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# Distributed Disaggregated Chassis Routing System

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# What is Distributed Disaggregated Chassis (DDC)?

The DDC architecture are the building blocks for carrier-class routers that scale from standalone to large, core clusters.

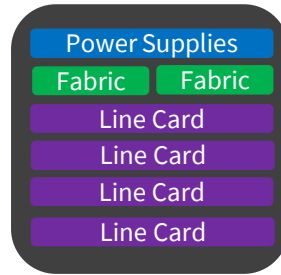


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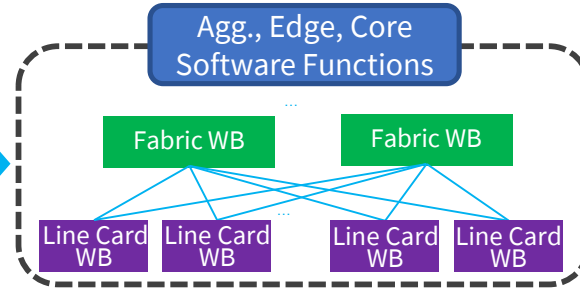
## Key Principles of DDC:

1. White box (WB) hardware built on merchant silicon
2. Disaggregation of hardware and software
3. Unified system design operating as a single logic L2/L3 router that can scale from small to large clusters

## Traditional Chassis



## Distributed Disaggregated Chassis



# Benefits of Distributed Disaggregated Chassis

## Architectural Benefits

- Foster HW and SW innovations
- Flexibility in CO installation
- Simplify service and capacity upgrades
- Uniform WB components used in aggregation, edge and core networks
- Flexible horizontal scalability by adding on WB when needed

## Business Benefits

### **Minimize CAPEX**

- Merchant silicon
- Bulk purchasing of White Box HW
- Scale up without purchasing redundant chassis space

### **Minimize OPEX**

- Common hardware across entire network



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# UFISPACE BRIEFING

## UNIFYING CLOUD & CARRIER NETWORK

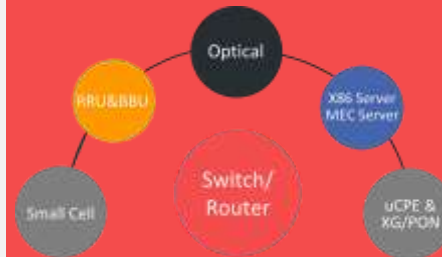
*We aim to accelerate and lower the cost of mobile 5G deployment by enabling commodity hardware with disaggregated software solution which in turn allows for a faster technology upgrade on open network platform.*

### Company Highlights

- UFI's team has more than 15 years of experience in SMB, Enterprise, and Cloud ODM.
- Strong focus on R&D/ Sales & Marketing Oriented
- Partner with World-Wide No.1 EMS Company for engineering services & manufacturing operation



### Product Categories



### Ahead of Game

- CSGR to be deployed on AT&T's Network, which is the worldwide FIRST mass deployment on LIVE customer traffic .
- AT&T has launched Industry-First 400G networks connection using Ufi's J2 WB solution— is believed to be a FIRST in the industry in Nov. 2019.

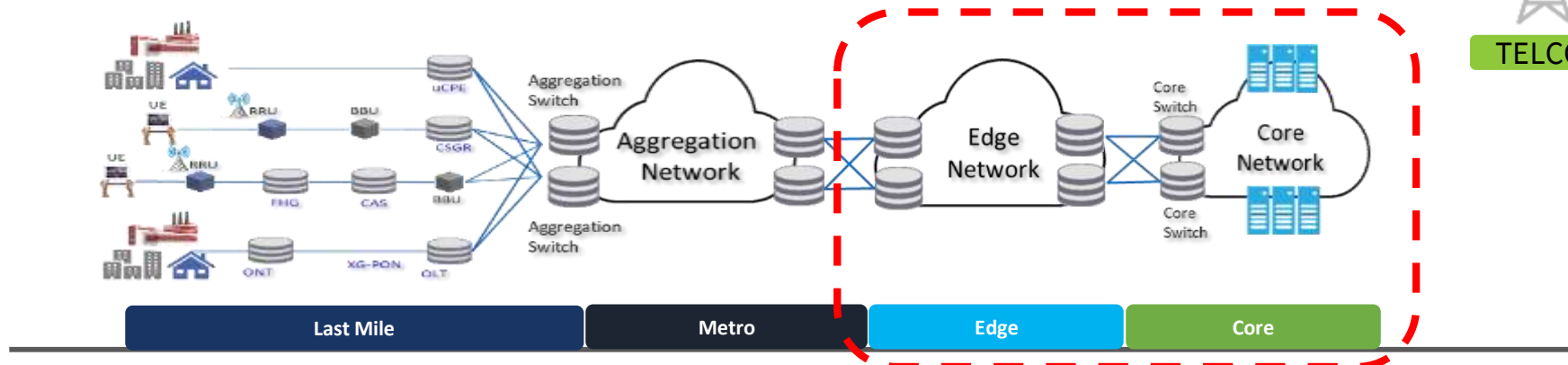
## UfiSpace Positioning

A leading enabler of open networking platform & end-to-end networking solutions.

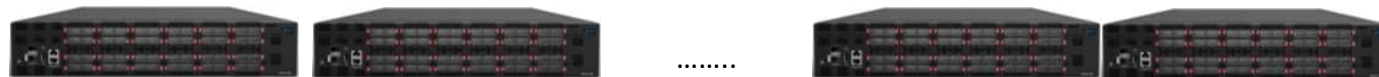
# DDC Topology for Next Gen Routing System



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**S9705-48D (400GE NCF) : Up to 13**



400GE Fiber



100GE Ports

100GE Ports

**S9700-53DX (100GE NCP) : Up to 48**



400GE Ports

400GE Ports

**S9700-23D (400GE NCP) : Up to 48**



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# DDC Topology for Next Gen Routing System



TELCO

9705-48D (400GE NCF)



+

9705-53DX (100GE NCP)



or

9705-23D (400GE NCP)



<b>Standalone (4 Tbps)</b>	0	1 x 40x100GE (40x100GE)	1 x 10x400GE (10x400GE)
<b>Small Cluster (16 Tbps)</b>	1	4 x 40x100GE (160x100GE)	4 x 10x400GE (40x400GE)
<b>Medium Cluster (96 Tbps)</b>	7 (6+1 redundant)	24 x 40x100GE (960x100GE)	24 x 10x400GE (240x400GE)
<b>Large Cluster (192 Tbps*)</b>	13 (12+1 redundant)	48 x 40x100GE (1920x100GE)	48 x 10x400GE (480x400GE)

\*192 Tbps = 40ports x 100GE x 48pcs / 1000Gbps  
1 NCP req. 12 fabrics for non-blocking routing, therefore 1 NCF support up to 4 NCP

# DDC Routing System Compliance



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## **S9700-53DX**

40 x 100GE QSFP28 Service  
13 x 400GE QSFP-DD Fabric



## **S9700-23D**

10 x 400GE QSFP-DD Service  
13 x 400GE QSFP-DD Fabric



## **S9705-48D**

48 x 400GE QSFP-DD Fabric

## **Compliances:**

- Compliant with the AT&T DDC Specification.
- TP-76200 & TP-76450 compliance for Central Office/Telco environment, NEBS Level 3.
- Standalone or coupled with fabric router in small/medium/large clusters enabling 4Tb (standalone) to 192Tb (large cluster) switching capacity.
- Operating temperature range 32°F to 113°F (0°C to 45°C).
- IEEE 1588v2 and Synchronous Ethernet, support G.8273.3 T-TC (Class C), G.8262 and DDC Sync.
- 2RU height and 30" chassis depth especially designed for existing 19" cabinet rack-mount installation.
- Field replaceable dual -48VDC or AC hot swappable power supply options with 1+1 redundancy and field replaceable hot swappable FAN with 3+1 redundancy.



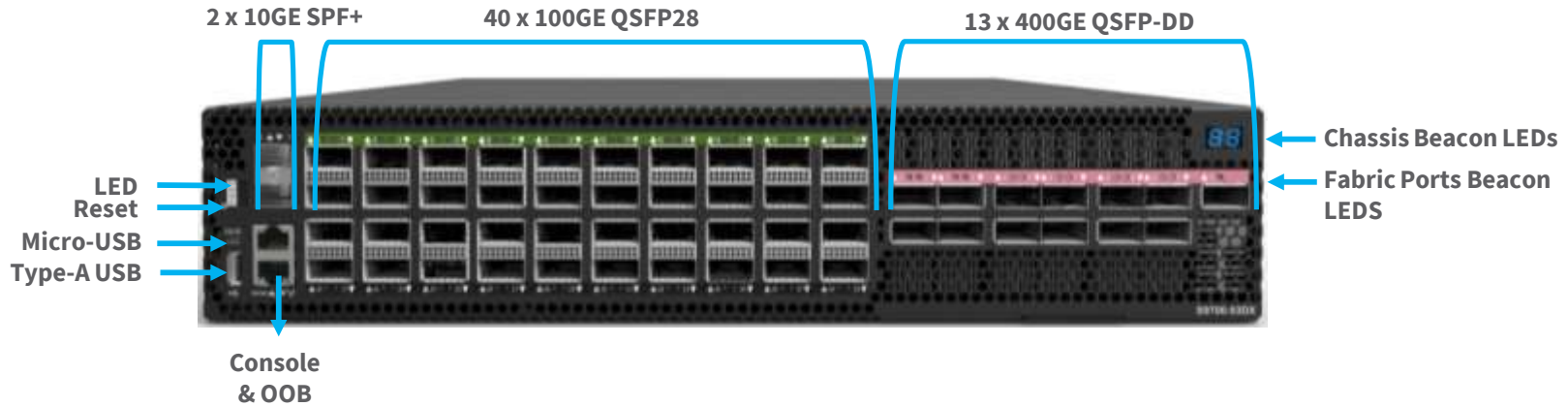
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# S9700-53DX DDC Routing System



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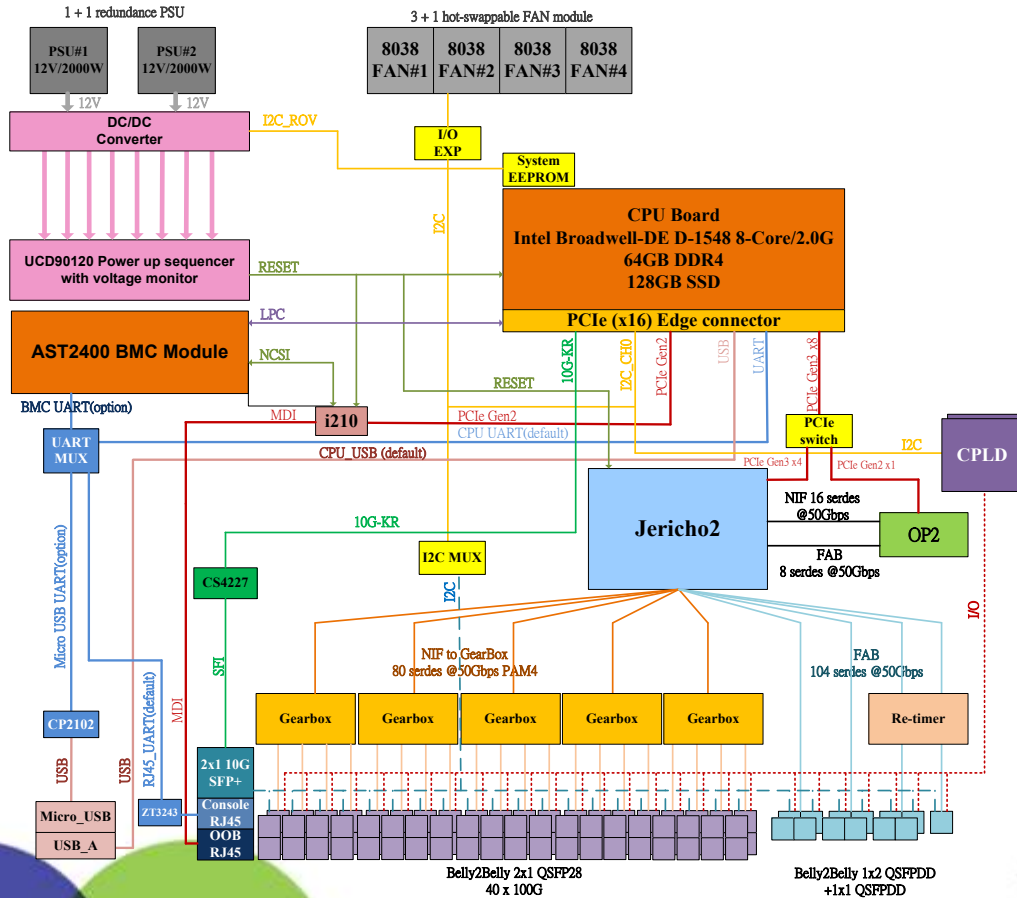
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# S9700-53DX System Block Diagram



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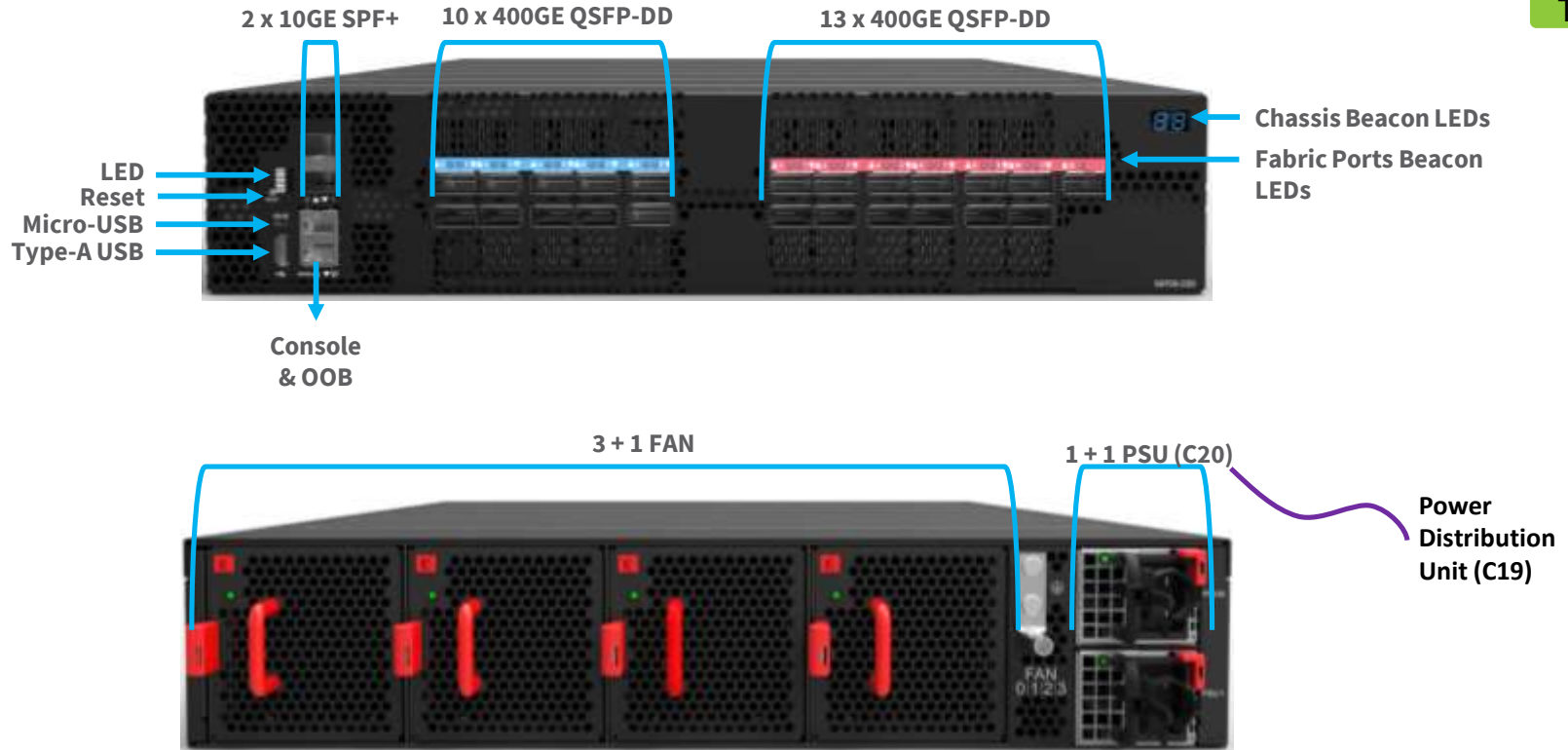
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# S9700-23D DDC Routing System



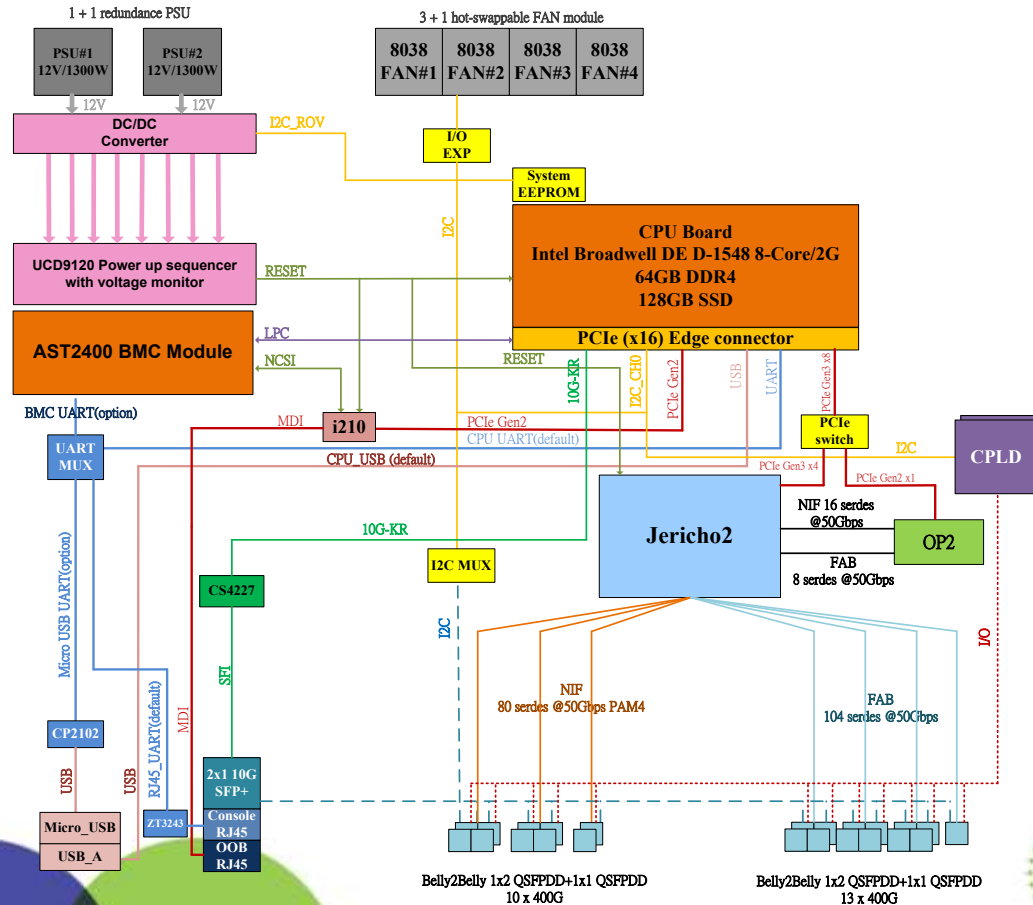
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# S9700-23D System Block Diagram



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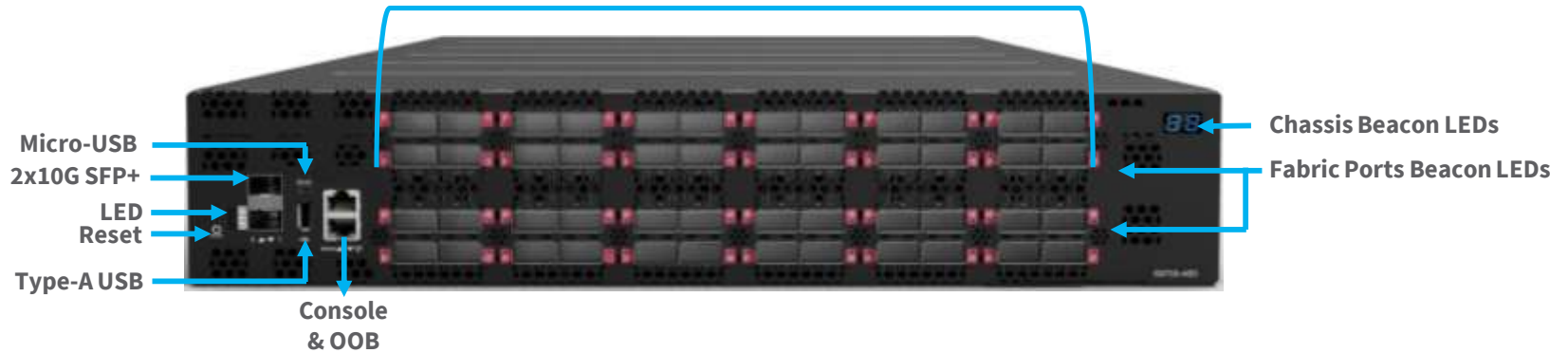
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# S9705-48D DDC Routing System



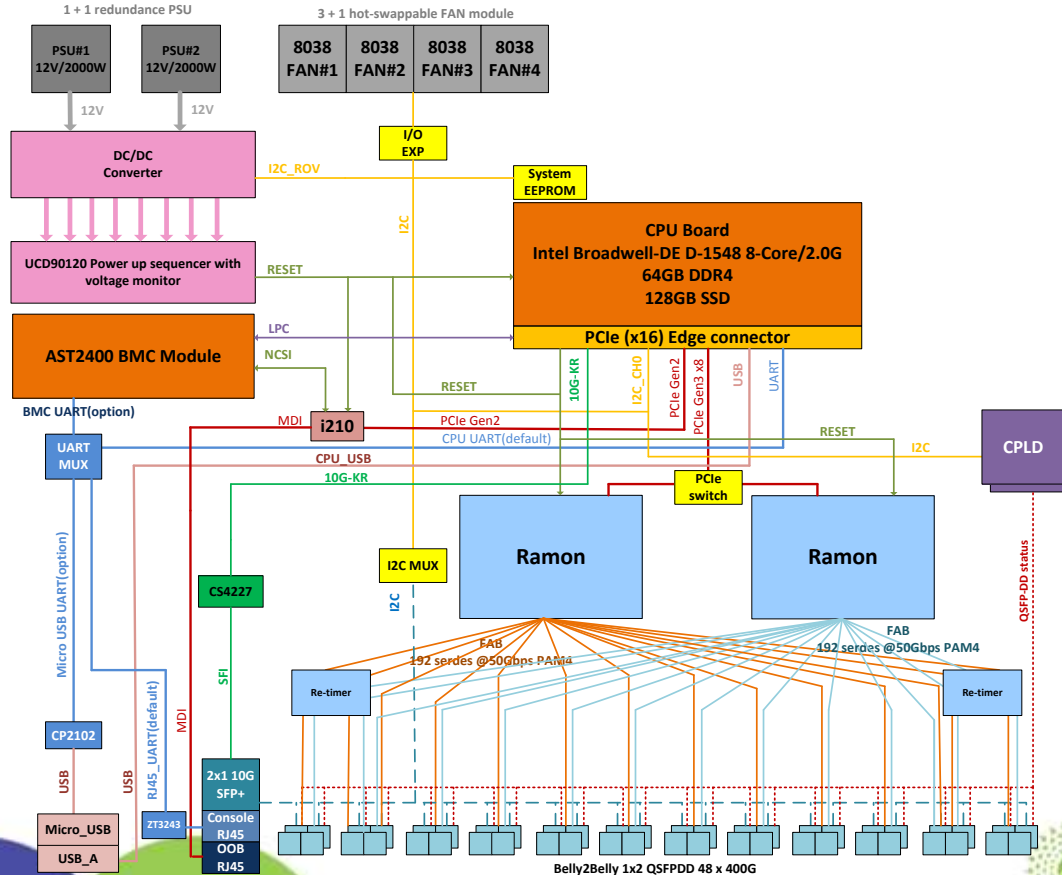
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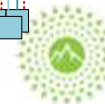
# S9705-48D System Block Diagram



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Belly2Belly 1x2 QSPFDD 48 x 40G



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# Software Support



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- ◆ BIOS

The DDC Routing System supports AMI Grangeville BIOS firmware with the Intel Broadwell-DE x86 CPU module

- ◆ BMC

The DDC Routing System supports AMI MegaRAC SP-X BMC firmware for Aspeed ARM AST2400 platform.

- ◆ ONIE

See <http://onie.org/> for the latest supported version



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# Call to Action



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- Get Involved: Contact us or Join the OCP Telco Project

Telco Project Wiki: <https://www.opencompute.org/wiki/Telcos>

- Contribution Availability: In process (IC Presentation)

- Product Availability: Now

- Additional information:

Where to buy: <https://www.ufispace.com>

Specification Wiki: [https://www.opencompute.org/wiki/Telcos#Specs\\_and\\_Designs](https://www.opencompute.org/wiki/Telcos#Specs_and_Designs)

Mailing list: <https://ocp-all.groups.io/g/OCP-Telco>



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