Deep Dive on OCP Software Projects

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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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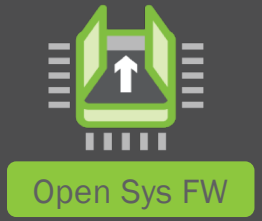
Open System Firmware



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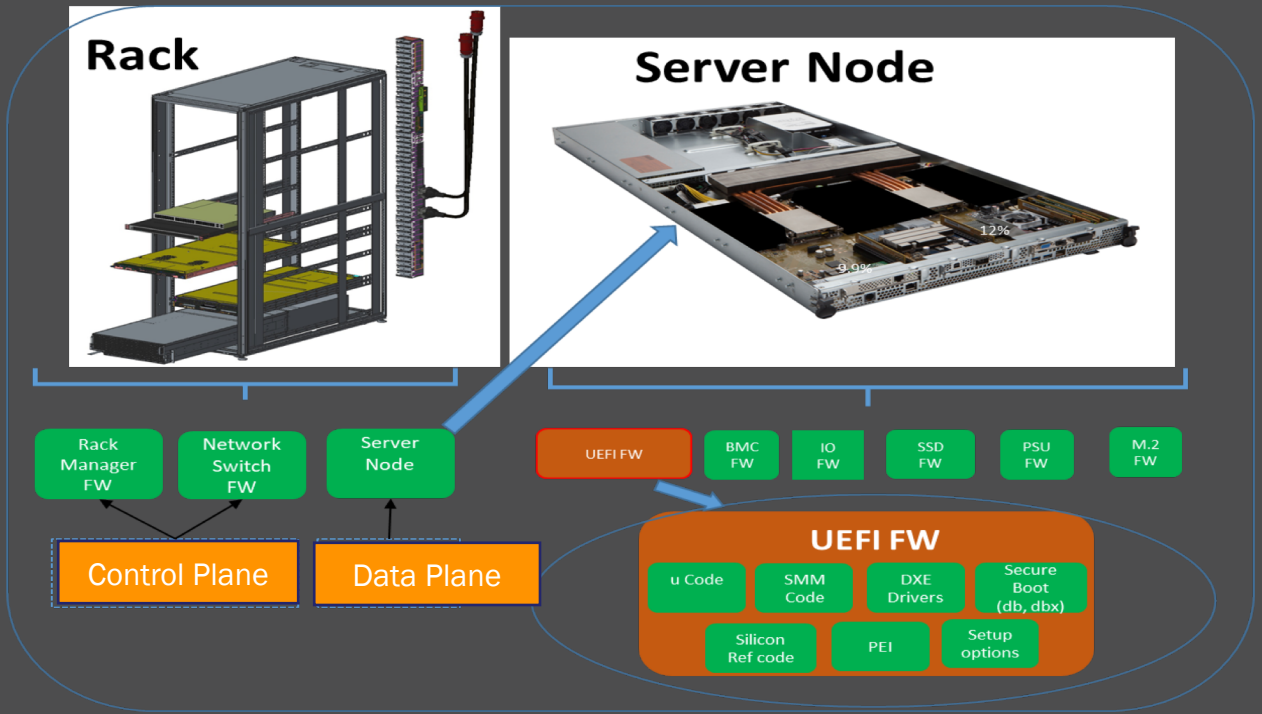
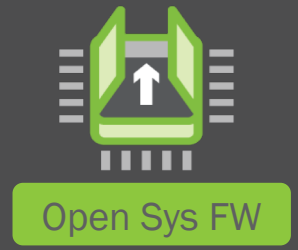
Open System Firmware

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





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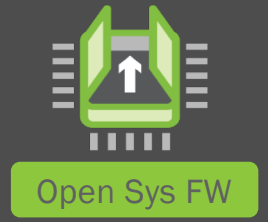
Need for OSF to be Open !!



- ”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.

Open System Firmware 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

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Open Rack Manager Controller (Open RMC)

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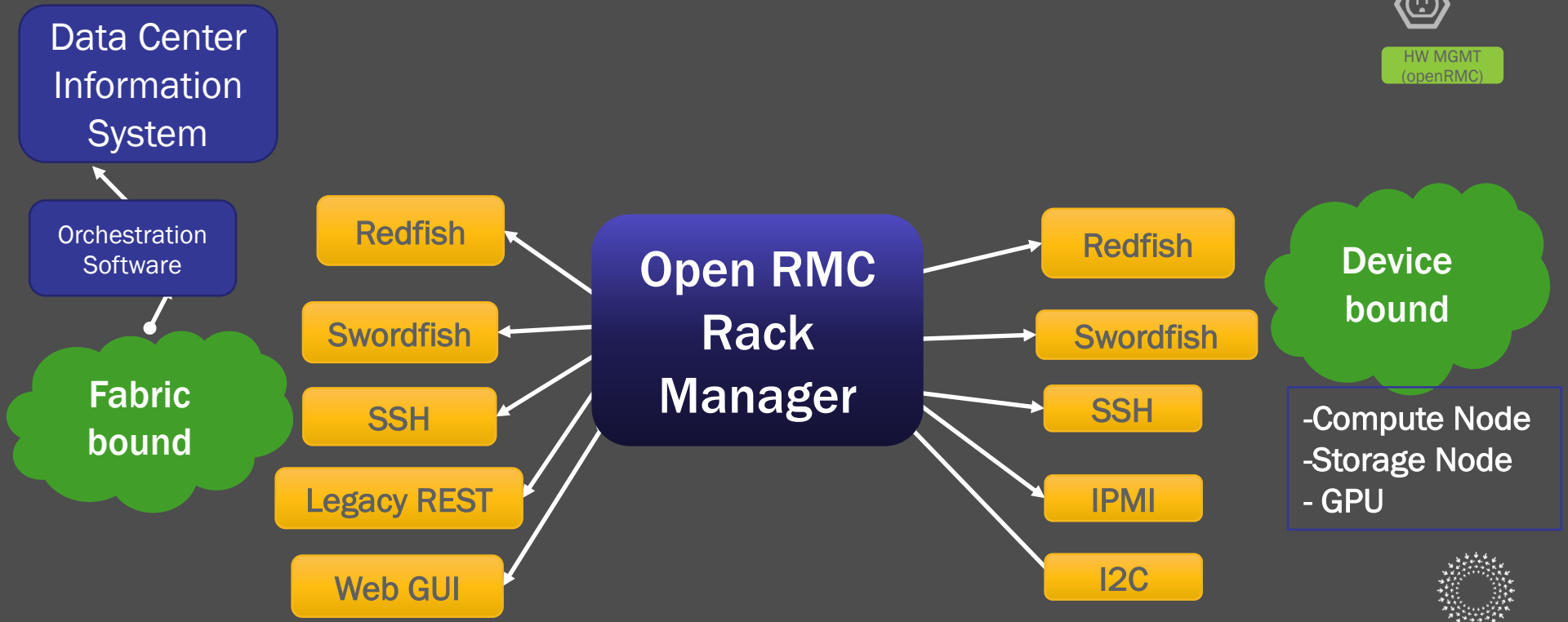
OCP OpenRMC Project

- 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

OCP Data Traffic Interfaces

A piece of hardware that provides Rack Management Functions



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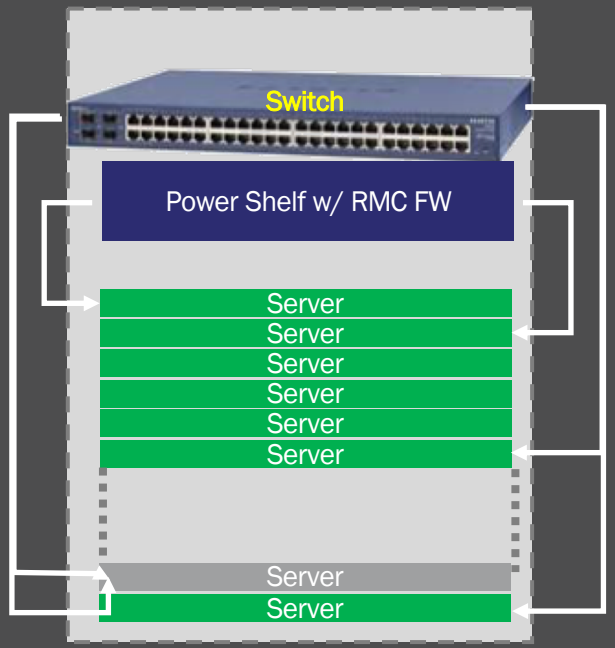
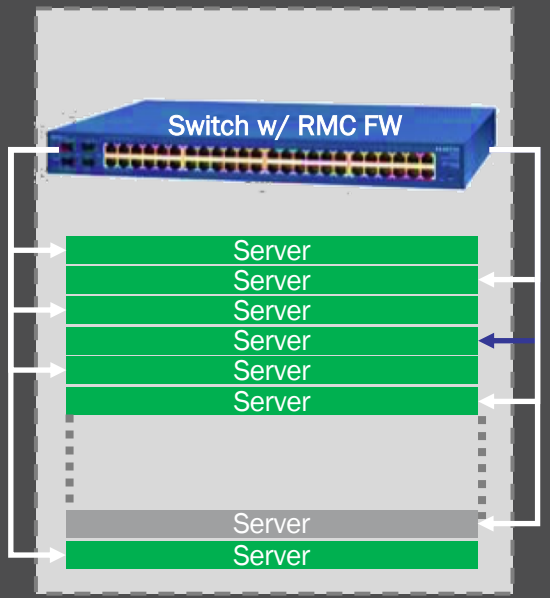
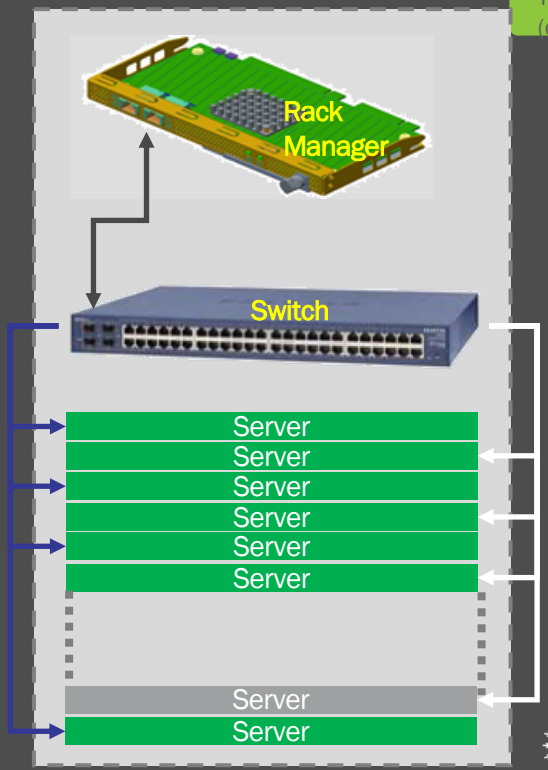
OpenRMC proposed configurations



OpenRack



EIA, OpenRack



Olympus

HW MGMT (openRMC)

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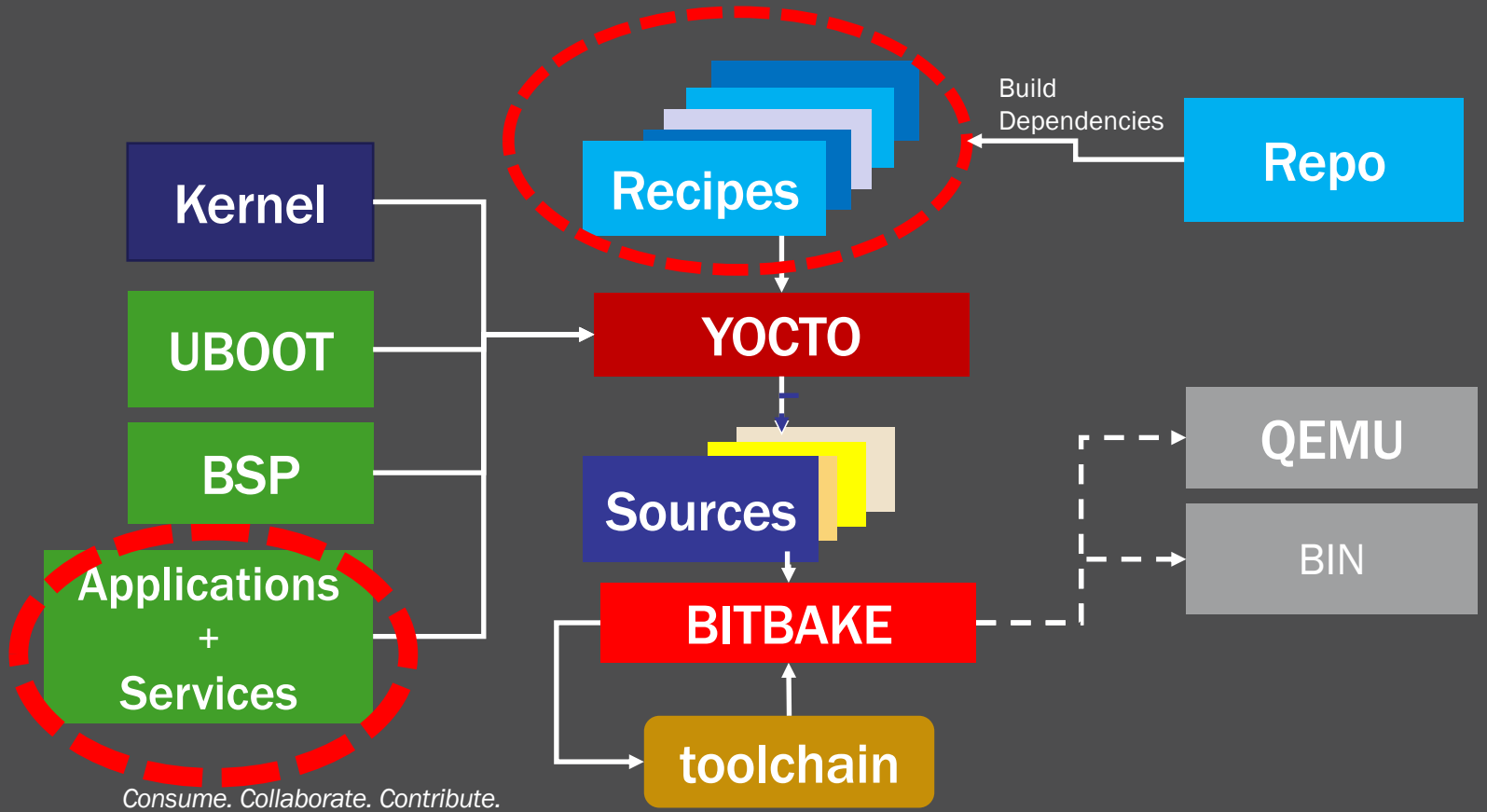
Microsoft RMC Build Process



HW MGMT
(openRMC)

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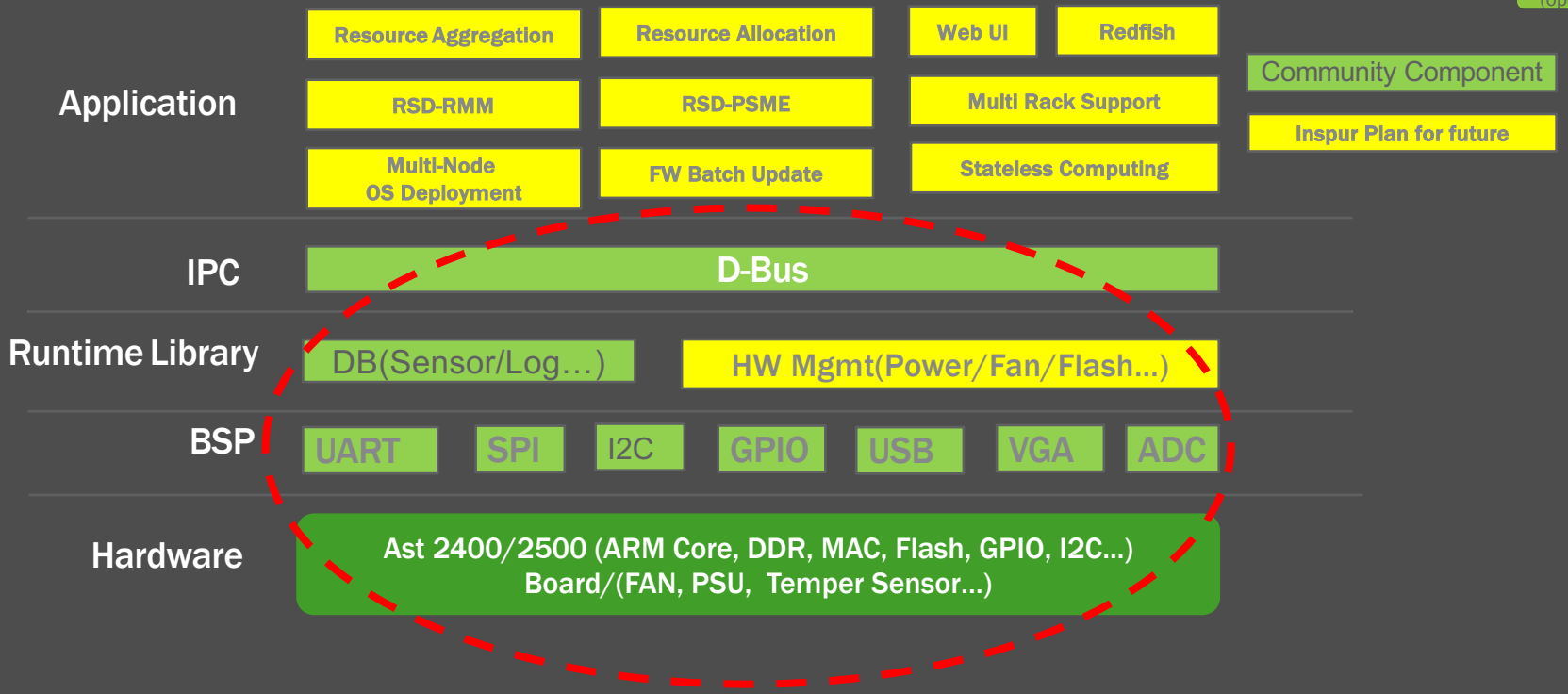
Inspur Firmware Stack

HW MGMT
(openRMC)



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OCP Open Networking Software

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OCP Networking Software Projects

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
- 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.
- Based on 4 Principals- Control, Extensibility, Agility and Collaboration
- https://github.com/Azure/SONiC

OCP Project Zipline

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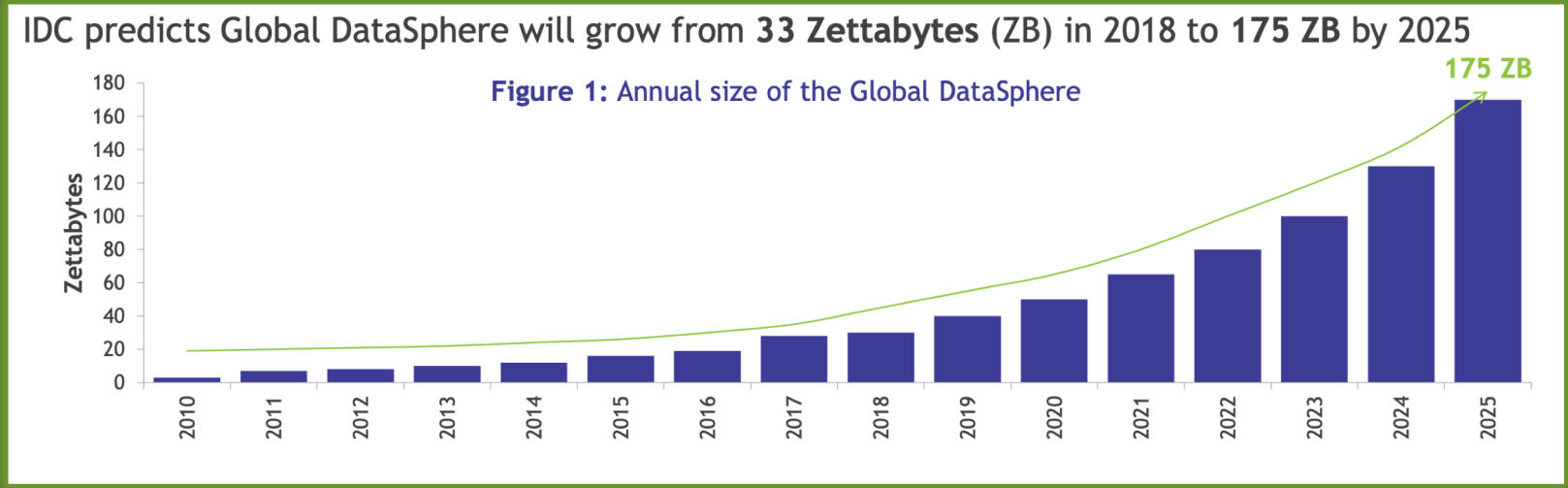
OCP Project Zipline

Why Project Zipline

Continuous Data Drives the need

Data Growth Projections

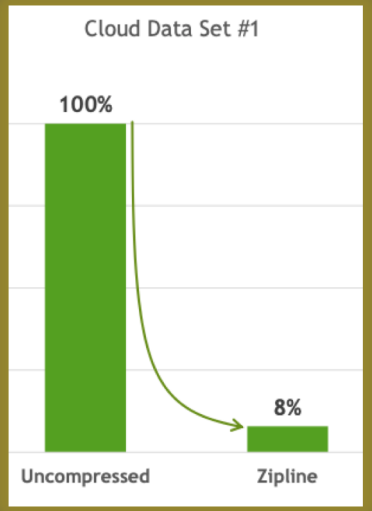


OCP Project Zipline…Cont'd

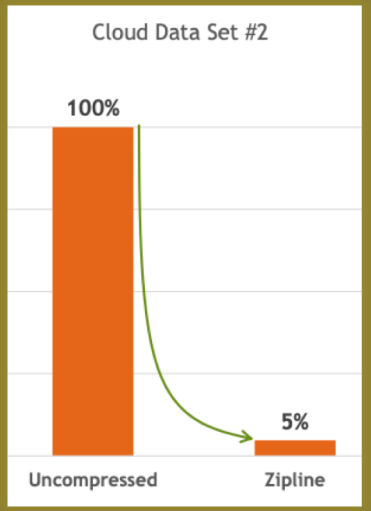
- Targeted for legacy and modern data sets
  - Covering usage scenarios from Edge to Cloud
- Full solution stack Implementation
  - Algorithms + Software + Hardware
- Compression without compromise
  - Always-on data processing enabled by trifecta of high compression ratios + high throughout + low latency

OCP Zipline Compression gains

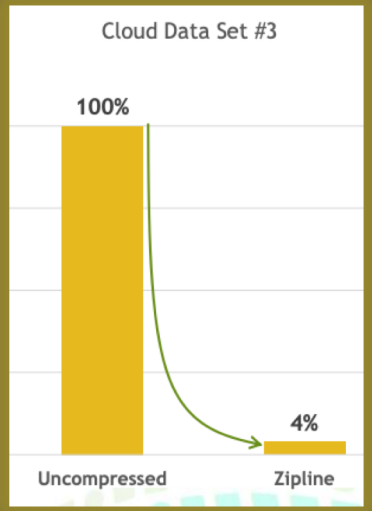
Data Sets



Application Service Logs



IoT Text Files



System Logs

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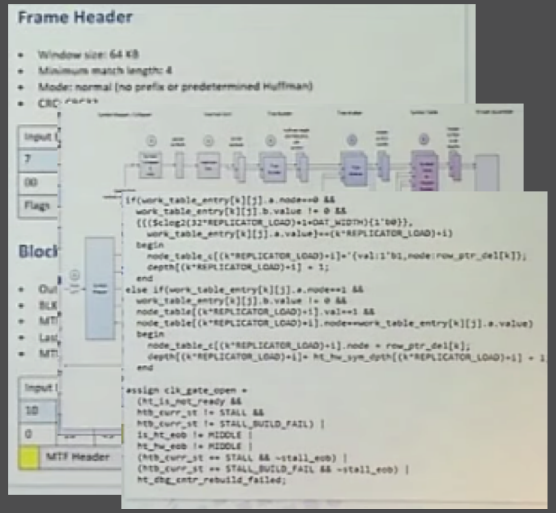
OCP Project Zipline…Cont'd

- Compression algorithm and specifications
  - Interoperability across endpoints (edge to cloud)
  - Hardware architecture specifications
    - High bandwidth, Low latency implementation
  - Verilog RTL source code and test suite
    - Open sourced IP – Industry first for OCP contributions
    - Enabling faster adoption in the silicon ecosystem



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OCP Zipline…Cont'd

Use Cases

- Network Data Processing
- IoT
- Storage Archival Systems
- Productivity Applications
- Smart SSD's
- Analytics
- Cloud Migration Appliances
- General purpose Microprocessors
- Database accelerators

Partners

CPU	Intel, AMD, ARM, MARVELL and SiFive
Network	Broadcom, FUNGIBLE, Mellanox
Storage	EIDETICOM, NGD Systems, PureStorage
EDA	Cadence, Synopsys

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Thank You !!

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