
# Rackgo X
# Tioga Pass

## Next-Gen OCP Server Refresh

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# Rackgo X Tioga Pass

- QCT Rackgo X Tioga Pass is next generation OCP general purpose compute server based on the latest Intel® Xeon® Scalable Processor family (aka Skylake-SP) CPU. The Motherboard has a single sided SKU, supporting up to 12 DIMMs or a double sided SKU supporting up to 24 DIMMs, designed to fit in the OCP Cubby chassis and mounted in ORv2 Rack.

- OCP contribution by Quanta:
  - Design files of Tioga Pass

- Reference:
  - Facebook 2S Server Tioga Pass Rev 1.0

# Rackgo X Tioga Pass

## Open Compute Project Multi-Node Server

Up to 2 Intel® Xeon® Skylake-SP Processors per Node

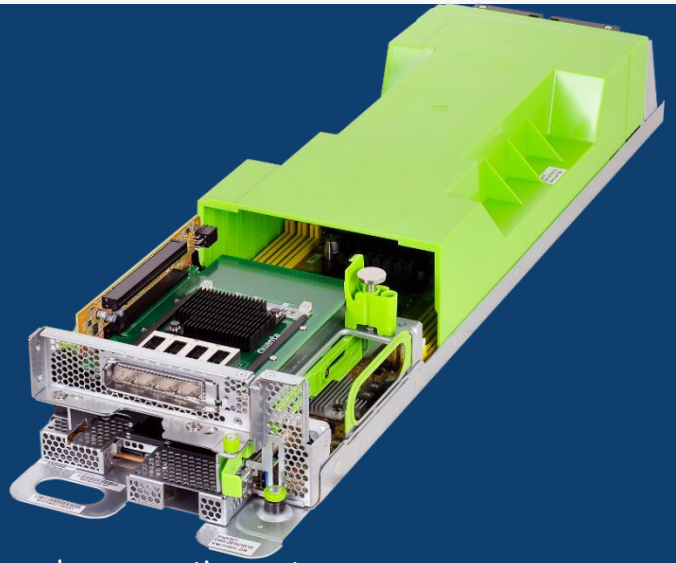
Up to 12 Memory Modules per Node

Up to 6 2.5” SFF drives(Ongoing) or 1 3.5” LFF drive per Node(Ready)

# Tioga Pass Overview

## *OCP Compute Server Refresh*

- **Intel Next Generation Platform**
  - Supporting the latest and most powerful Intel®Xeon® Skylake-SP processor family
  - Up to 1.5TB 2666 MHz DDR4 memory
- **Maximize Performance while Reducing Eco-footprint**
  - Eco-Friendly completely Halogen free board and component design
- **Uniform Scale-up and Scale-out Building Block**
  - Scale out on Capacity and Computing
- **High Reliability, Serviceability and Availability**
  - Incredible level of business continuousness
- **Air Cooling thermal design for existing infrastructure**
  - Support up to 165W processor TDP with ambient operating temperature of up to 40˚C* to reduce operating costs



40˚C* is stretch goal, 35˚C is spec

# Tioga Pass Chassis Overview

Uniform Modular Design as Previous Generation

93.2mm (3.67”)

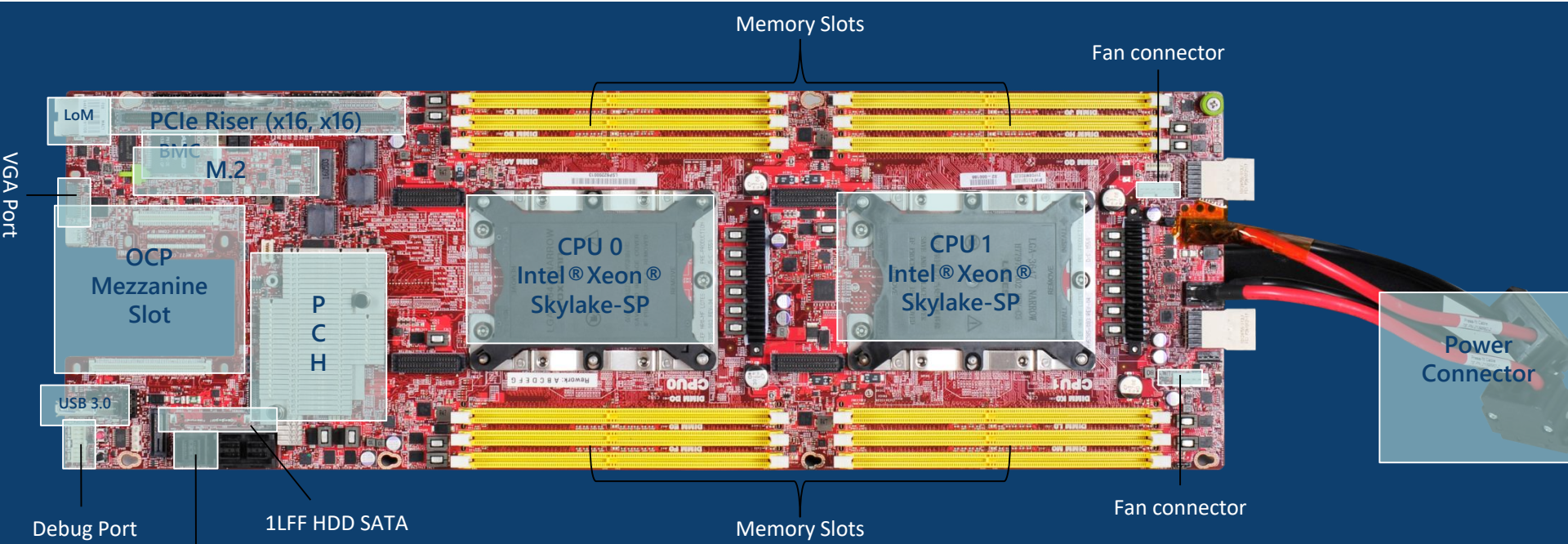
853mm (33.58”)

537mm (21.14”)

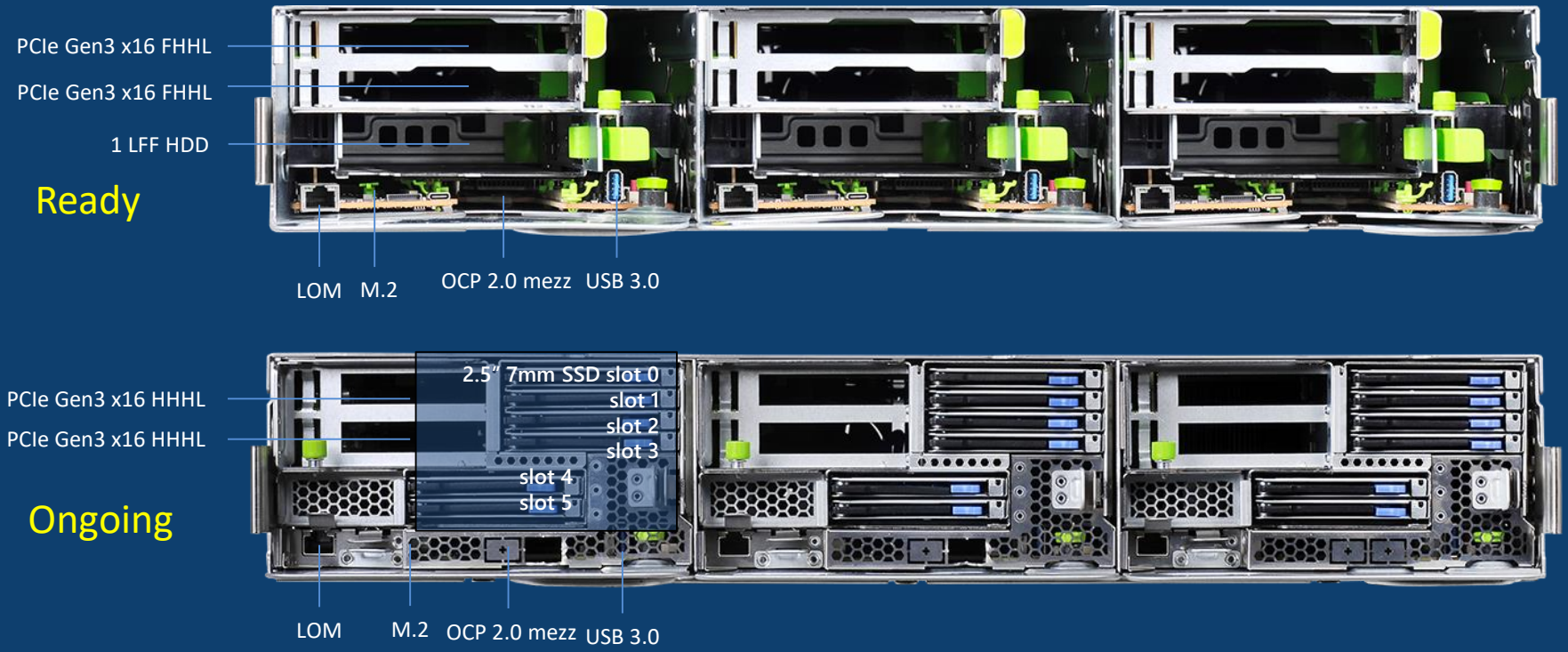
Modular Infrastructure Allows Simplicity and Flexibility

add or remove building blocks as needed

# Motherboard Overview



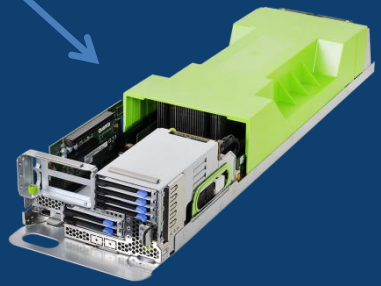
# Front View


PCIe Gen3 x16 FHHL
PCIe Gen3 x16 FHHL
1 LFF HDD
Ready
LOM
M.2
OCP 2.0 mezz
USB 3.0
PCIe Gen3 x16 HHHL
PCIe Gen3 x16 HHHL
Ongoing
2.5" 7mm SSD slot 0
slot 1
slot 2
slot 3
slot 4
slot 5
LOM
M.2
OCP 2.0 mezz
USB 3.0

# One System Design with Flexible Storage Options

(Ready)

High Performance Compute Blade
Intel®Xeon® Skylake SP family
*1x LFF drive with 2x FH PCIe slots*



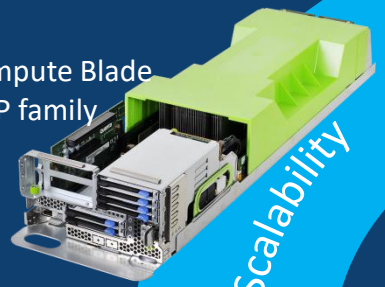
(Ongoing)

High Performance Compute Blade
Intel®Xeon® Skylake SP family
*6x SFF drives with 2x HH PCIe slots*

Note: Double sized with 24 DIMMs SKU is not orderable as plan

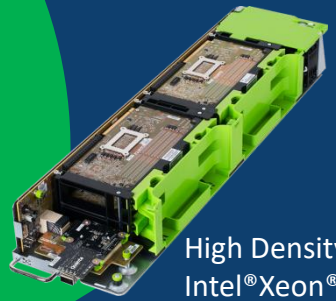
# One Infrastructure with Wide Application Coverage

High Performance Compute Blade
Intel®Xeon® Skylake SP family



Scalability

Flexibility



High Density Compute uServer
Intel®Xeon® D-1500 family

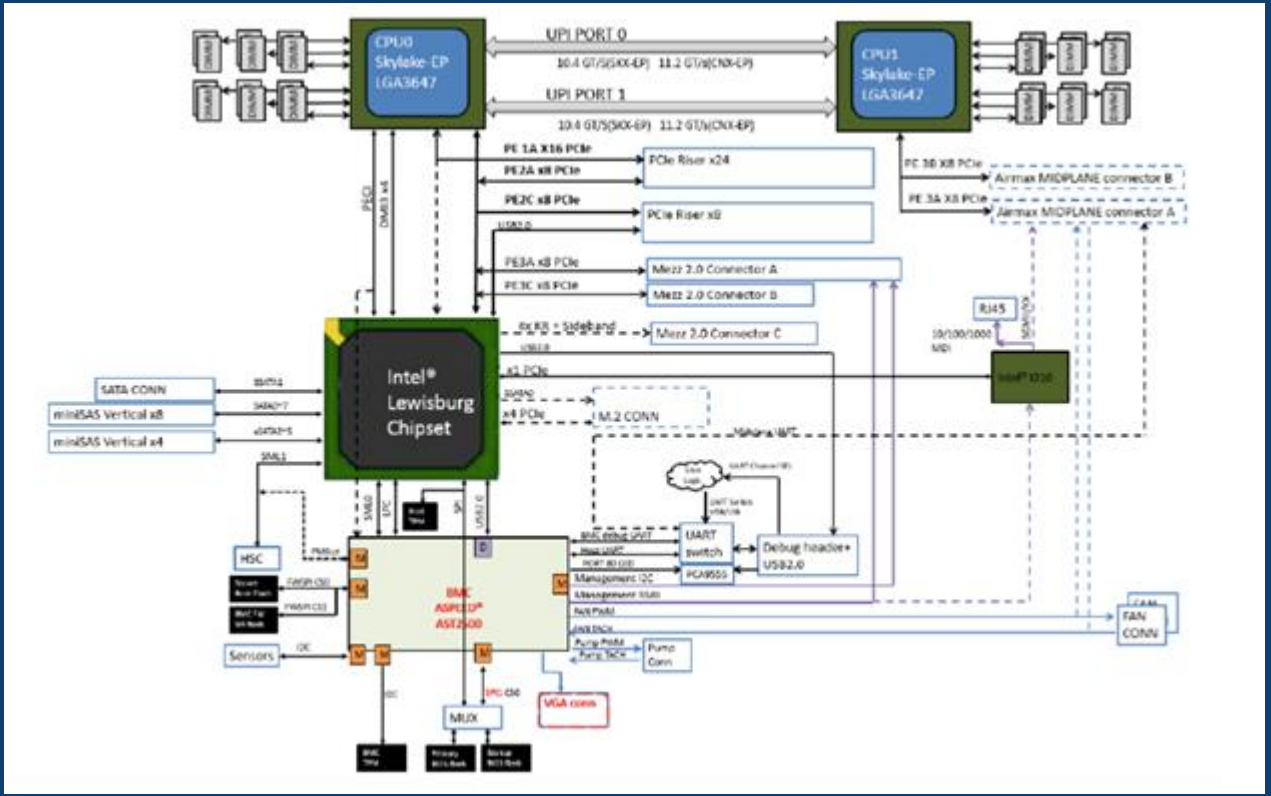
Compatibility

High Capacity All Flash NVMe (16x per tray)
Intel ® P3520 NVMe
optional Intel ® Xeon-D compute node

# Tioga Pass Short Spec

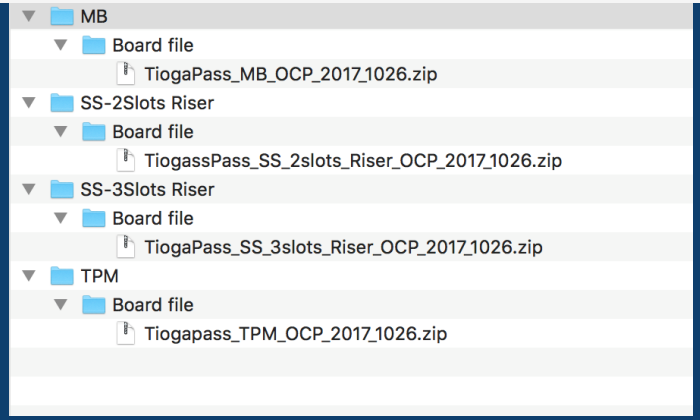
| Feature | Specification |
|---|---|
| Processor | (2) Intel®Xeon® Skylake-SP processor family per node, up to 165W |
| Chipset | Intel® C621 |
| Memory | (12) 2666 MHz DDR4 RDIMM per node<br>Or<br>(24) 2666 MHz DDR4 RDIMM per node |
| Drive Bay | (1) 3.5" fixed drive bays per node(Ready)<br>or<br>(6) 2.5” hotswap SFF drive bays per node(Ongoing) |
| Network Controller | Support following QCT OCP mezzanine card (PCIe x16) for network option in front IO per node<br>(1) QCT 1/10GbE RJ45 dual port OCP mezzanine card or<br>(1) QCT 10G/25Gb SFP+/SFP28 OCP dual port mezzanine card<br>(1) QCT 40/56G QSFP+ OCP single port mezzanine card<br>(1) QCT 100G QSFP28 OCP single port mezzanine card |
| Expansion Slot | (2) PCIe gen 3 x16 FHHL PCIe expansion slots per node with 1x LFF drive SKU<br>(1) PCIe gen 3 x16 OCP mezzanine slot per node<br>or<br>(2) PCIe gen 3 x16 HHHL PCIe expansion slots per node with 6x SFF drive SKU<br>(1) PCIe gen 3 x16 OCP mezzanine slot per node |
| Form Factor | (3) nodes in 2OU (Open Rack) Rackmount |
| Rack Compatible | Open Rack v.2 |
| Onboard Storage | (1) M.2 PCIe/SATA 2280/22110 |
| Management Port | (1) dedicated 1GbE RJ45 management port |
| Integrated BMC chip | Aspeed AST2500/AST2520 |
| Front I/O | (1) USB 3.0 type A port<br>(1) USB 3.0 type C port<br>(1) VGA port |

# Block Diagram

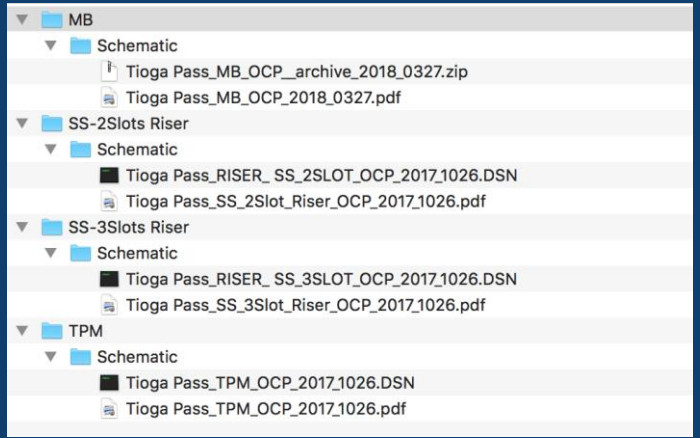


# Design Files Contribution- 01_Electricals

- 01_Full System Board Layout

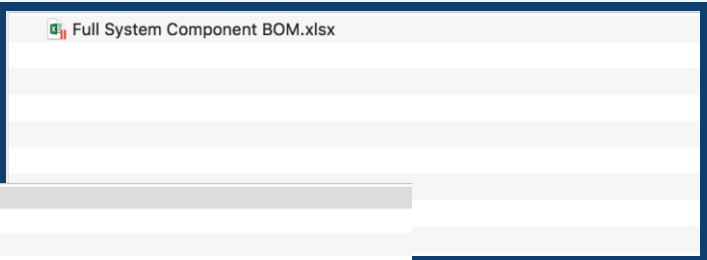



- 02_Full System Schematic CAD

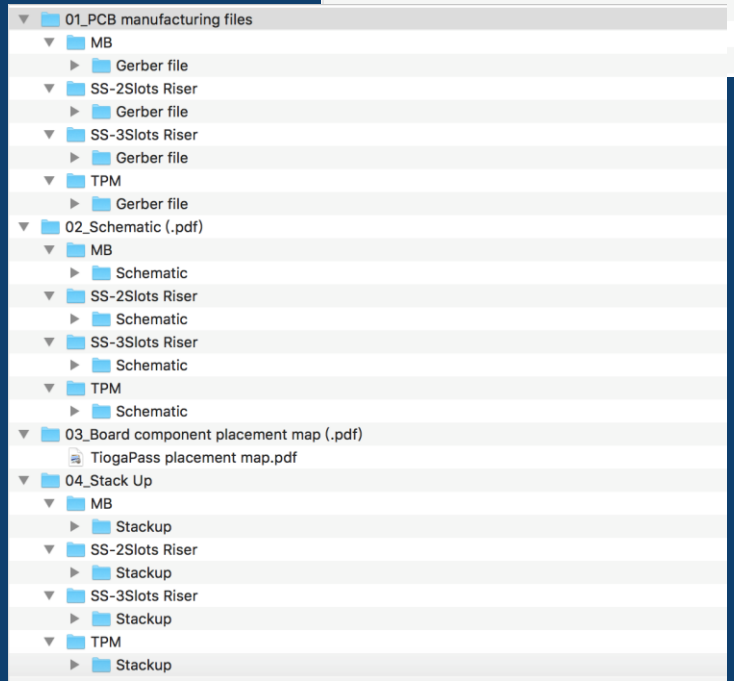


# Design Files Contribution- 01_Electricals

- 03_Full System Component BOM

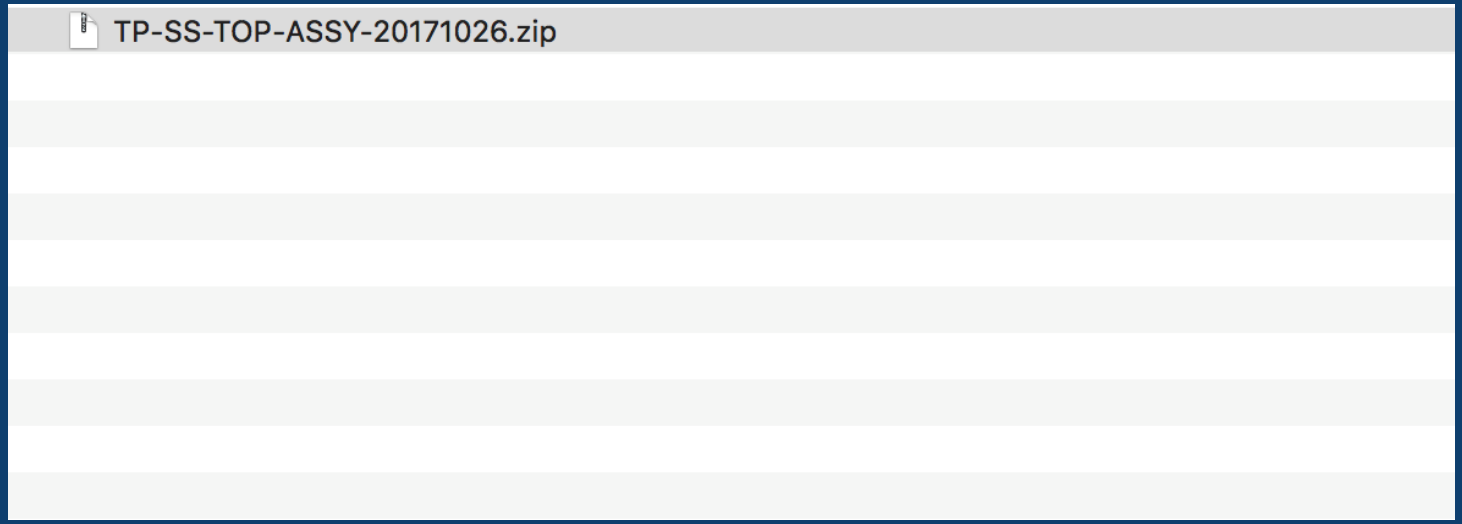



- 04_Manufacturing Files



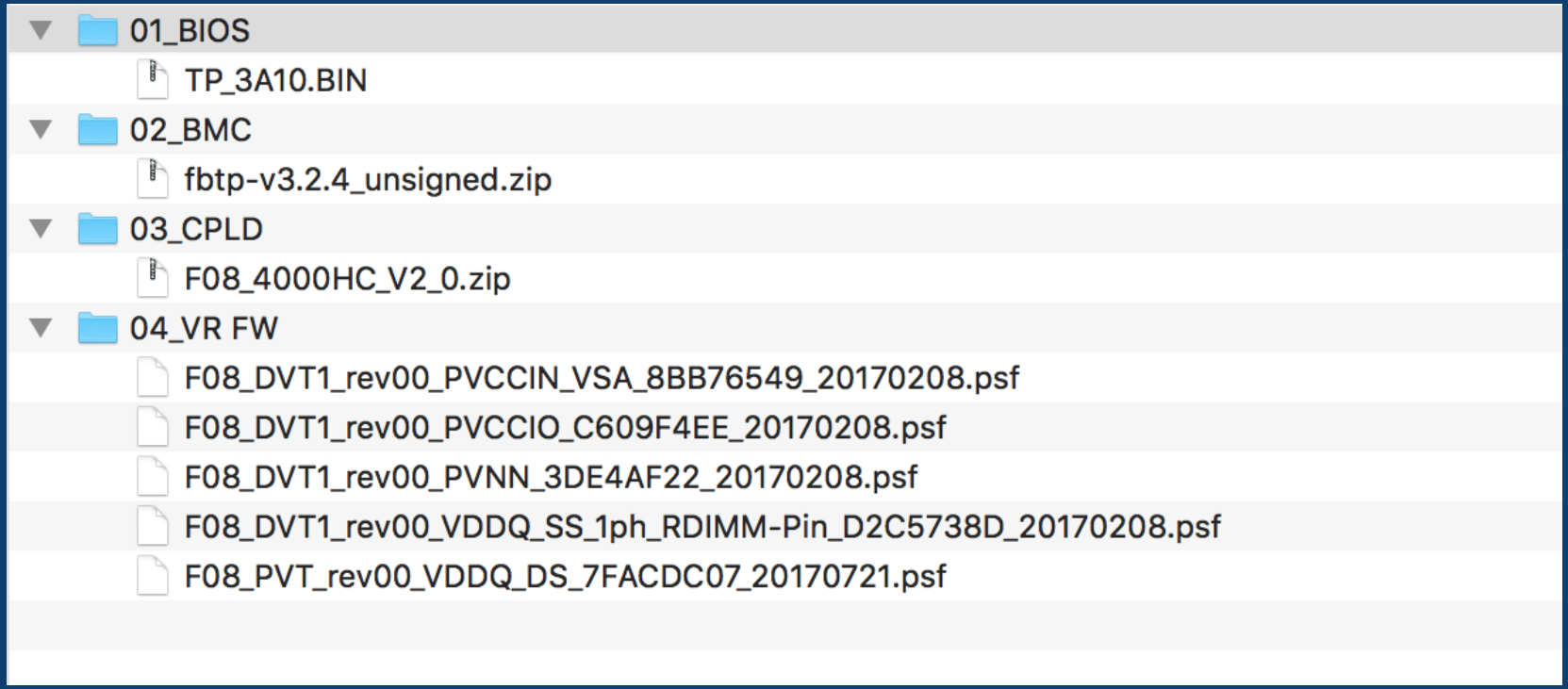
# Design Files Contribution-02_Mechanicals

- Mechanical Step File



# Design Files Contribution-
# 03_Software

- Software File



# OCP Tenets/Principles

- **Efficiency**
  - New design to trim the dimension requirement of compute node to achieve the optimization of space use in the chassis
  - Selectable riser to support 2x FH slots riser with 1x 3.5” HDD or 2x HH slots riser with 6x 2.5’’ HDD according to the IO bandwidth requirement
  - Utilize efficiently the layout of rack, each chassis is with 2OU height, totally 16x 2OU system in one rack without remaining space
- **Scalability**
  - Leverage current Cubby chassis to extend the various platform use case
- **Openness**
  - Comply with ORv2 standard
- **Impact**
  - New design architecture of placing DIMM on bottom side of baseboard to efficiently utilize the chassis space

# Thanks!!!