



OPEN
Compute Project



OCP U.S. SUMMIT 2017

Santa Clara, CA



Multi-Node 1S Server Platform

Yosemite V2

Yan Zhao/Hardware Engineer/Facebook

OPEN HARDWARE.

OPEN SOFTWARE.

OPEN FUTURE.





System Overview

- Flexible Multi-Node 1S platform
- Twin Lakes 1S server with Next Generation Intel® Xeon® Processor D
- Open Rack V2 compatible with new 40U vCubby design
- Support 4x 1S server cards or 2x 1S server + 2x Device cards
- Single smart baseboard to handle different configurations
- 100G/50G Multi-Host Network options

OPEN HARDWARE.

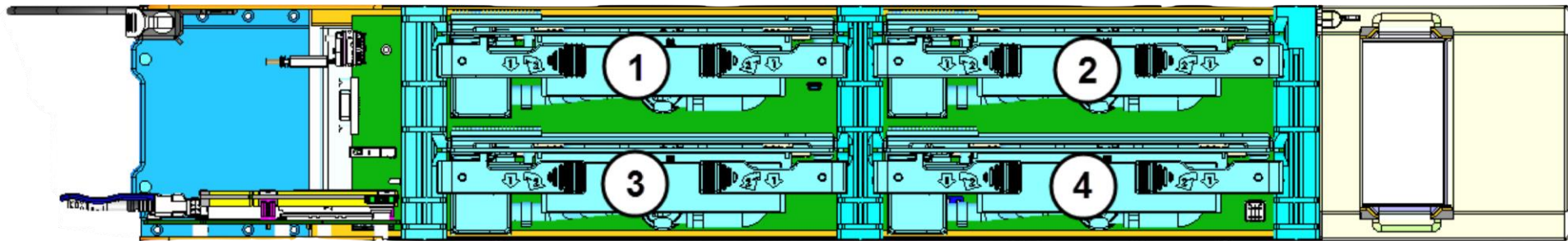
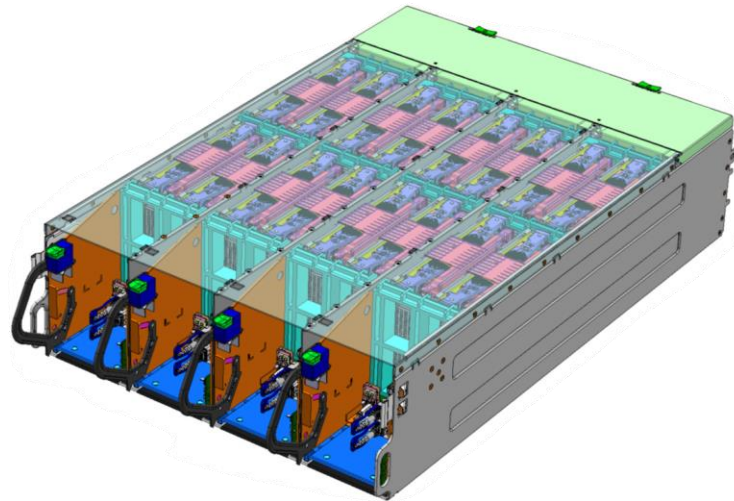
OPEN SOFTWARE.

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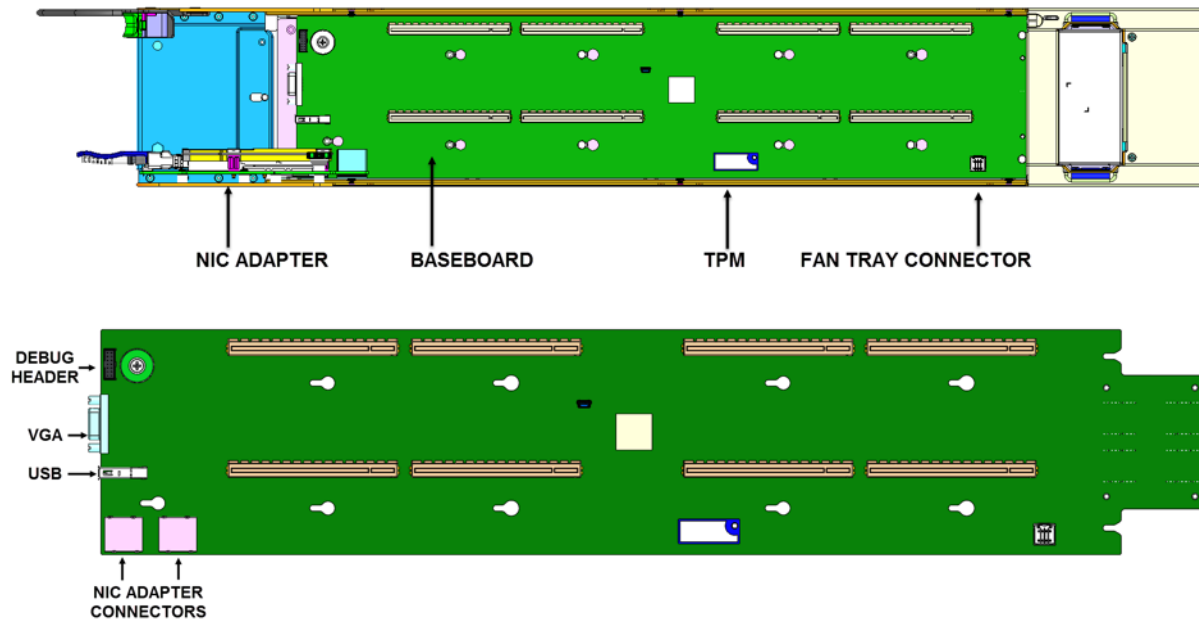
Yosemite V2



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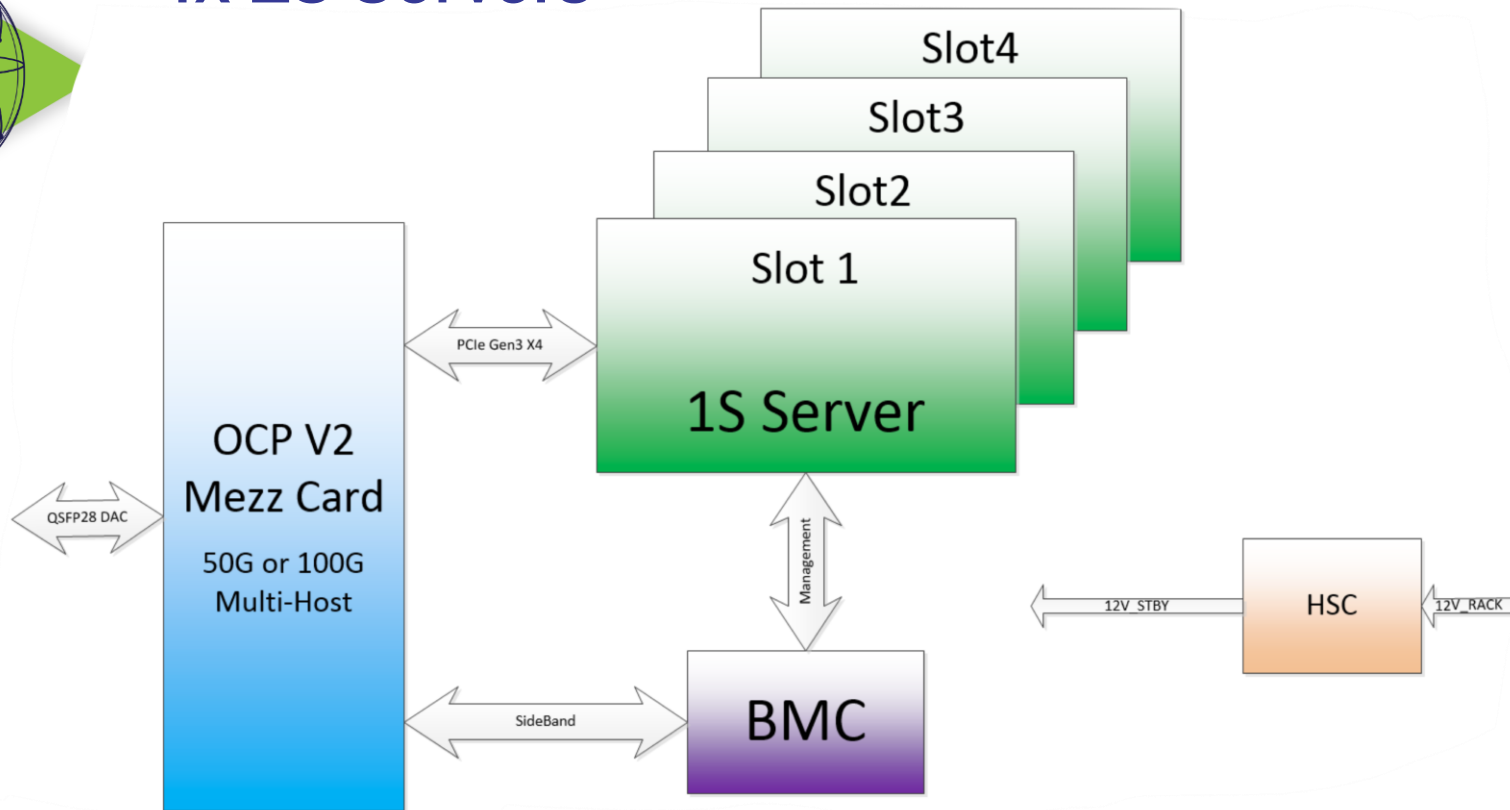
Yosemite V2 Details



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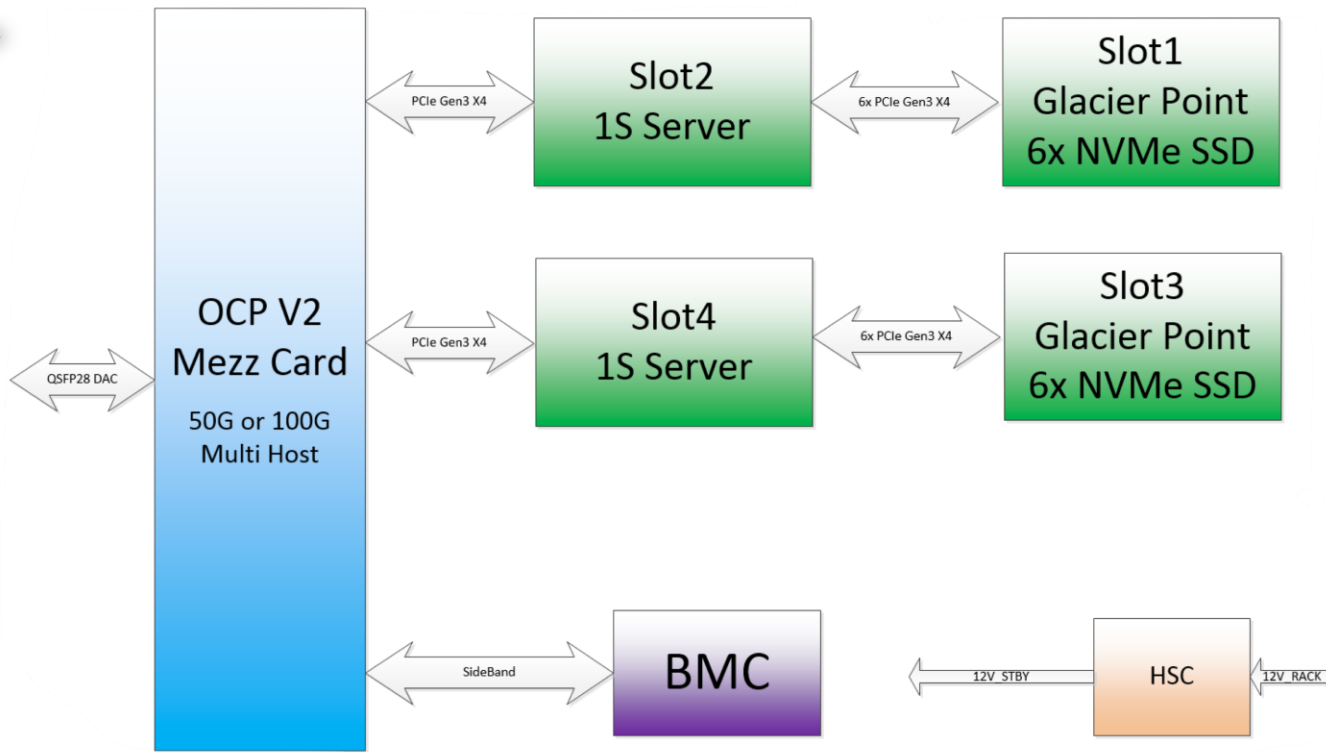
4x 1S Servers



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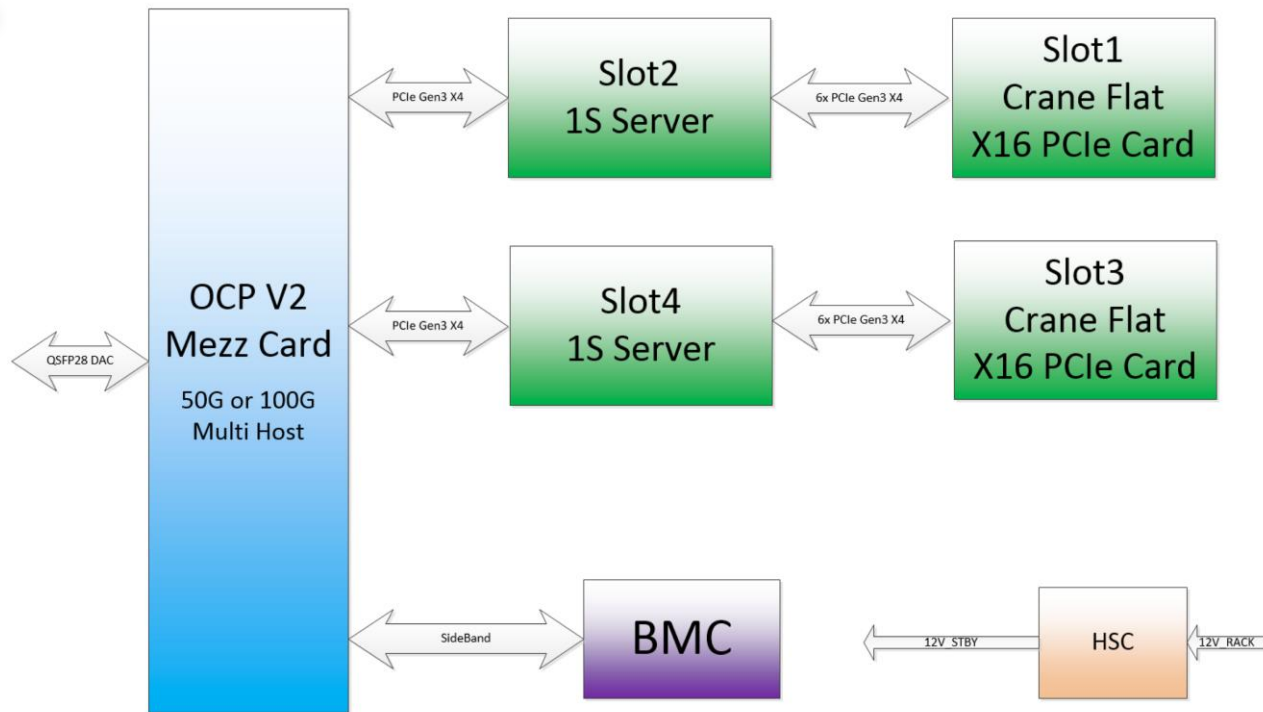
2x 1S Servers + 2x SSD cards



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2x 1S Servers + 2x PCIe Cards



OPEN HARDWARE.

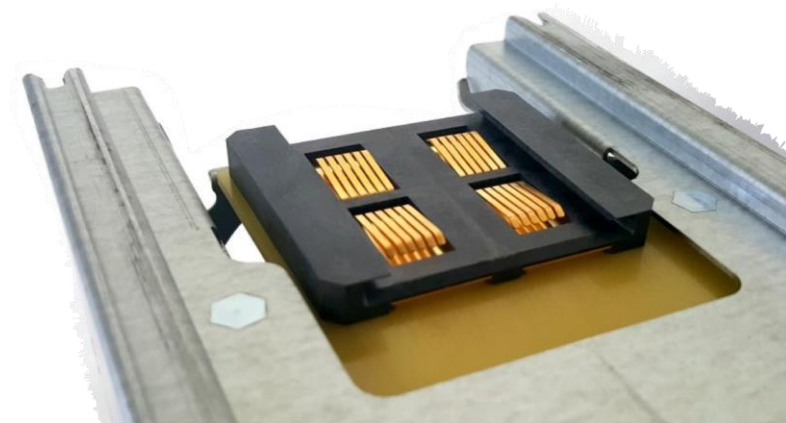
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Hot Service

- PowerBar PCB provides uninterrupted power to sled as it is pulled out
 - PowerBar is part of the vCubby assembly
 - Electrical brushes on the sled baseboard makes contact with the PowerBar PCB
- Fans need to be run at full speed to mitigate thermals while sled is out



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GPIO definition

- GPIO0 --- CARD_TYPE
 - 0V: 1S server
 - 1.2V: PCIe device carrier card
 - 1.7V: Customized PCIe PCIe Card
- GPIO1 – POWER_EN
 - Output from 1S server to its paired device cards. Input to devices.
- GPIO2 – EJECTOR_LATCH_DETECT_N
 - Active low when ejector on 1S server or device card is closed.
- GPIO3 – RESET_BMC
 - Output from 1S server to reset BMC on the baseboard. Active high.

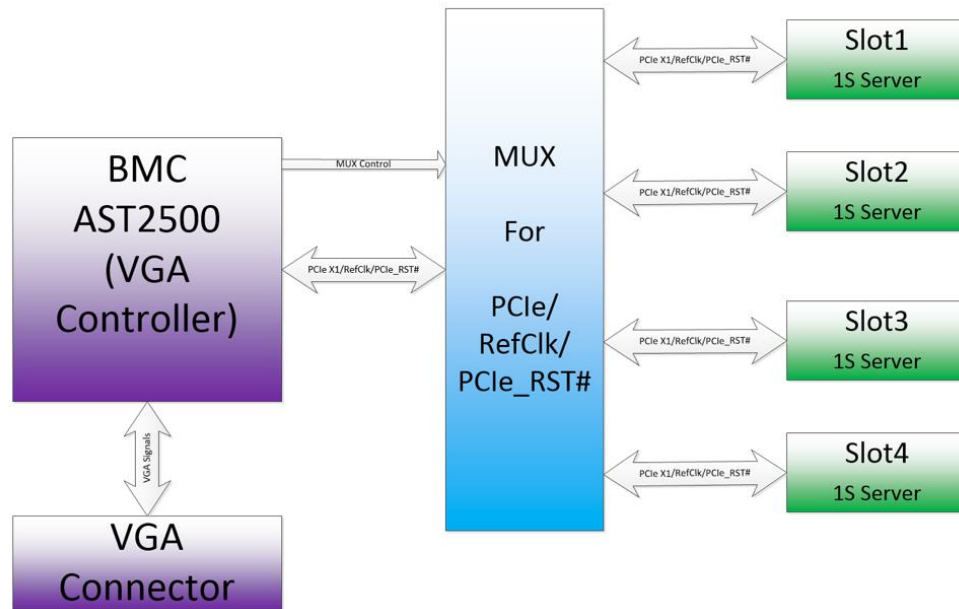
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VGA support

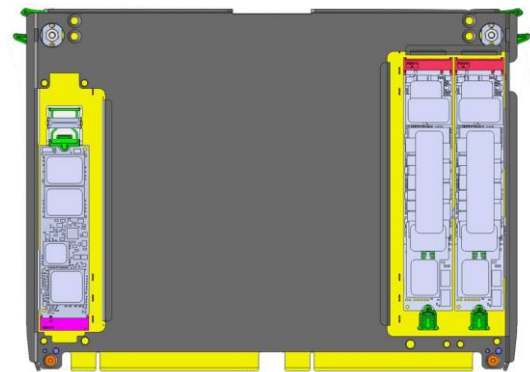
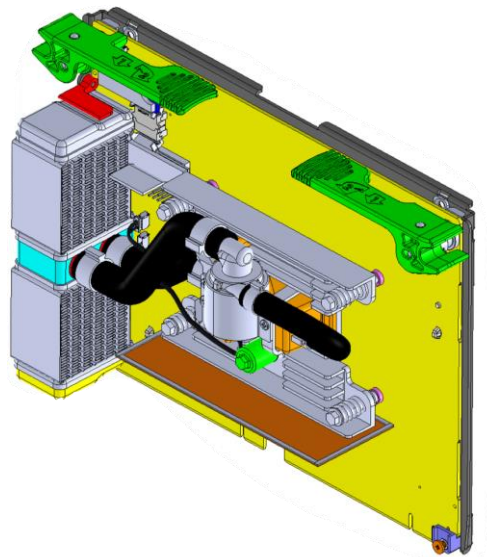


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Twin Lakes

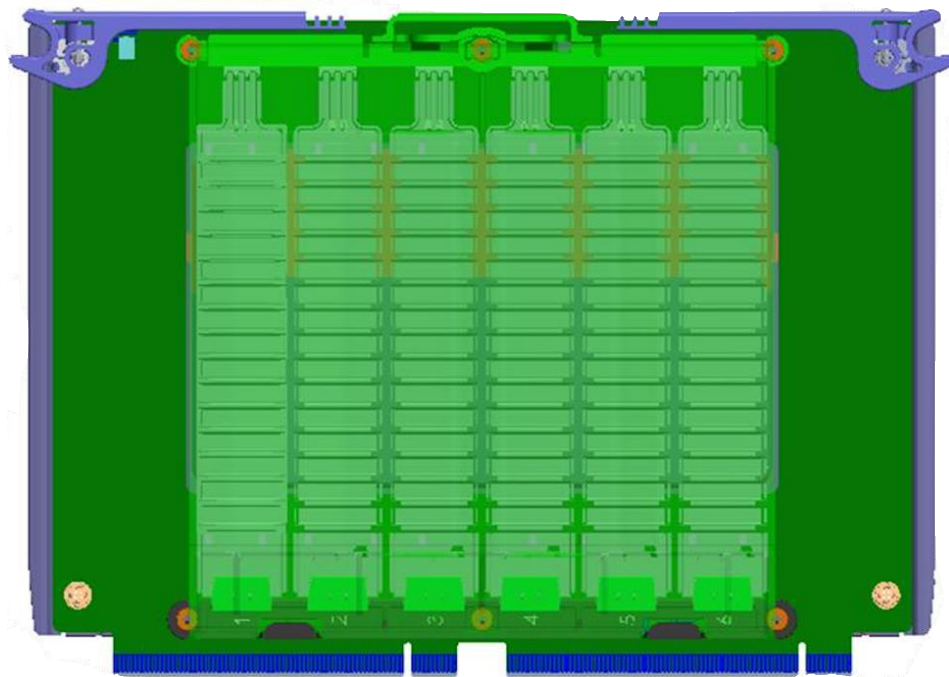
- Based on Next Generation Intel® Xeon® Processor D
- 210mm x 160mm
- DDR4 DIMMs
- 1x 2280 256GB SSD boot drive
- 2x 22110 high-perf NVMe SSDs
- Bridge IC design
- Liquid cooling



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Glacier Point Flash Card

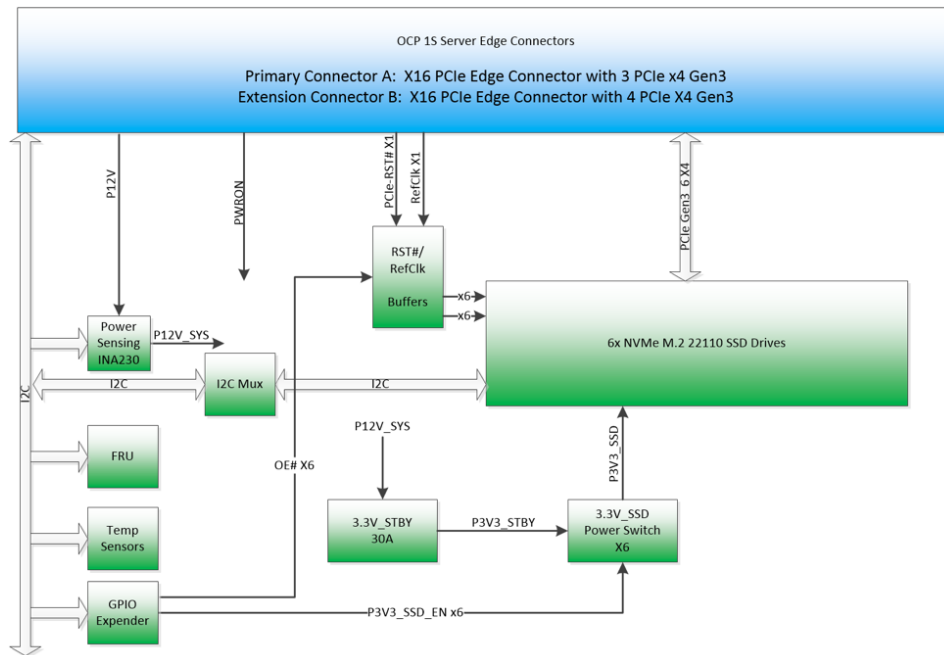


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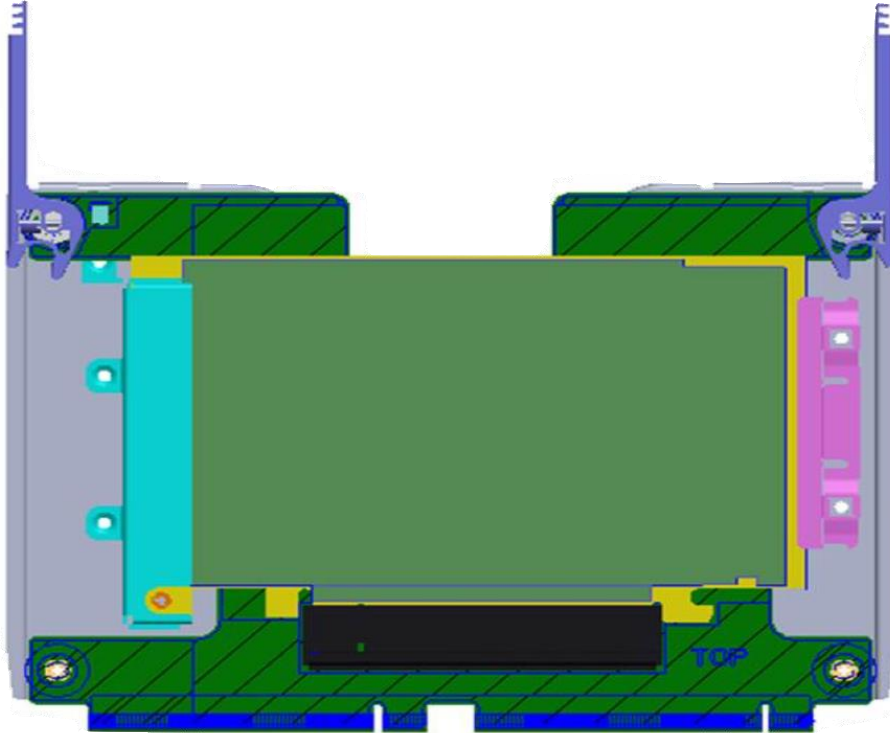
Glacier Point Flash Card Block Diagram



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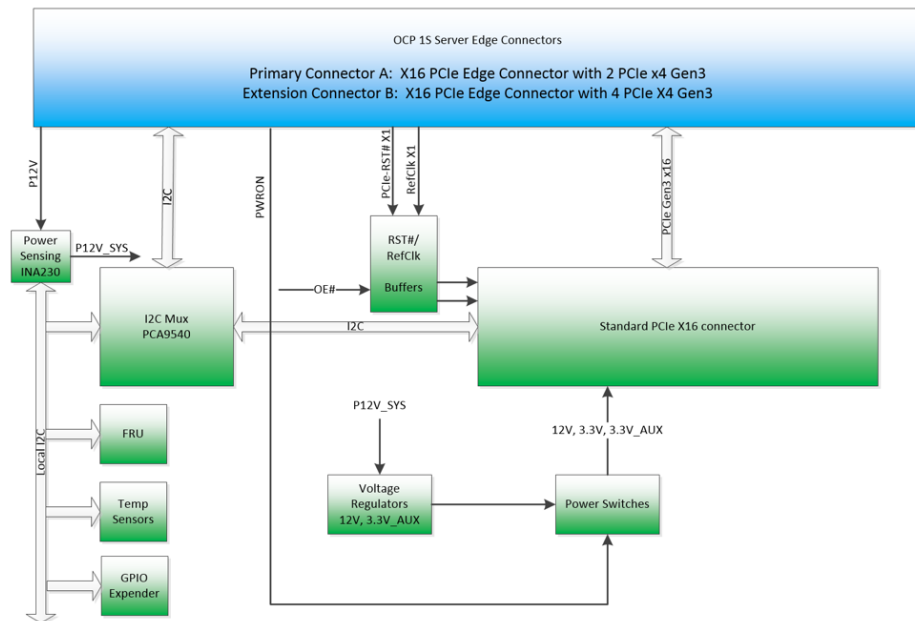
Crane Flat Device Carrier Card



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Crane Flat Device Carrier Card Block Diagram



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ORV2 — Rack View

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41	BlankingPanel			
40	TORswitch			
39	BlankingPanel			
38	40U	40U	40U	40U
37	YosemiteV2	YosemiteV2	YosemiteV2	YosemiteV2
36	40U	40U	40U	40U
35	YosemiteV2	YosemiteV2	YosemiteV2	YosemiteV2
34	40U	40U	40U	40U
33	YosemiteV2	YosemiteV2	YosemiteV2	YosemiteV2
32	40U	40U	40U	40U
31	YosemiteV2	YosemiteV2	YosemiteV2	YosemiteV2
30	PowerShelf			
29	PowerShelf			
28	PowerShelf			
27	40U	40U	40U	40U
26	YosemiteV2	YosemiteV2	YosemiteV2	YosemiteV2
25	40U	40U	40U	40U
24	YosemiteV2	YosemiteV2	YosemiteV2	YosemiteV2
23	40U	40U	40U	40U
22	YosemiteV2	YosemiteV2	YosemiteV2	YosemiteV2
21	40U	40U	40U	40U
20	YosemiteV2	YosemiteV2	YosemiteV2	YosemiteV2
19	40U	40U	40U	40U
18	YosemiteV2	YosemiteV2	YosemiteV2	YosemiteV2
17	40U	40U	40U	40U
16	YosemiteV2	YosemiteV2	YosemiteV2	YosemiteV2
15	40U	40U	40U	40U
14	YosemiteV2	YosemiteV2	YosemiteV2	YosemiteV2
13	40U	40U	40U	40U
12	YosemiteV2	YosemiteV2	YosemiteV2	YosemiteV2
11	PowerShelf			
10	PowerShelf			
9	PowerShelf			
8	40U	40U	40U	40U
7	YosemiteV2	YosemiteV2	YosemiteV2	YosemiteV2
6	40U	40U	40U	40U
5	YosemiteV2	YosemiteV2	YosemiteV2	YosemiteV2
4	40U	40U	40U	40U
3	YosemiteV2	YosemiteV2	YosemiteV2	YosemiteV2
2	40U	40U	40U	40U
1	YosemiteV2	YosemiteV2	YosemiteV2	YosemiteV2



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