



# Open – Disaggregated Networking

## OCP Japan Meet Up

*George Tchapanian, CEO Edgecore Networks*

*June 27, 2019*

*Tokyo*

- Briefly: What is Open – Disaggregated Networking?
  - Open Networking Value Proposition
- Why OCP and “More of” Open Networking?
- Edgecore Networks – Who are we?
  - Edgecore Open Networking Value Proposition
  - Few New (sample) Products Introduction
- Q&A

# Switch, Component Ecosystem and OCP

Mgmt  
Software

Network OS

Drivers

Box /  
Mechanical

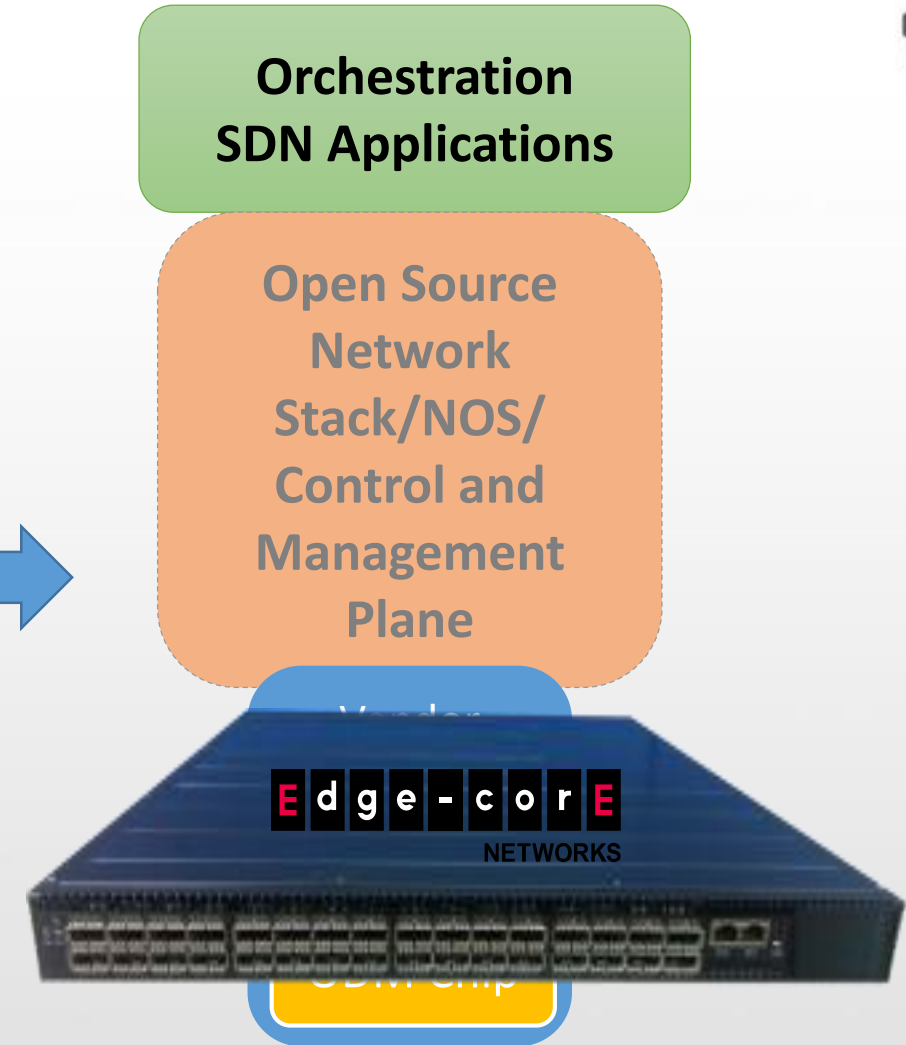
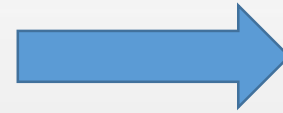
Silicon



**Legacy  
Networking  
(Past)**



**Traditional  
Networking  
(Today)**



***Bare Metal – White Box  
(Market Shift ....Tomorrow)***

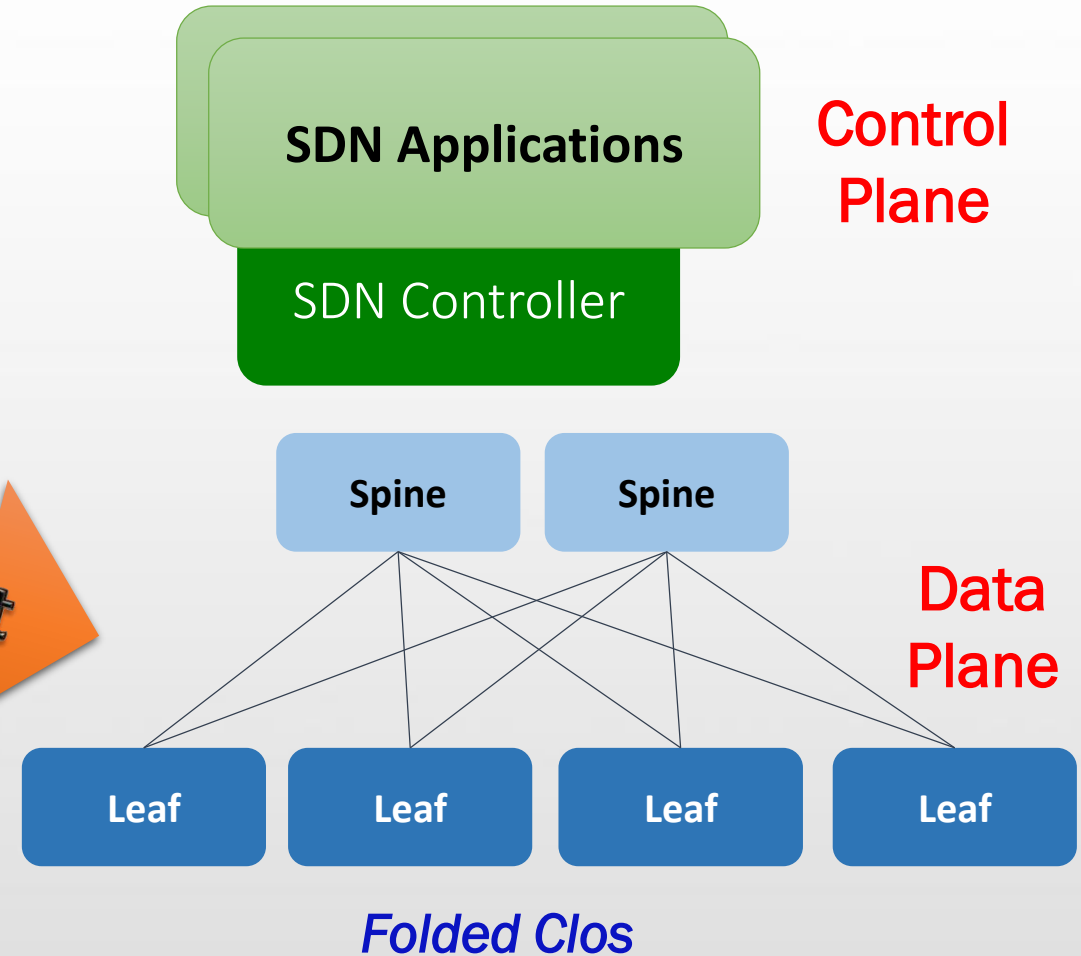
# Cost Reduction ....and more!

## Proprietary Chassis



- **Proprietary Stack (ASIC, HW, SW)**
- **Expensive**
- **Complex /Slow**
- **Scale UP**
- **Vendor Lock In**

**30%-50% Lower Cost**



**Open Virtual Chassis**

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- **AI & Edge Computing in 5G Era**
- The adoption of **5G**, **AI**, and **Edge Computing** will drive new expectations for:
  - always-on,
  - low to no latency,
  - high quality network and,
  - services,
- Which will lead to operational efficiency (OPEX reduction) and boost ultra-low latency and intelligent applications.
- To honor the promise with the right CAPEX, it is vital to have the proper compute infrastructure in place, aligned to the right strategy, like, **Openness**, **Whitebox**, **Disaggregation**, **Automation**, etc.



# What upgrades are needed for 5G ?

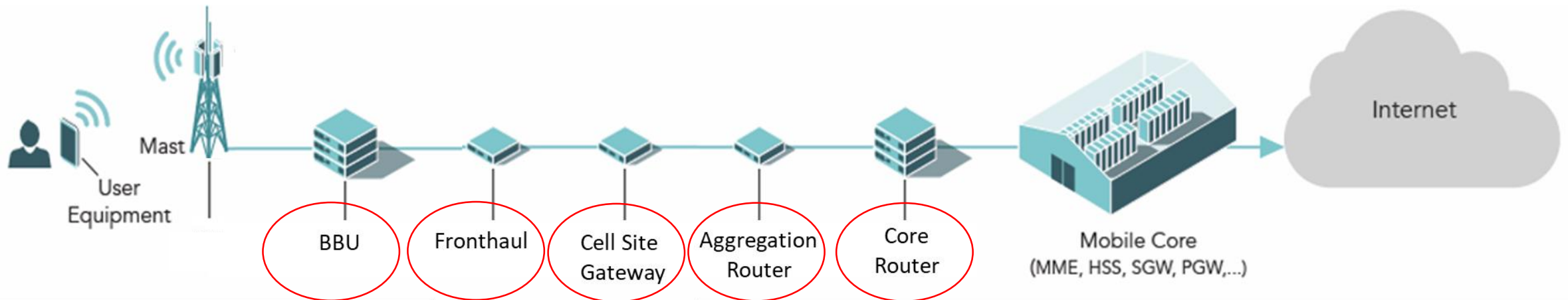
Core >> 400G... +

Aggregation >> 100/400G

Cell Site Gateway >> 10/25G/100G

Fronthaul >> RoE

BBU >> RU, CU, DU



# How will these product upgrades be delivered ?

- Openness
- Disaggregation
- Whitebox
- OCP Work Groups / Community DevOps

## Open Community



## Active Community Members

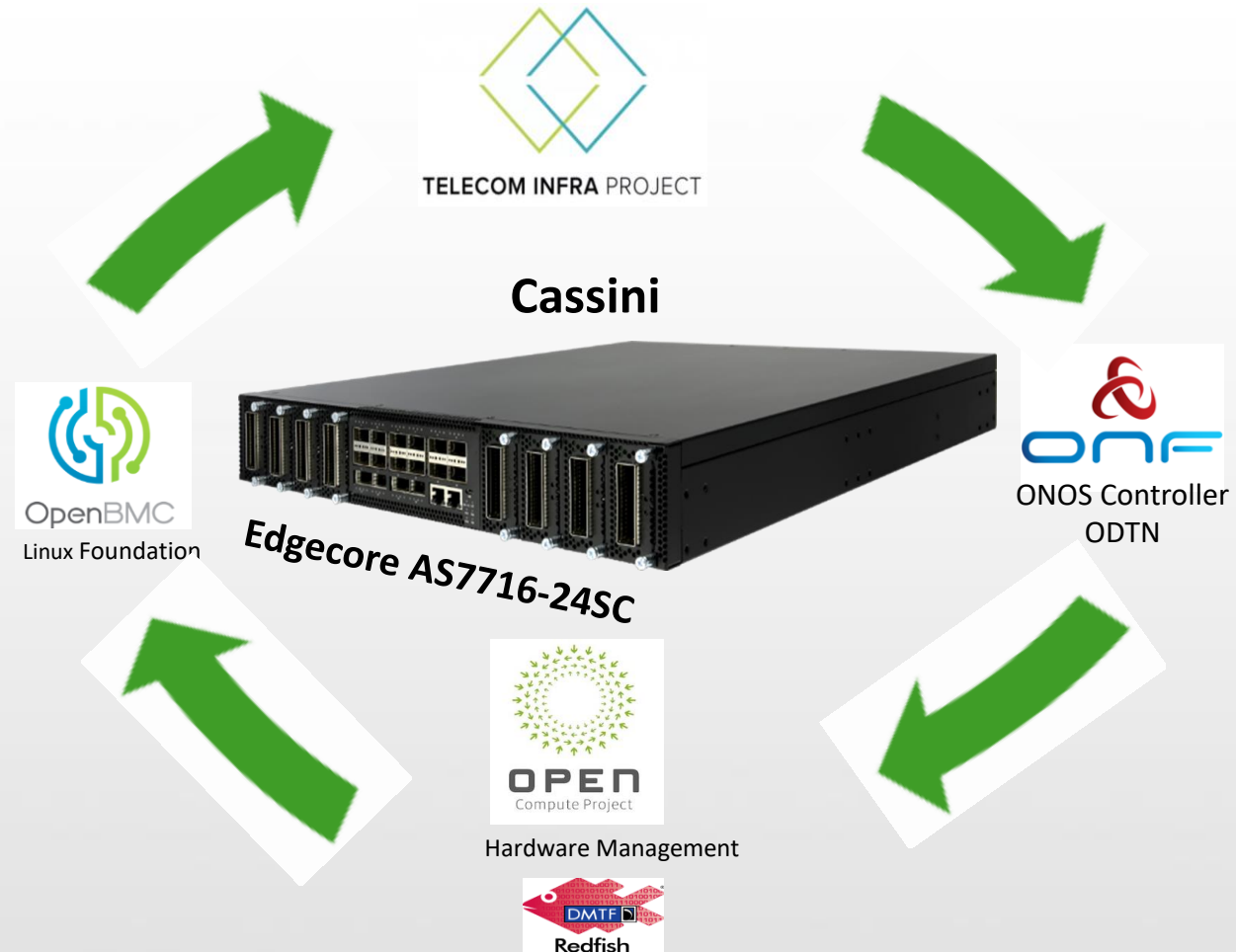
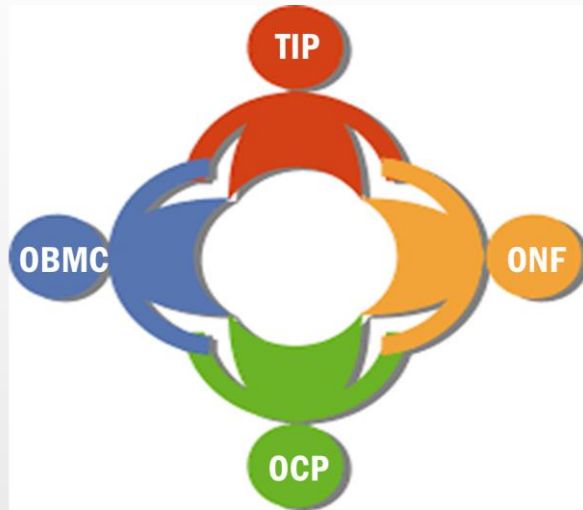




# OCP Community Work .... At Work !



# Open Communities and Cross Pollination



Cross Pollination = “A sharing or interchange of knowledge, ideas, etc., as for mutual enrichment;

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# Accton and Edgecore

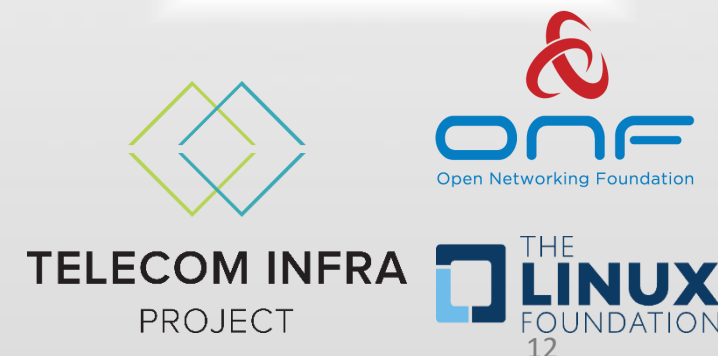



- **#1 Network ODM**
- Founded 1988, IPO Taiwan 1995
- ~ 700 network engineers
- Manufacturing: Taiwan (TAA Compliant) and China

- **Edgecore Accton's brand business**



- Wholly owned subsidiary of Accton Group
- Go-to-market business to network operators - DC, Telecom, and Enterprise
- Manages SW Dev. R&D, customer, partner and open community relationships
- Leading contributor of network designs to OCP
- TIP and LF Active participant – contributor
- ONF – Charter Partner and leading ONF Strategic Initiative – Building Reference Designs (HW and SW).



# Edgecore Open Networking

- Open Hardware Leadership
- Open Software Value / Enablement Leadership (Ecosystem Partnership)
- Integration (Ecosystem Partnership)

# Most Network Design Contributions to Open Source

## *Industry Firsts: 10G to 400G DC switches, New Telco /MSO Use Cases*

### OCP-Accepted™ Designs & Products

- 1G Rack Mgmt Switch *Helix4*
- 10G TOR Switch *Trident II*
- 40G Spine Switch *Trident II*
- 100G TOR & Spine Switch *Tomahawk*
- 100G TOR & Spine Switches *Trident3*
- 64 x 100G Spine Switch *Tomahawk II*
- 32 x 400G *Tomahawk III*
- 10G/100G Edge Switch *Qumran*
- Open Rack Switch Adapter

### Design Contributions in OCP Review

- 100G OMP800 Chassis *Tomahawk*
- 100G OMP1600 Chassis *Tomahawk*
- 25G TOR Switch *Tomahawk*
- MiniPack AS8000 *Tomahawk III*

### Partner Designs, Edgecore OCP-Inspired™ Product

- Wedge40-16X *Facebook*
- Wedge100-32X *Facebook*
- Wedge100BF-32X *Barefoot*
- Wedge100BF-65X *Barefoot*



### Accepted Design Contribution

Cassini Packet Transponder

### Designs in Process

DCSG Cell Site Gateway

### OCP Telco Working Group

- ASXvOLT16 10G OLT *BCM Qumran & Maple*
- AS7316-26XB Cell Site Gateway *QumranAX*
- AS7926-40XK and -80XK Aggregation Routers *Jericho2 in OCP Review*

### OCP-Accepted™ Access Products

- 1G PoE Switch *Helix4*
- 802.11ac Wave1 Wi-Fi APs *BCM*
- 802.11ac Wave2 Wi-Fi APs *QCA*

# Leadership in Open Networking Community

- VP Technology, Jeff Catlin on Incubation Committee
- CEO, George Tchapanian co-chair of OCP Taiwan
- 1<sup>st</sup> & leading contributor to Network Group
- Designs for new use cases in Telco Project
- Support all OCP Software/Firmware



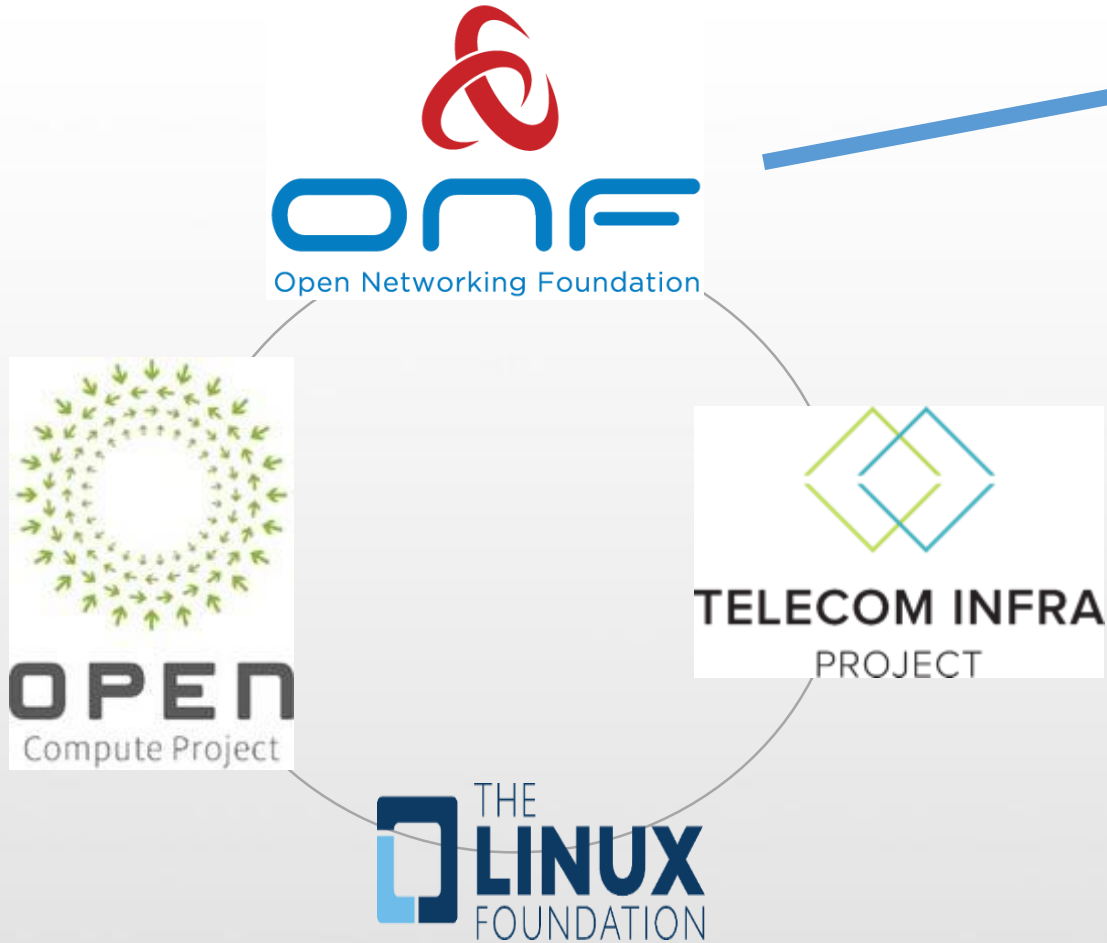
- CEO, George Tchapanian on ONF Board
- Member since 2014, Partner since 2018
- Edgecore hardware basis for CORD
- Contributing to all four (4) ONF Reference Designs



- Active Member
- Contributed Cassini packet transponder
- Integrating optical technology from leading partners
- 1<sup>st</sup> contributor to DCSG (TIP) cell site gateway project



# Open Networking Community



## ONF Operator Partners





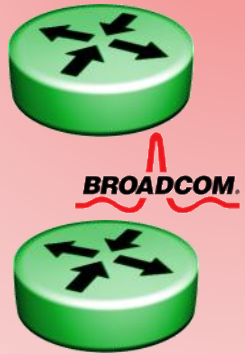


# Open Networking Roadmap

# Technology Focus- Places in the Network

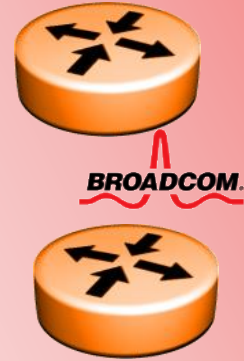


5G Switch



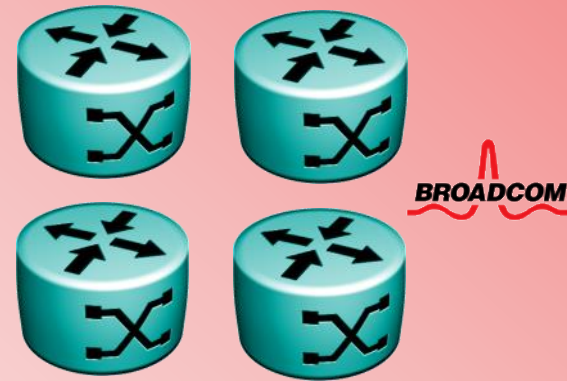
Fronthaul

Cell Gateway



Backhaul

High Scale Deep Buffer Switch



Aggregation/Core

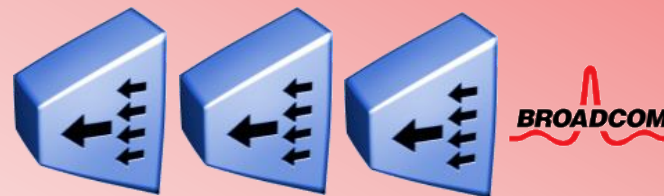
Leaf/Spine & Edge



Nephos

DC and Enterprise

PON OLTs



Wireline Access

Optical Packet Transponder



Data Center Interconnect

# MINIPACK AS8000

Industry's First 400G Open Network Switch  
Optimized for Spine Applications

*Design Contributed and  
In OCP Review .....*

## Features

8 Slot Small Form-Factor  
16x 100G QSFP28 / 8x200G QSFP-56 or 4x 400G QSFP-DD  
Broadcom XGS Tomahawk III BCM56890 12.8Tb  
64MB Packet Buffer  
Xeon D-1527 processor 4-Core 2.2 GHz  
32GB DRAM, 256MB Flash, 32GB SSD  
AC and DC Power Options  
4RU  
Cumulus, SONiC



Planning Phase:  
100G Available Q3 2019  
400G Available Q4 2019

# Edgecore Open Networking for Telecom

## **Data Center – CSP / Enterprises:**

Leaf and Spine Fabrics  
1GE to 400GE  
DCI – Packet Transponder



## **Telecom/MSO:**

**Deep Buffer Large TCAM – Edge Switches**

**Open OLTs, XGS-PON and GPON**

**Cell Site Gateways – OCP and TIP**

**Fronthaul / Backhaul Switches**

**Aggregation / Core Routers**



[www.edge-core.com](http://www.edge-core.com)

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THANK YOU