

OPEN
Compute Project

Deep Dive on OCP Software Projects

Rajeev Sharma
Director, Software & Technologies
E-mail: rajeev@opencompute.org

*Consume. Collaborate.
Contribute.*

OCP Projects and Sub-projects



NETWORKING

ONL, ONIE, SAI, SONiC



RACK & POWER

Adv cooling Solutions
Power Shelf Interoperability
OpenRack V3



STORAGE

Archival
Cloud Fast Fail API



SERVER

PCI 3.0 MEZZ
Open Domain Specific Architecture (ODSA)
OCP Accelerator Infrastructure (OAI)



DC Facility

Modular DC



HPC



TELCO

OpenEdge



HW MGMT

OpenRMC



Open Sys
FW



SECURITY

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Open System Firmware



Open Sys
FW

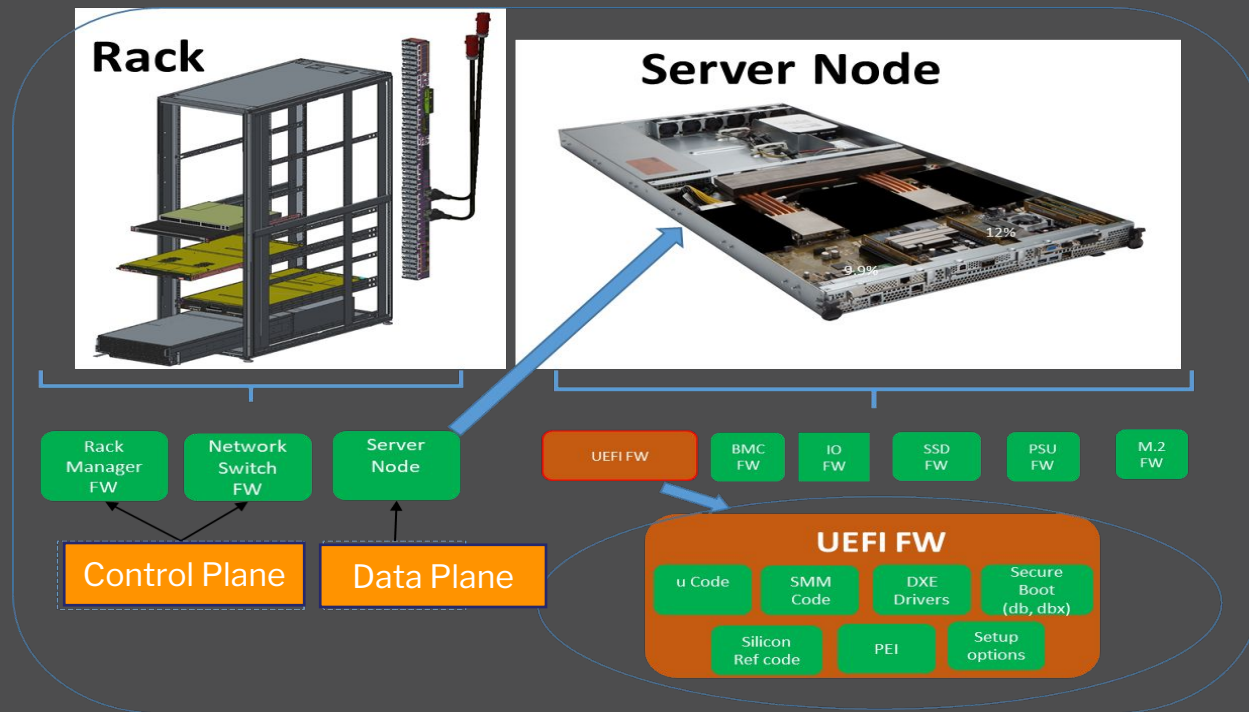
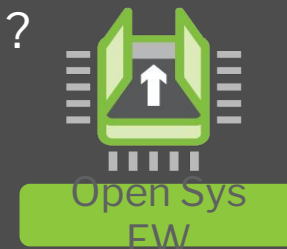
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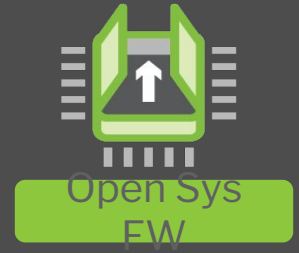
OPEN
System Firmware

Open System Firmware (OSF)

- Where does System Firmware reside in a typical Cloud/Rack ?



Need for OSF to be Open!



- "Closed" System firmware
- Different Silicon vendors have their own version of boot flows.
- No one has single implementation
- Current firmware dev model not been able to keep pace with multiple cloud HW vendors.

CATCH UP!

Open System Firmware (OSF) Activities



- Major Companies contributing to the OSF development

Microsoft

Intel

Google

Facebook

Lenovo

IBM

Two Sigma

ITRenew

9 Elements

Cavium

AMD

... and many more

GitHub Repositories Collateral link

<https://github.com/opencomputeproject/OSF>

- Bi-weekly OSF discussions
 - Architectural reviews
 - Workstream progress
 - Design reviews
 - Agenda setting
 - Miscellaneous collaborative discussions

Open RMC Rack Manager Controller



OCP OpenRMC Project



HW MGMT
(openRMC)

- Motivation from System Firmware (BIOS) and BMC Firmware
- Needed to work on Rack Manager
 - OCP is designing Rack and Power
 - Not just the compute manager but a Rack level Manager
- The Rack Manager will run-
 - Firmware
 - Software

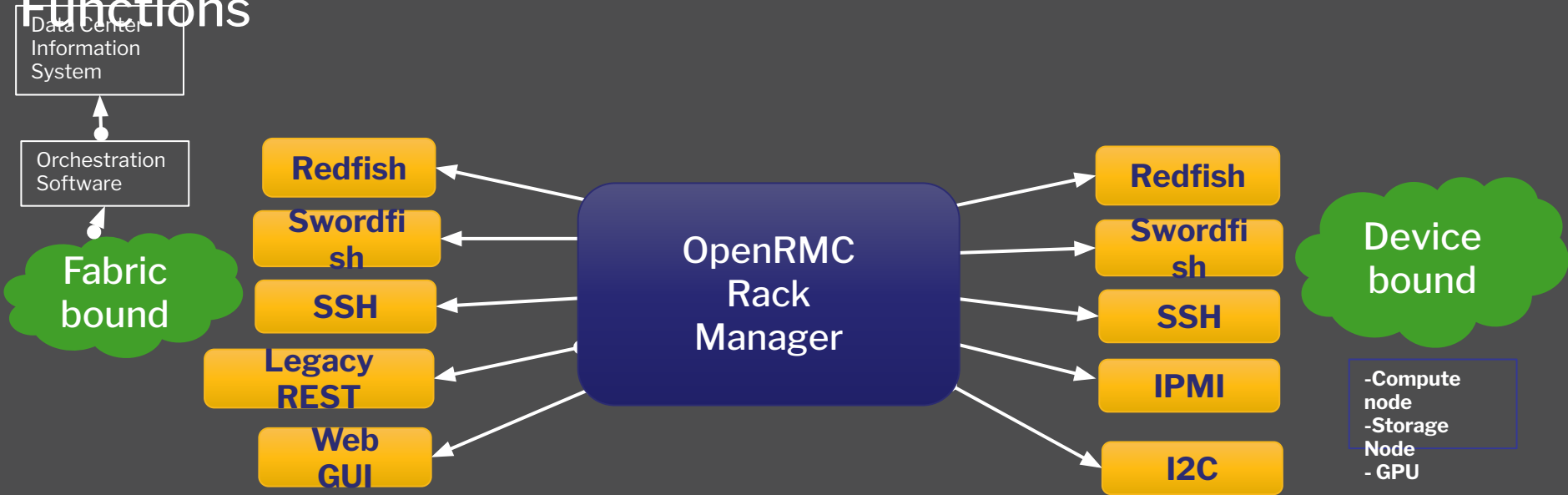
OpenRMC data traffic interfaces



HW MGMT
(openRMC)

A piece of hardware that provides Rack Management

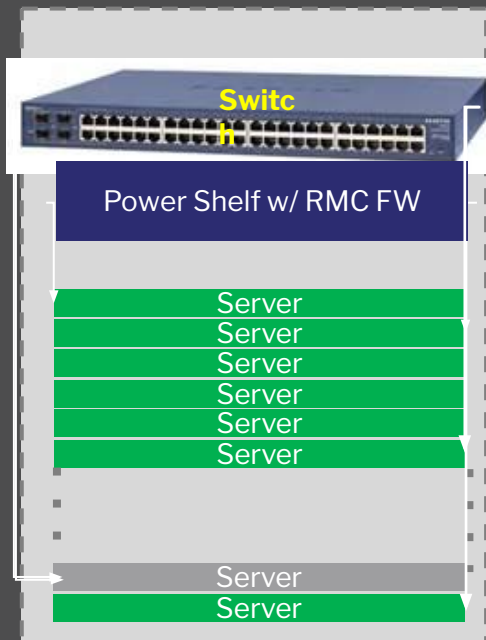
Functions



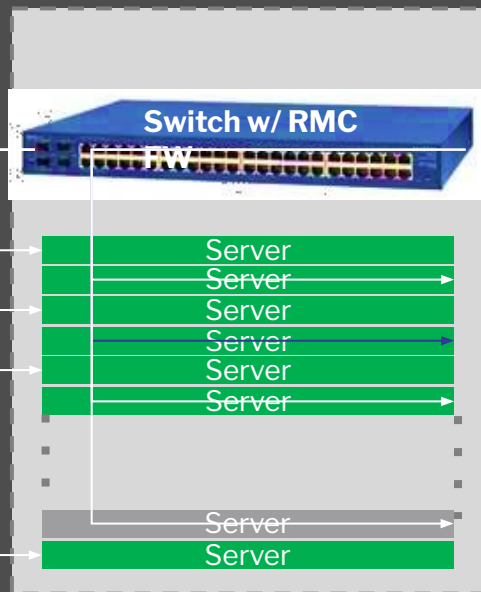
OpenRMC proposed configurations



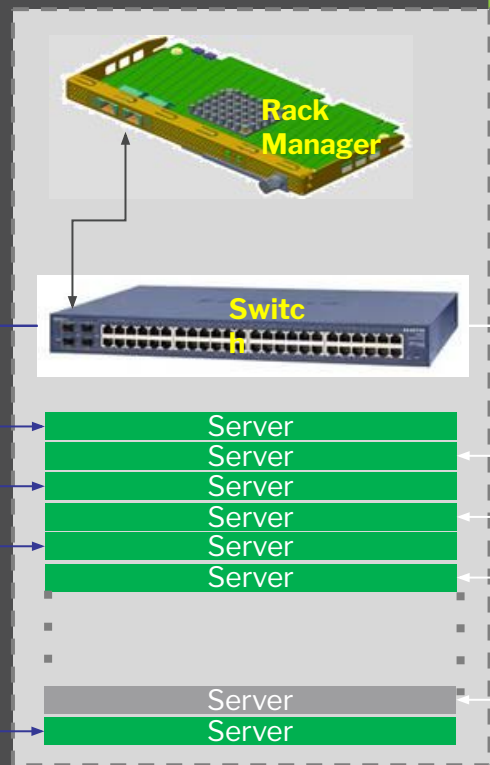
HW MGMT
(openRMC)



OpenRack



**EIA,
OpenRack**



Olympus

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OCP Networking Software



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OCP Networking Projects

ONIE

Open NW Install Env →

- ▶ Provides an OS install environment
- ▶ Makes writing and running installers easier
- ▶ It is a small Linux based OS itself
- ▶ <https://github.com/opencomputeproject/onie>

SAI Switch Abstraction Interface →

- ▶ Provides the standardized C APIs to program the ASIC
- ▶ ASIC is a microchip designed for a particular application
- ▶ <https://github.com/opencomputeproject/SAI>

OCP Networking Projects...Cont'd



Open Network Linux



- ▶ Linux distribution for bare metal switches
- ▶ NOS that ONIE would install
- ▶ Think of it as a collection of software packages, utilities & drivers that is run on OCP HW
- ▶ <https://github.com/opencomputeproject/OpenNetworkLinux>



Software for Open Networking in Cloud Built on SAI


- ▶ Breaks monolithic switching software into containerized components
- ▶ Enables failure recovery and upgrades with zero downtime.
- ▶ <https://github.com/Azure/SONiC>
- ▶ Based on 4 Principals- Control, Extensibility, Agility and Collaboration

Contribute.




OCP Networking Projects...Cont'd

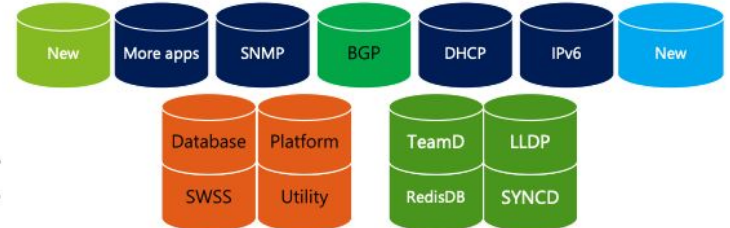
configuration and management tools



Jenkins ANSIBLE kubernetes puppet CHEF 1st party



SONiC

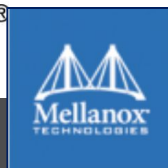


New More apps SNMP BGP DHCP IPv6 New
Database Platform TeamD LLDP
SWSS Utility RedisDB SYNCd

Linux Switch Abstraction Interface (SAI)



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Project Zipline



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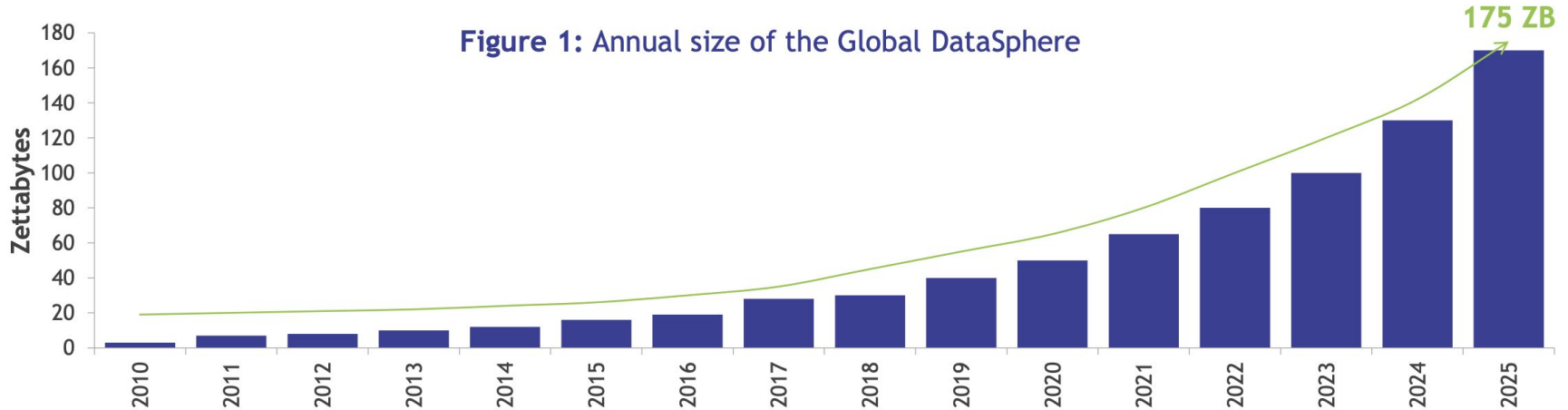
OCP Project Zipline

Why Project
Zipline

Continuous Data Drives the
need

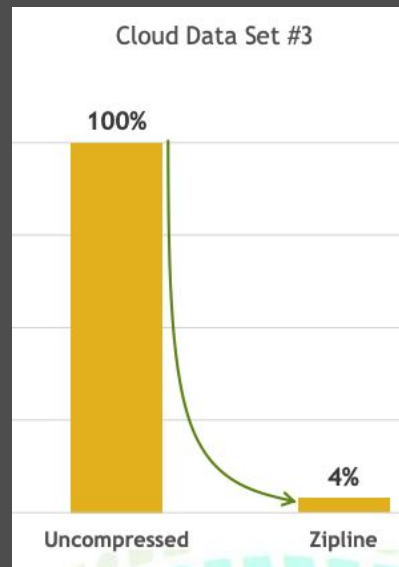
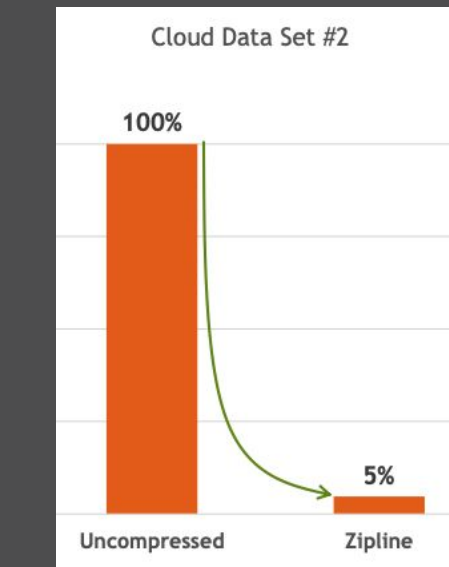
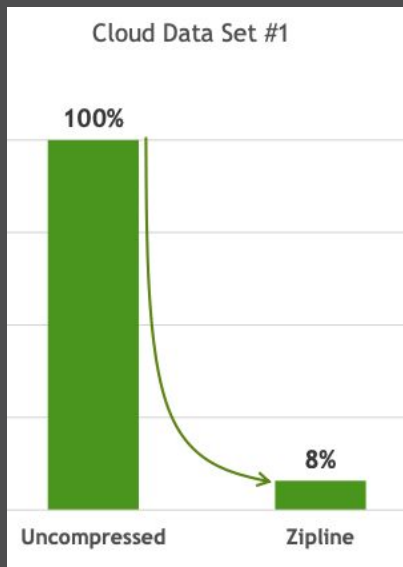
- Data Growth Projections

IDC predicts Global DataSphere will grow from **33 Zettabytes (ZB)** in 2018 to **175 ZB** by 2025



OCP Project Zipline compression gains

Data Sets



**Application Service
Logs**

IoT Text Files

System Logs

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OPEN
Project

OCP Project Zipline... Cont'd

Use

Cases

Work
Data
Processing

Analytics

IoT

Cloud
Migration
Appliances

Storage
Archival
General
purpose

Microprocess
ors

Productivity
Applications

Analytic
s

Smart SSD's

Database
accelerators

Partners

CPU

Intel, AMD, ARM, MARVELL and
SiFive

Networ
k

Broadcom, FUNGIBLE, Mellanox

Storag
e

EIDETICOM, NGD Systems,
PureStorage

EDA

Cadence, Synopsys

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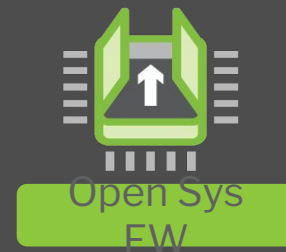
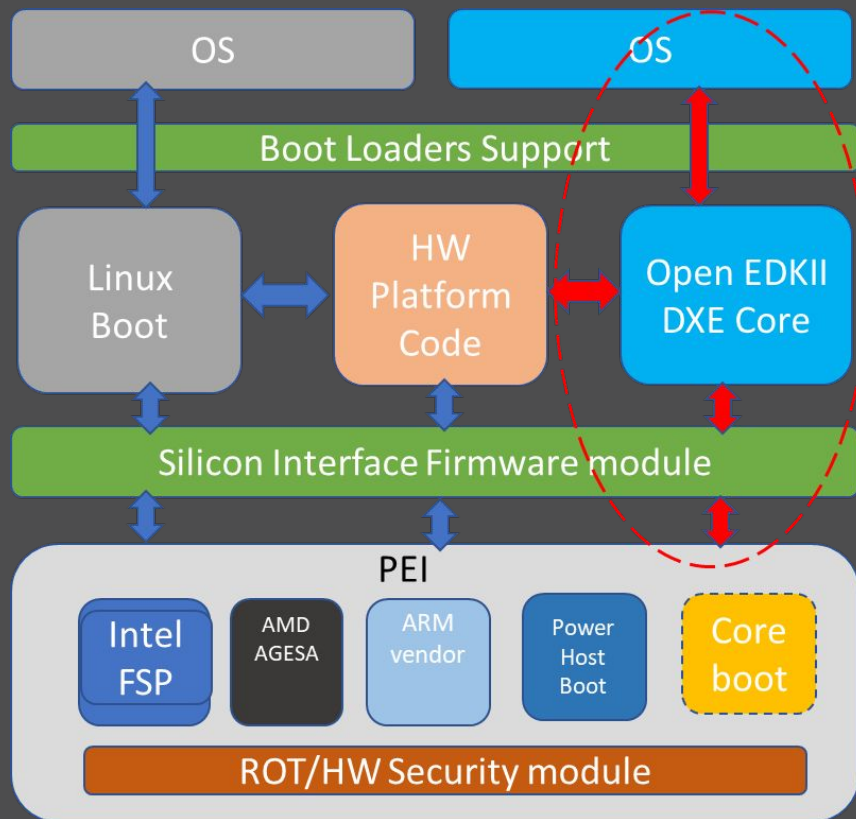


THANK YOU

धन्यवाद

Backup Slides

Open System Firmware Concept



- Many silicon vendors supplying their own silicon interface
- We need one SIFM module which will help us go in different paths
 - E.g. one can go from Core Boot with Intel's help or AMDs help and go boot Linux
 - Even one can go through Linux Boot and boot Windows

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OCP Project Zipline

Why Project Zipline

- By 2020

Continuous Data Drives the need for the Edge cloud

20
BILLION

Connected Devices
3-4x from 2018

115
Yottabytes

IoT Data Generated
(1 YB= 10^{24} Bytes)

1,587
Exabytes

IoT Data Captured
(1 Exb= 10^{18} Bytes)

5.6
BILLION

IoT Devices processing data at the Edge

OCP Project Zipline

- Targeted for legacy and modern data sets
 - Covering usage scenarios from Edge to Cloud
- Full solution stack Implementation
 - Algorithms + Software + Hardware
- Compression without compromise
 - Always-on data processing enabled by trifecta of high compression ratios + high throughput + low latency

