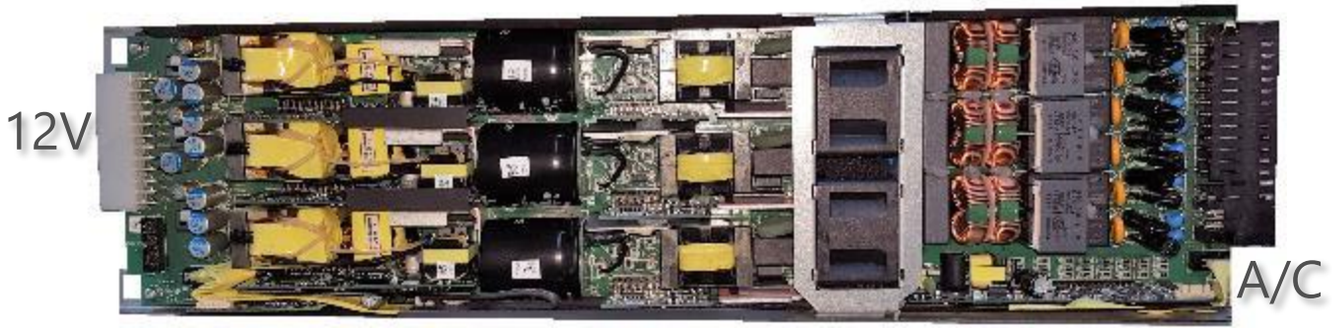
Three x 340 PSUs Fully Integrated

- N+1 HA ➔ no repair on failure
- 680W N+1 (1020W total power capability)
- Dual-feed auto-selection (IVS)
- Three-phase balanced AC power

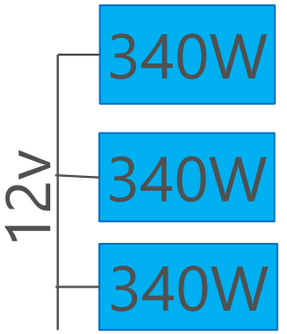


Fault Mode Resiliency

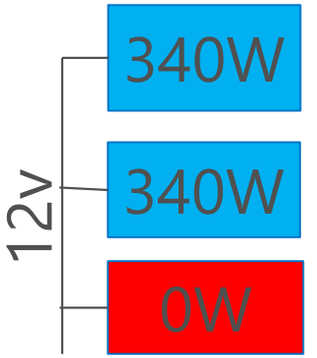
- AC feed failure, automatic fail over
- PSU failure throttles if necessary
- Double fault will be extremely rare



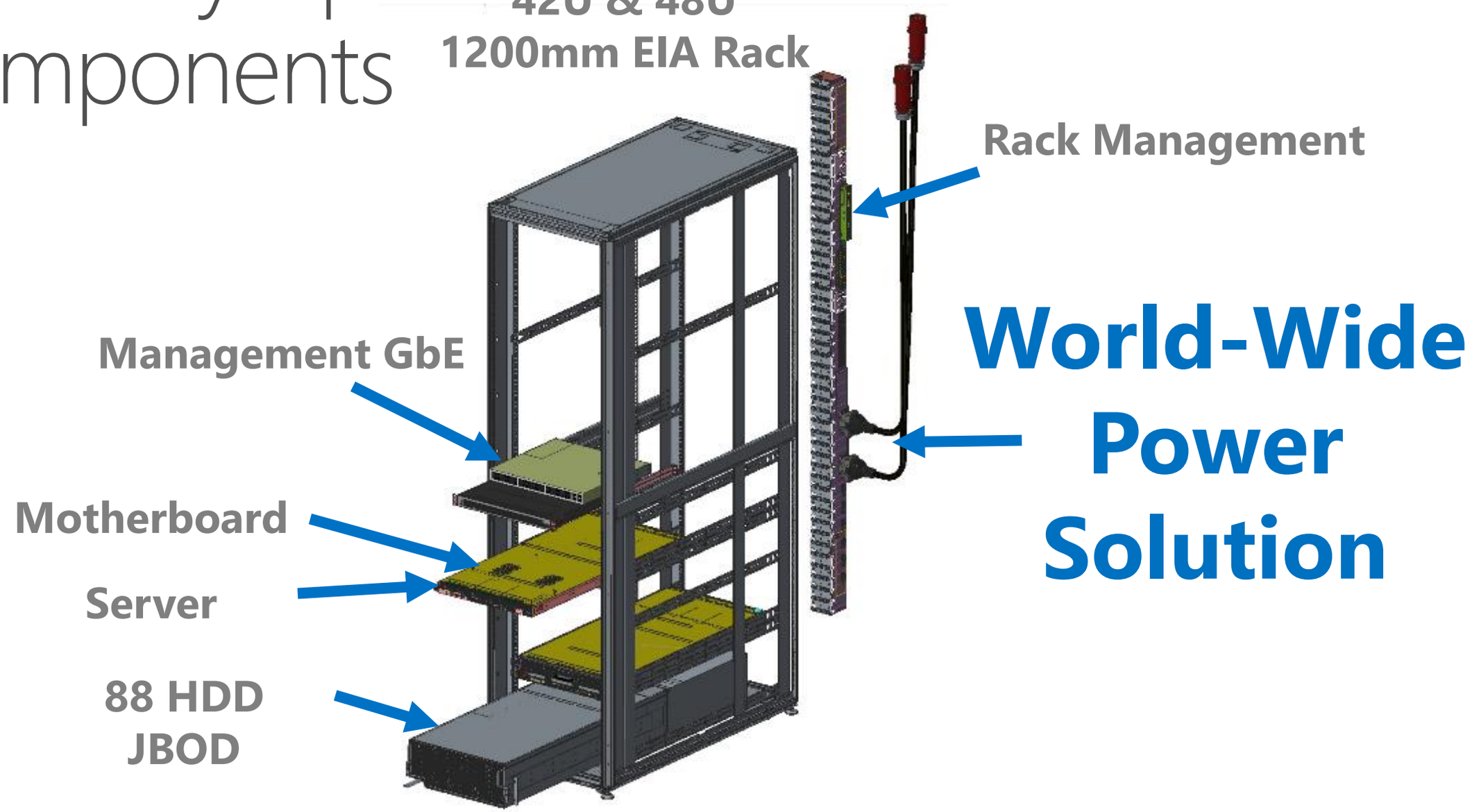
Normal mode
680W



Fault mode
680W



Project Olympus – Components



World-Wide Power Solution

Supports high availability data centers

- Dual-feed, three-phase Power to every slot
- Rack power monitoring and throttling

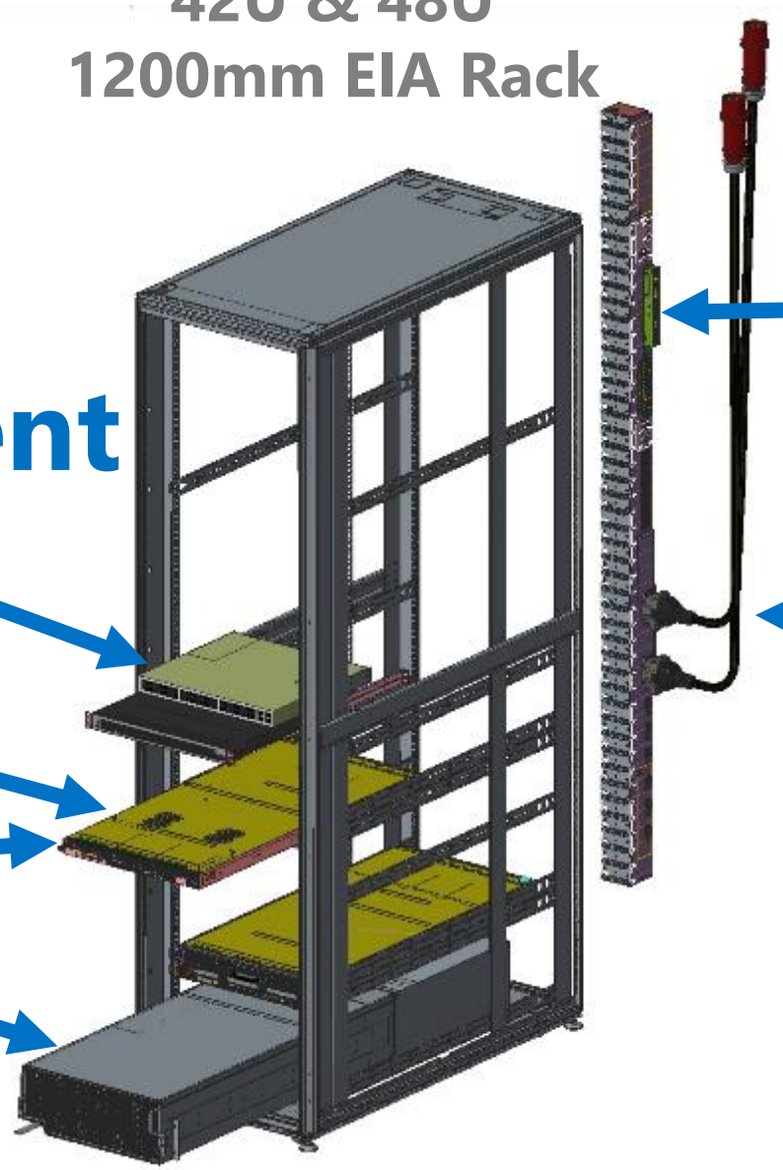
Power and Management Distribution Unit (PMDU)

- Distributes power and management
- Integrated Rack Manager
- Supports blind-mate servers

AC “7-Wire” Adapter for world-wide deployments

- Three phases plus ground return
- Data Center whips under development
  - 208V-30A, 208V-50A, 415V-30A, 400V-32A

Project Olympus – Components



Management Architecture

Rack Management

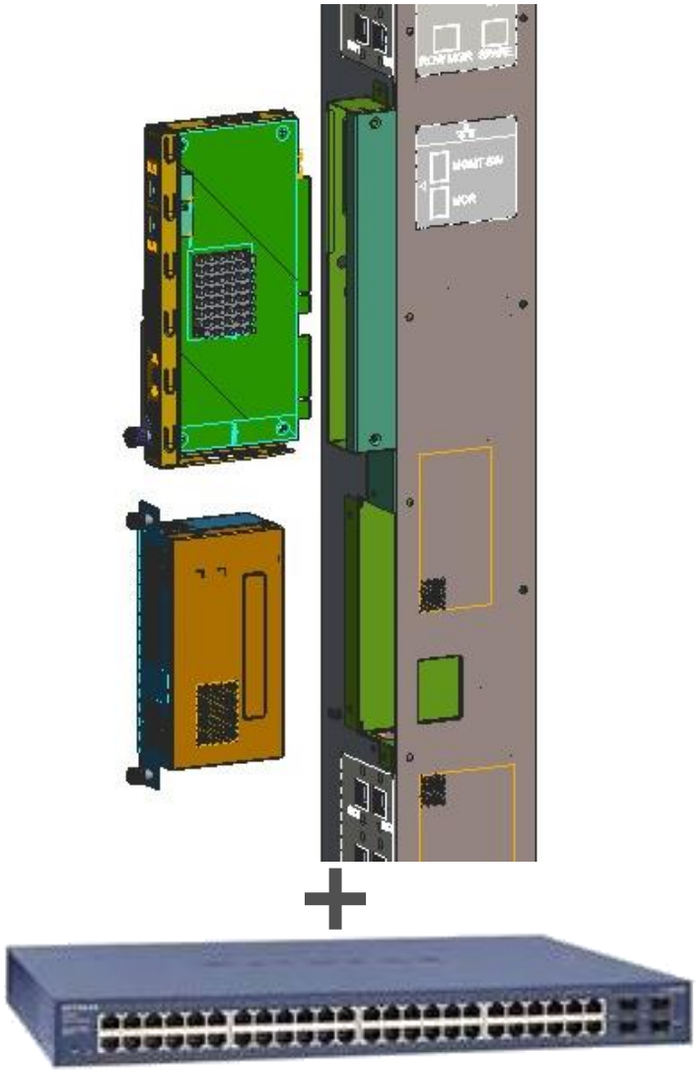
- Restful API I/F – i.e. Redfish via external Ethernet
- Rack Manager (RM) ARM CPU running Linux

Blade Management flexible to your needs

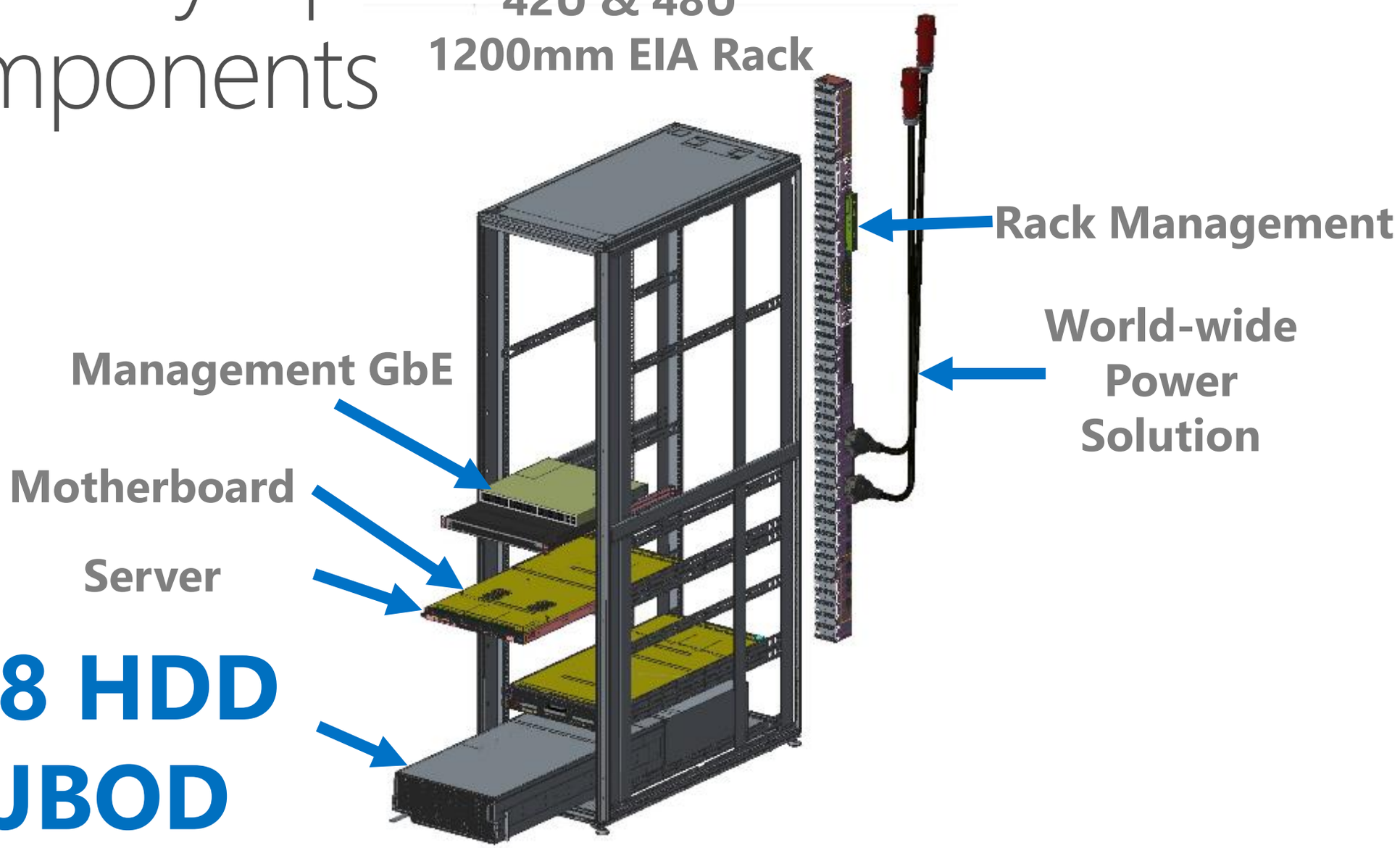
- GbE I/F to each blade's BMC
- NCSI enabled on motherboard with cable to OCP Mezz Carrier
- KVM enabled on motherboard

Deployments

- Integrated into PMDU for rack scale deployments
- Standalone, 1U rack mount version for hardware that does not use the PMDU



Project Olympus – Components



JBOD – High Density Storage

4U JBOD – 88 HDDs / chassis

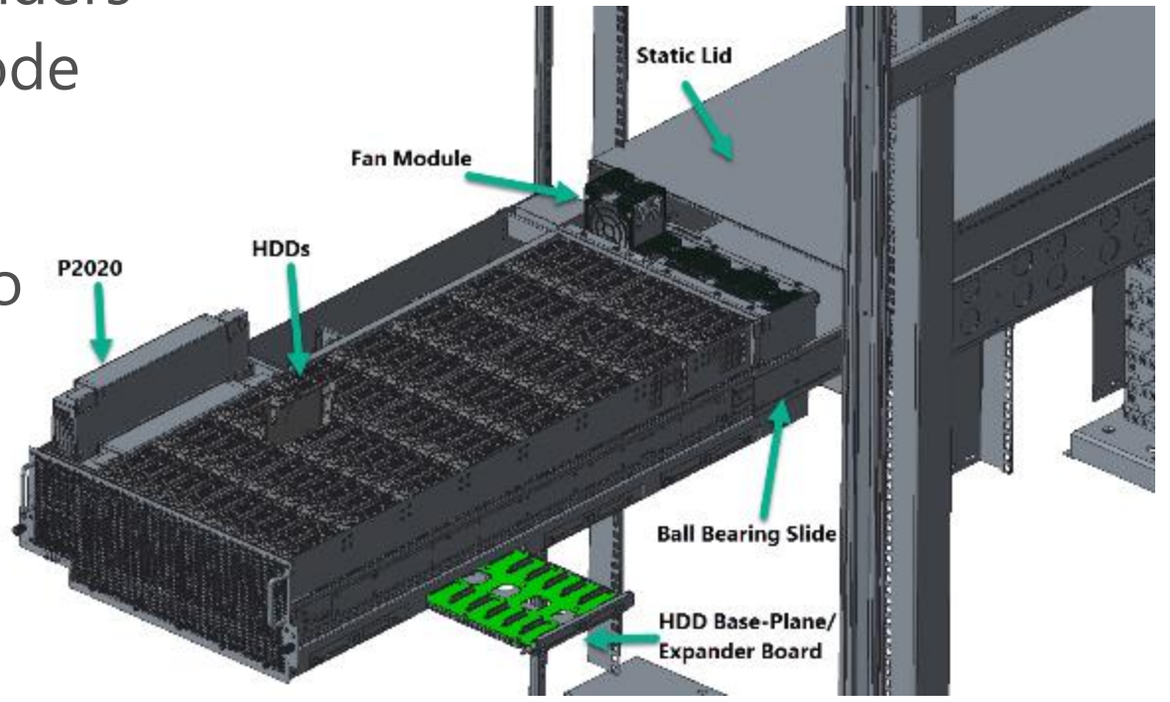
- Drawer design – slide out for repair
- Hot-plug HDDs, front-serviceable expanders
- Front cabled to compute blade head-node

Robust Feature Set

- BMC gathers HDD temps and status info
- Individual HDD on/off to minimize NTF

Configuration

- One head node, 88 HDD each
- Two head nodes, 44 HDD each
- Four head nodes, 22 HDD each



Project Olympus – Components

42U & 48U EIA 19” Rack