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STANDARDIZING MORE EFFICIENT POWER SUPPLY MODULES FOR 19” EQUIPMENT IN OPEN COMPUTE RACK

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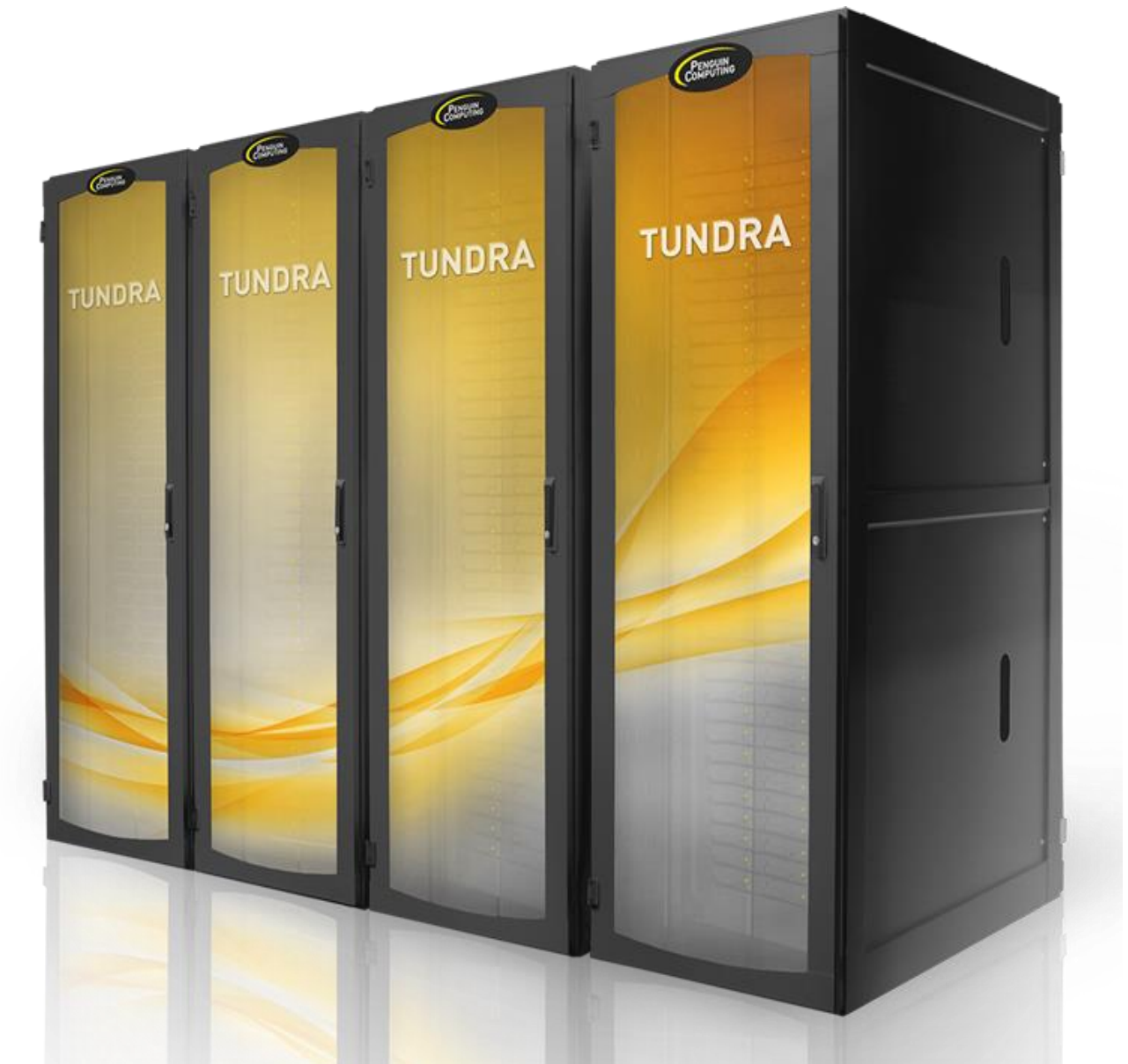
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Agenda



- About Penguin Computing (& why we care about OCP standards)
- Birth of an OCP HPC Cluster
- Need for more power supply options
- Switches for HPC in OCP
- Arctica Product Line
- Component not on OCP marketplace
- Productization requires standardization
- Discussion



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About Penguin Computing



- U.S.-based 20 year old, global provider of HPC hardware, software, and services
- Home to Scyld® Beowulf cluster software & bare metal HPC on cloud Penguin Computing On-Demand™
- Over 300 OCP racks delivered to date based on Tundra™ Extreme Scale design*
- Platinum OCP member, Penguin CTO Phil Pokorny is HPC representative of the OCP Incubation Committee

* OCP Inspired, for discussion Q2

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Birth of an OCP HPC Cluster

- Client needed OCP HPC cluster
- Needed to create one from scratch
- Result:
 - Tundra™ Extreme Scale* with 10U, 3 node, CPU compute, leverage v1 rack

* OCP Inspired, for discussion Q2



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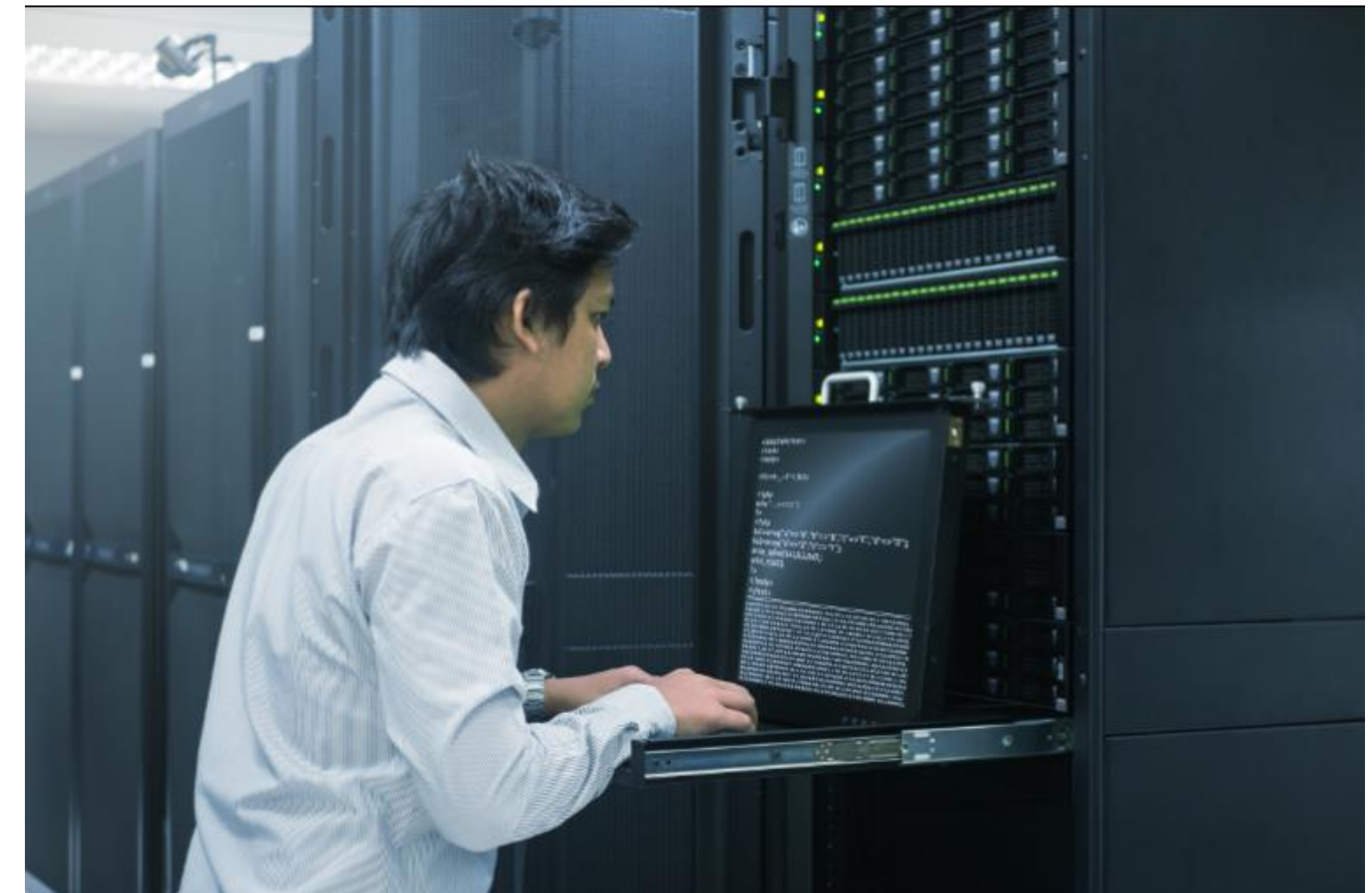
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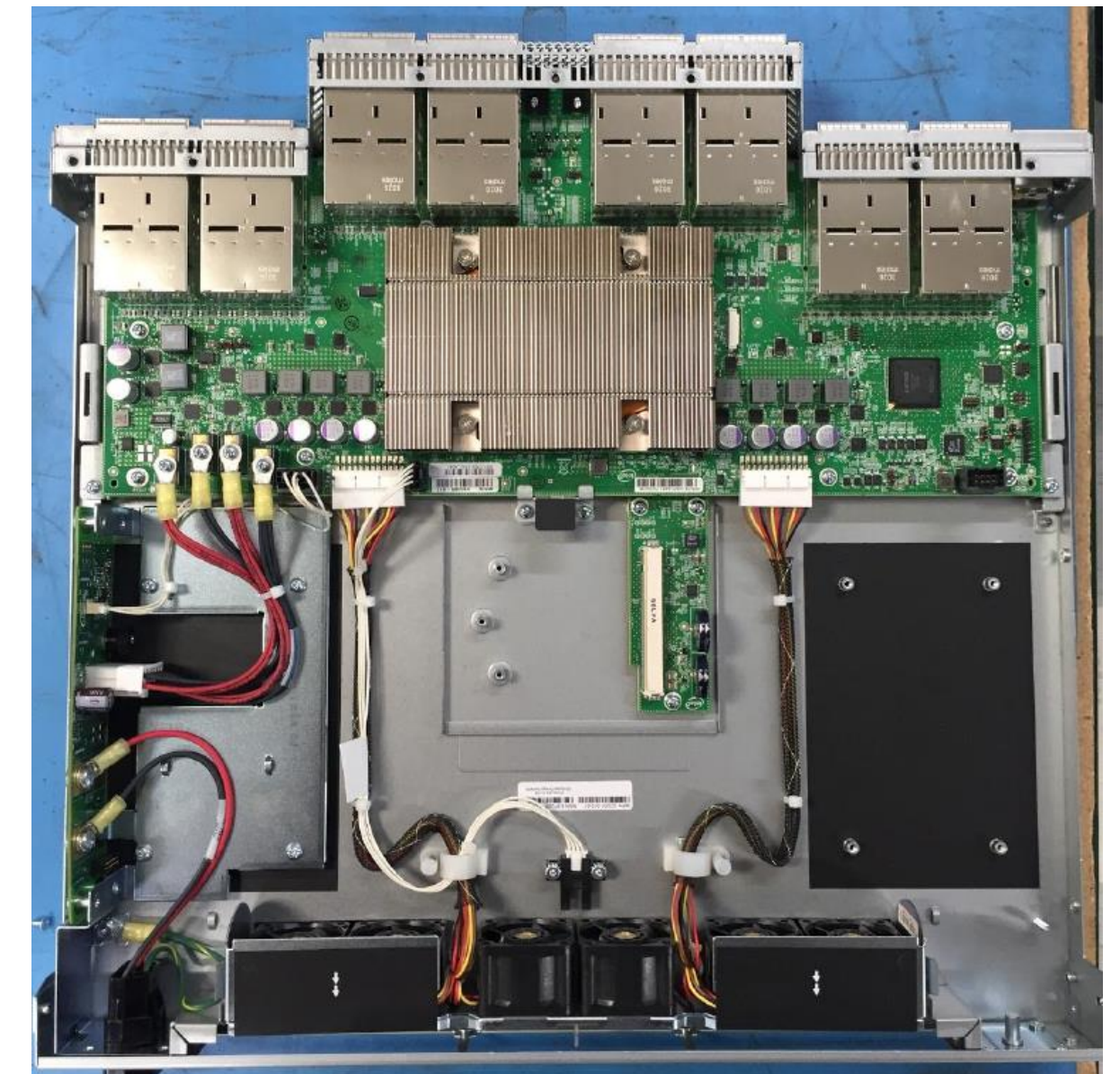
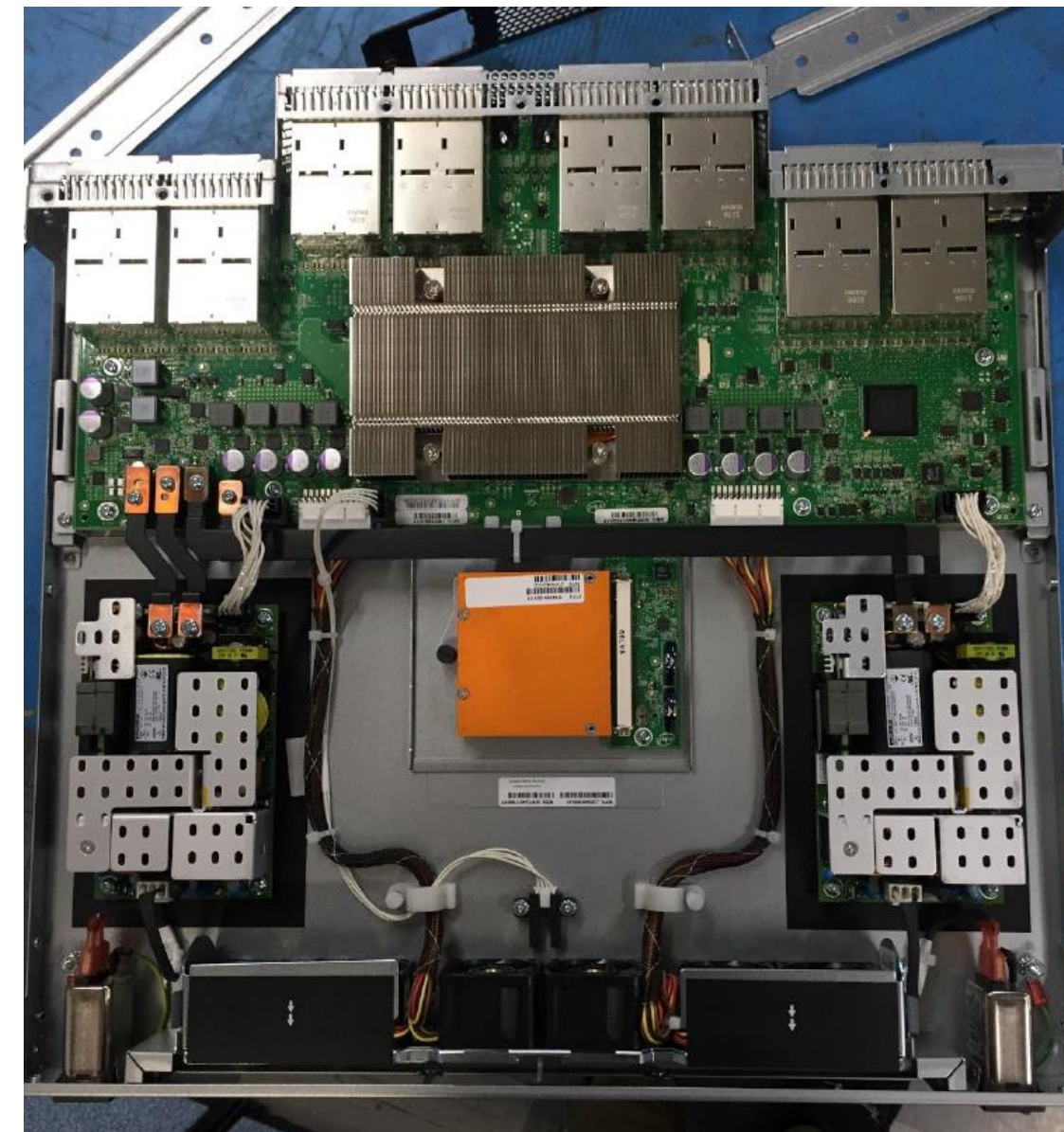
Need for More Power Supply Options

- Only DC Power, no AC courtesy plugs
- “Off the Shelf” top of rack switch won’t work in OCP
 - Another rack for 19” – Just for network?
 - Angus rack - Lose half density, and lose Tundra’s value add as high density
 - DC to AC inverter - Fire danger



Switches for HPC in OCP

- Intel Omnipath 100 Edge Switch*
 - Designed new power board, replacing existing AC-DC PDB
 - New PDB is 12V passthrough to the switch baseboard



* OCP Inspired, for discussion Q2

Arctica Product Line

- Arctica Ethernet Switch*
 - Designed new power board, replacing existing AC-DC PDB
 - Designed new 12VDC modular PSU for high-end models

* OCP Inspired, for discussion Q2



**Arctica 4804IP 1G Switch
(fixed power design)**



**Arctica 4806XP 10G Switch
(modular power design)**

Component Not on OCP Marketplace

- There are network switches are on OCP marketplace, but not devices to convert off shelf switches to support Open Rack
- The pass-through component is customized to each individual switch
- Discuss standardization to allow wider range of off shelf switches to work with Open Rack



Productization Requires Standardization

- Possible to cost-effectively productize – Penguin is proof
 - Penguin Tundra solution required Arctica in same rack
 - Penguin Tundra solution required OPA in same rack
- Ask OCP members to standardize so that each network switch is not it's own OEM project





Discussion

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