Jason Waxman
Intel Corporation Corporate Vice President
Data Centric Chief Strategy Officer
TAKING OCP TO THE NEXT LEVEL – WORKLOAD OPTIMIZATION

Jason Waxman
Intel® Corporate Vice President, Data Centric Chief Strategy Officer
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OPEN COMPUTE HISTORY OF COMMITMENT AND LEADERSHIP

2011
Founding Board Member of OCP

+25
Contributions and Enablements

+80
Products with Partners
GETTING TO $10B IN OCP DEPLOYMENT

Workload Optimized
Open Management
Integrated Solutions
NEW OCP COMPUTE PLATFORMS THIS YEAR

Mount Olympus Next Gen Platform for Cascade Lake Processor

Cooper Lake Processor Platforms

- 2S
- 4S (2x 2S)
- 8S (4x 2S)

*Other names and brands may be claimed as property of others.
INTEL® HIGH-DENSITY, CLOUD-OPTIMIZED PLATFORM

Cloud-Optimized Platform
2U 450mm x 780mm
4S Intel® Xeon® Scalable processors
48 DDR4 memory slots,
SATA/SAS/NVMe 2.5” SSD drive bays

Available in second half 2019

*Other names and brands may be claimed as property of others.
OCP CARDS SUPPORT NEW AI ACCELERATORS
INTEL® NERVANA™ NEURAL NETWORK PROCESSOR (NNP)

FOR TRAINING:
Dedicated deep learning training acceleration
Optimized memory and interconnects
In production in 2019

FOR INFERENCE:
Dedicated deep learning inference acceleration
10nm Intel® process node
In production in 2019

Intel is a proud partner of the GLOW community

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ANNOUNCING A NEW CPU-TO-DEVICE INTERCONNECT STANDARD
COMPUTE EXPRESS LINK (CXL)

New CXL specification and consortium
Memory coherent, high-speed interconnect
Initial spec donated by Intel
Intel® believes there is an opportunity for an OCP working group to define new form factors for CXL
Optimized stack with x16 PCI Express Gen 5 physical and electrical connection (32 GT/s)
Use cases include AI, networking, media, graphics and more
Availability expected 2021

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### ADVANCING NETWORK PERFORMANCE WITH OCP NIC 3.0 ADAPTERS

**Now: OCP Mezzanine cards 2.0**

- 25GbE Intel® Ethernet Network Adapters for OCP 2.0

**Q3’19: OCP NIC 3.0 Adapters**

- 1GbE and 10GbE Intel® Ethernet Network Adapters for OCP NIC 3.0
- Up to 100 GbE next gen Intel® Ethernet Network Adapter for OCP NIC 3.0

<table>
<thead>
<tr>
<th>Intel® Ethernet Network Adapters for OCP - 10GbE, 25GbE and 40GbE are available</th>
<th>Complete OCP NIC 3.0 product family from 1GbE to 100GbE (1, 10, 25, 50, 100)</th>
<th>Flexible port configurations</th>
</tr>
</thead>
</table>

**Work with us on implementing and validating your solutions**

*Other names and brands may be claimed as property of others.*
ADVANCING COMMON SIPH CONNECTIVITY STANDARDS

Open standard optical hardware leveraging wafer scale manufacturing

100G CWDM4-OCP shipping in volume since 2017, 400G shipping in 2019

Working to standardize electrical interfaces (die-to-die and die-to-optical) for optical I/O and integrated networking/switch solutions
OPEN PLATFORMS READY FOR NEW MEMORY AND STORAGE

- DRAM (HOT TIER)
- Intel® 3D Nand SSD
- HDD / TAPE (COLD TIER)
- SSD (WARM TIER)
- Persistent Memory
- EDSFF* Open Standard for Ruler SSD Form Factor

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GETTING TO $10B IN OCP DEPLOYMENT

Workload Optimized

Open Management

Integrated Solutions
INTEL® RACK SCALE DESIGN
OPEN STANDARD FOR DATACENTER RESOURCE POOLING

- Higher workload performance
- Pooling increases utilization
- Disaggregation for late-binding and independent refresh
- Composable with software defined resource allocation
- Resiliency and security
- Ease of integration

Software demo located at the Intel® showcase

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ANNOUNCING RACK MANAGEMENT MODULE CONTRIBUTIONS
Open Source Industry Efforts

- **BIOS/System Firmware**
  (OCP system firmware project including firmware support package, platform runtime mechanism, runtime firmware update…)

- **BMC Firmware**
  (Linux Foundation project)
  OpenBMC Github

- **Rack Manager Firmware**
  (OCP OpenRMC project)
  OCP Github

*RSD 2.3 Rack Management Module contribution to OpenRMC*

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ANNOUNCING AN INDUSTRY COLLABORATION AROUND PLATFORM ROOT OF TRUST

Set an open and aligned specification built upon Cerberus-v1 and Intel® PFR (Platform Firmware Resilience)

Collaborate through OCP on future root of trust capabilities including: in-silicon RoT, secure key measurement/storage, advanced key management

Create open and standardized interfaces, application programming interface (API), firmware and register-transfer level (RTL)

Extend on NIST 800-193 platform resiliency as the foundation

Call for participation, collaboration, and engagement

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OPEN SOFTWARE TO ENABLE INTEGRATED SOLUTIONS

**ISOLATION**
- katacontainers.io/

**ORCHESTRATION**
- openstack
- kubernetes

**OPTIMIZING FOR AI**
- Caffe2
- MKL-DNN
- PYTORCH
- OpenVINO

**LIBRARIES**
- github.com/intel/nemu

**FRAMEWORKS**
- github.com/intelai

**TOOLKITS**

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INTEL® + OCP
Visit the OCP Experience Lab

OCP NIC 3.0: A Collaborative Industry Effort to Create a New Server Connectivity Standard
Brad Burres
Thursday March 14 1:00pm - 1:25pm
210 DH

Intel® Cloud Innovations – An Overview
Mohan Kumar
Thursday March 14 1:30pm – 1:55pm
210 CG

Breaking Barriers in AI: New Hardware, Standard Platforms
Tingwei Huang
Thursday March 14 5:00pm – 5:25pm
210 CG

Case Study: Alternatives for SMM Usage in Intel® Platforms
Sarathy Jayakumar
Friday March 15 8:30am - 8:55am
Marriott Salon III

AI Accelerator Module for Deep Learning Training with Intel® Nervana™ Neural Network Processor (NNP)
Song Hang
Friday March 15 4:05pm - 4:45pm
210 A

Next Generation Intel® Xeon® Scalable Processors for Machine Learning
Niveditha Sundaram, Andres Rodriguez
Friday March 15 3:00pm - 3:40pm
210 A