



OPEN
Compute Project



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3U High Density Compute Accelerator System (Dr.Know)

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OPEN HARDWARE.



OPEN SOFTWARE.



OPEN FUTURE.



What's Dr. Know ?

A High Performance Compute Accelerator Pool

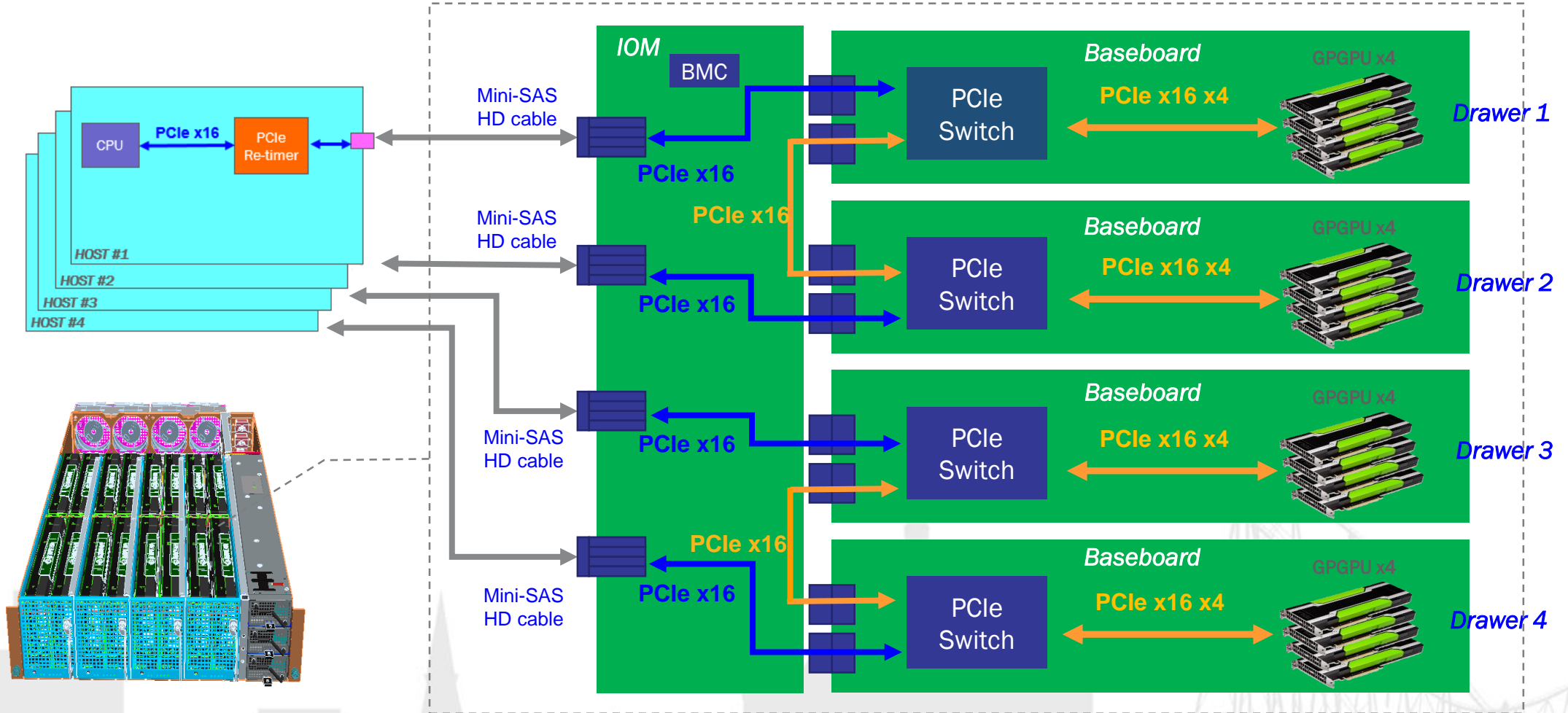
Features

- Resource pool can be connected up to 4 host nodes
- Support up to 16 PCIe compute accelerators (Xeon Phi, GPGPUs, FPGAs)
- 4 PCIe Drawers for easy service/maintenance
- On Chassis BMC management
- Integrated PSUs with 2+1 redundant



XC200 (Dr.Know)

Architecture & Block



Designs on Drawer Baseboard

Modular baseboard design for each drawer

- 97 lanes PCIe switch on baseboard
- 1 x16 host inputs connector and 5 x16 outputs (4 x16 standard PCIe slots and 1 x16 for cascading).
- 4 additional power connectors for higher power GPGPU cards

4 Xeon Phi Cards



4 GPGPU Cards



On-chassis Management

Monitor

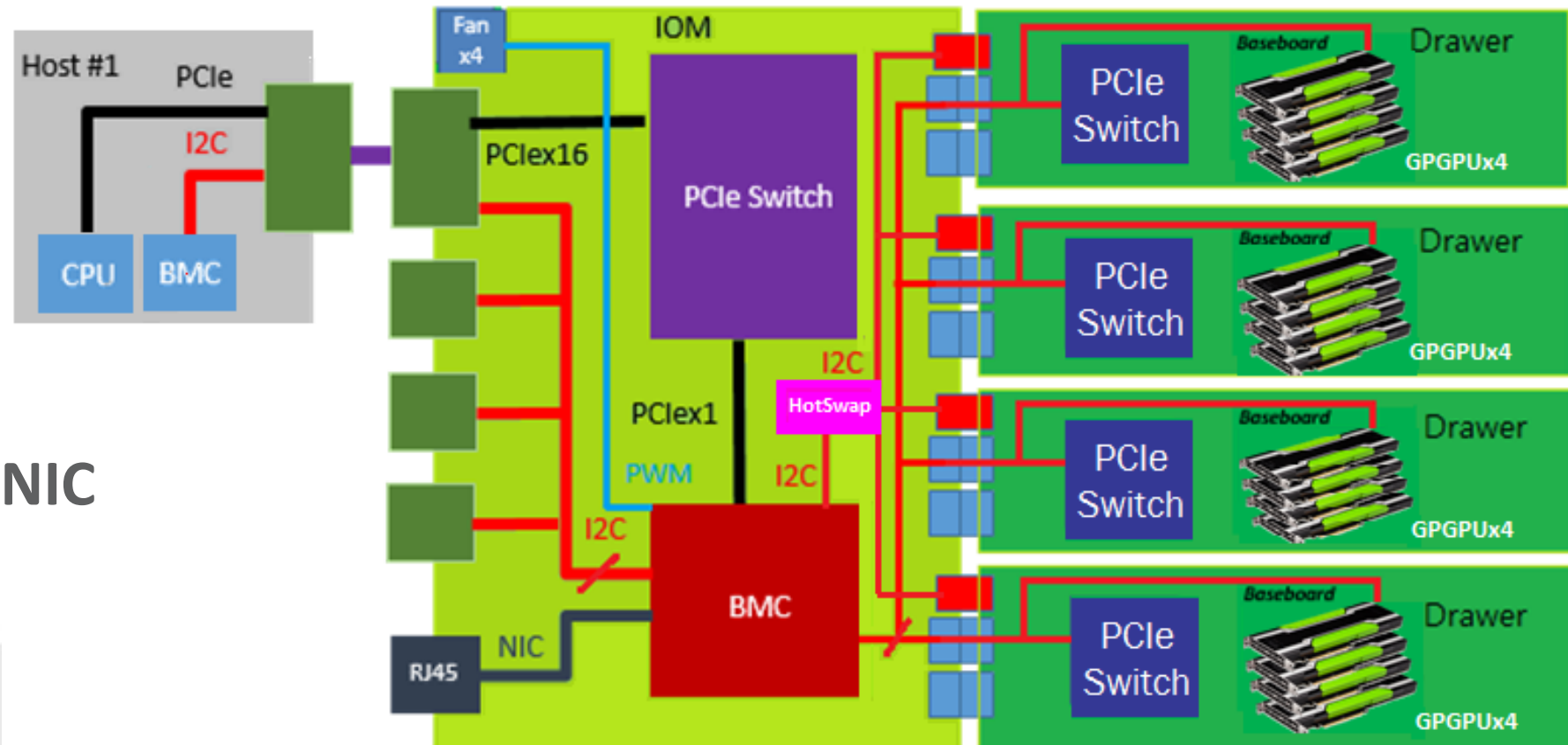
- Temperature
- Voltages
- Power Consumption

Control

- Fan Speed
- LEDs

Interface

- Dedicate 1G NIC
- I2C to hosts



Application Field of Dr. Know

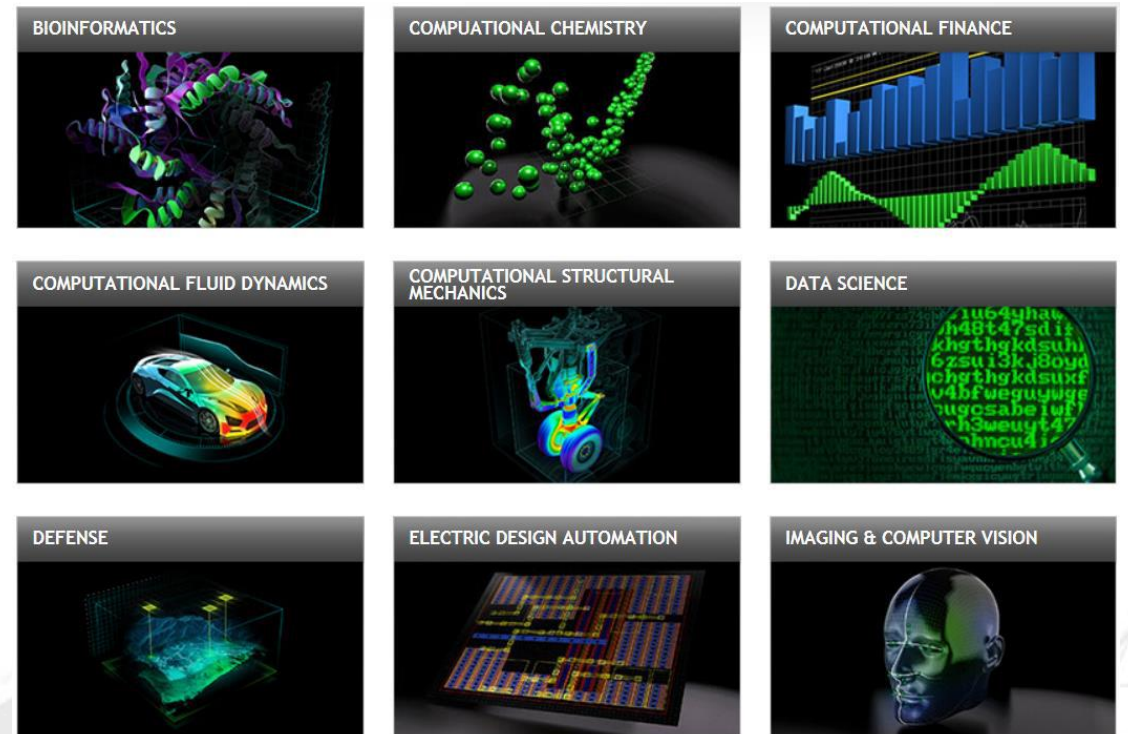
To provide Xeon Phi/GPGPU/FPGA pool for:

- **HPC Workloads**

- Scientific Computing
- Financial Services

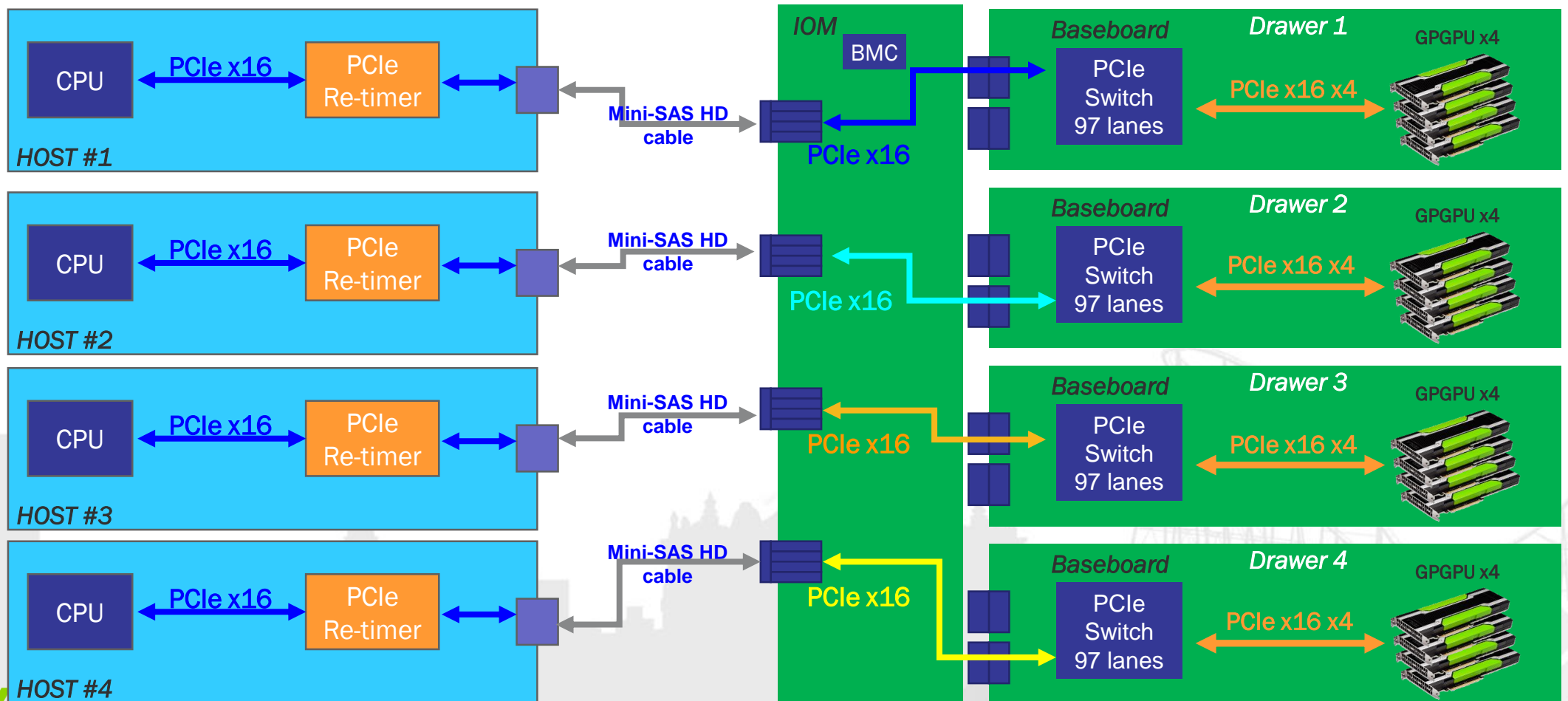
- **Deep Learning**

- AI
- Image Processing
- Data Analysis



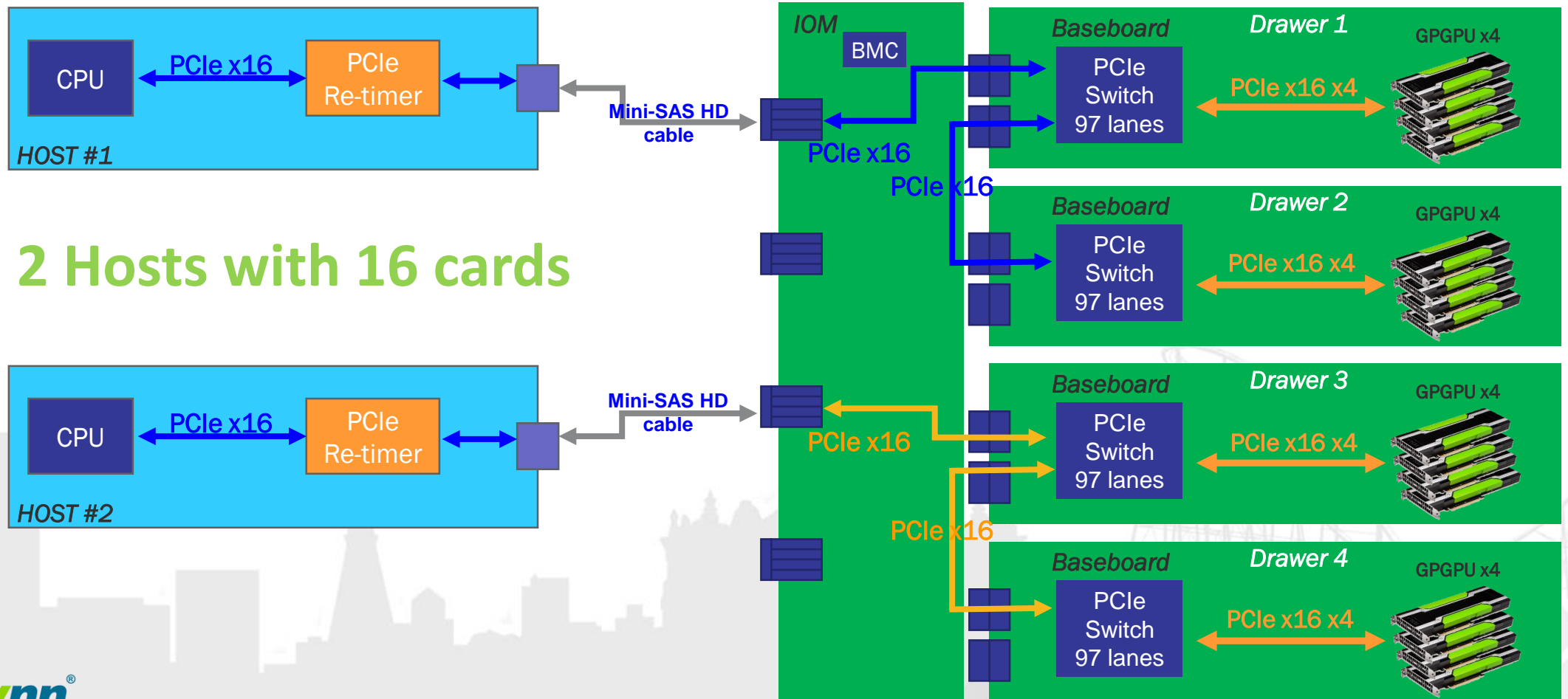
Application Configuration

4 Xeon Phi/GPGPU/FPGA compute powers on each drawer dedicated to each host



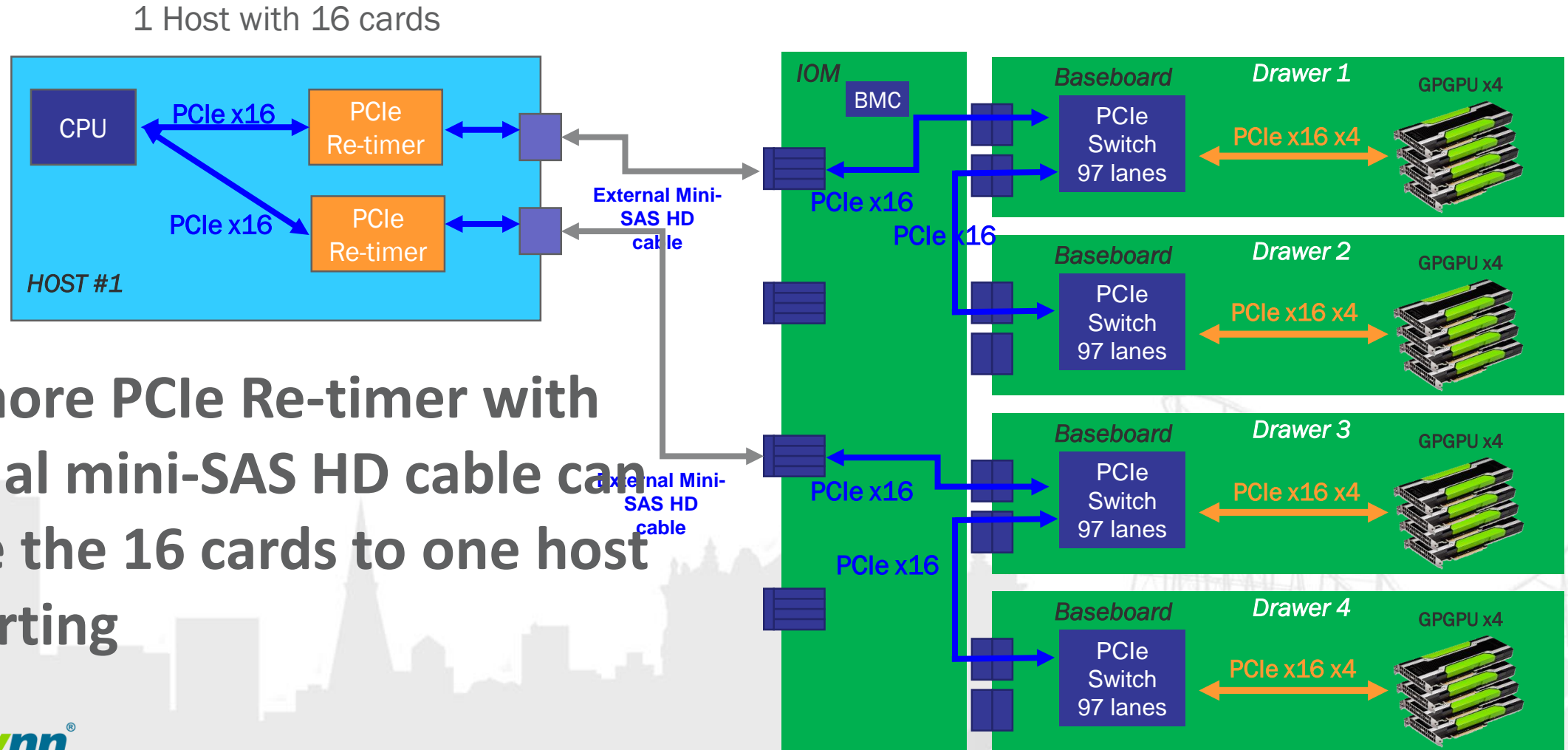
Application Configuration:

8 Xeon Phi/GPGPU/FPGA compute powers for each host through cascading ports



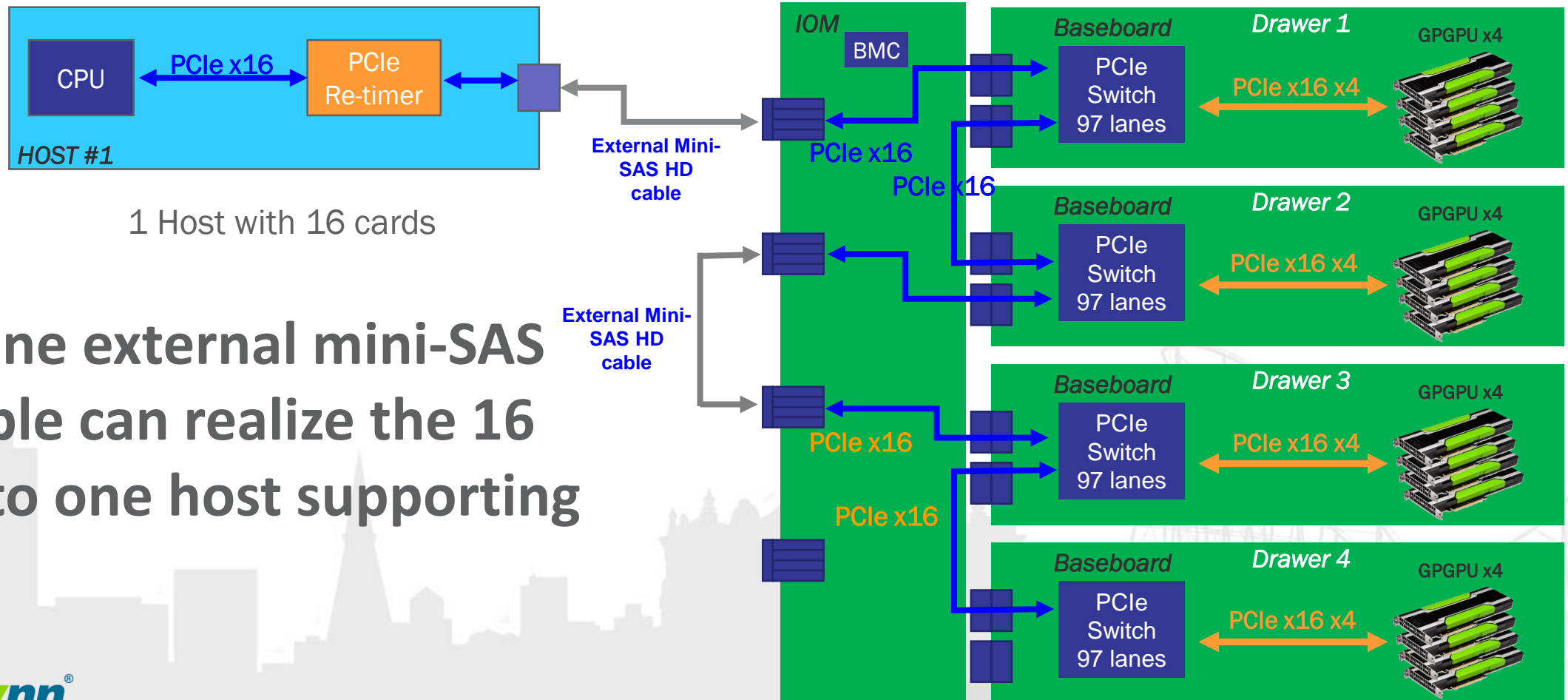
2 Hosts with 16 cards

Application Configuration



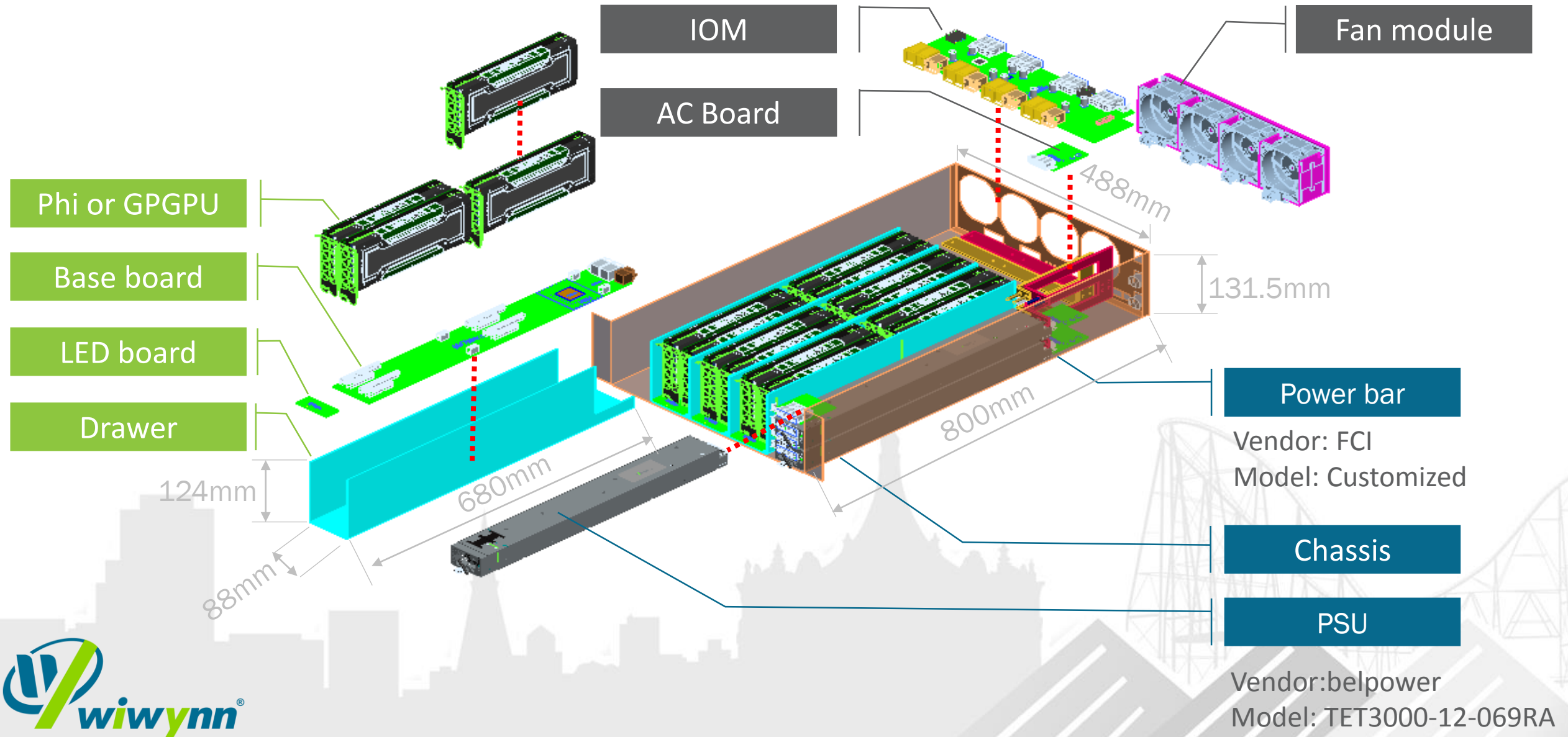
One more PCIe Re-timer with external mini-SAS HD cable can realize the 16 cards to one host supporting

Application Configuration

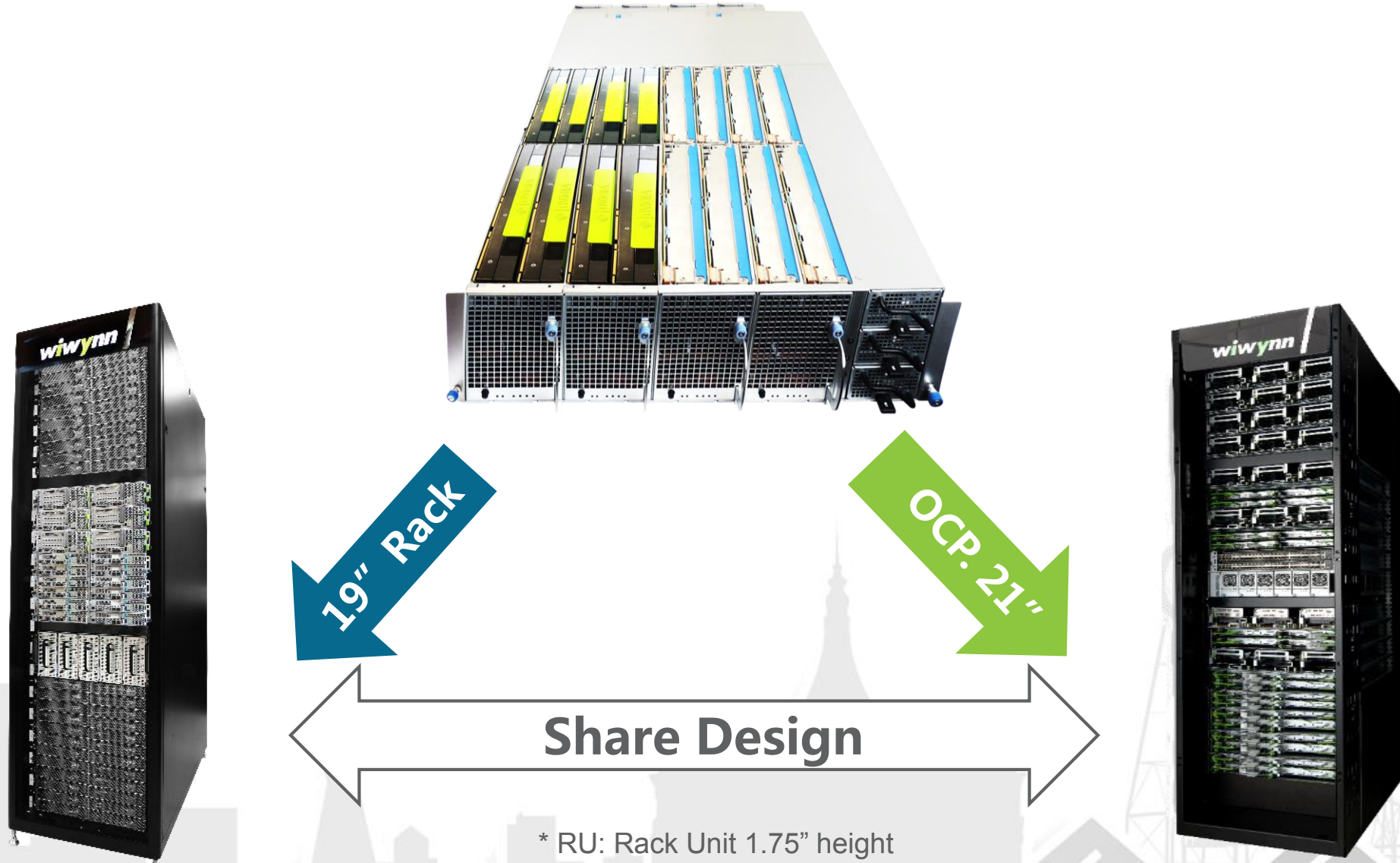


Only one external mini-SAS HD cable can realize the 16 cards to one host supporting

Dr. Know for 19" Rack



Extendable to 21" OCP Rack

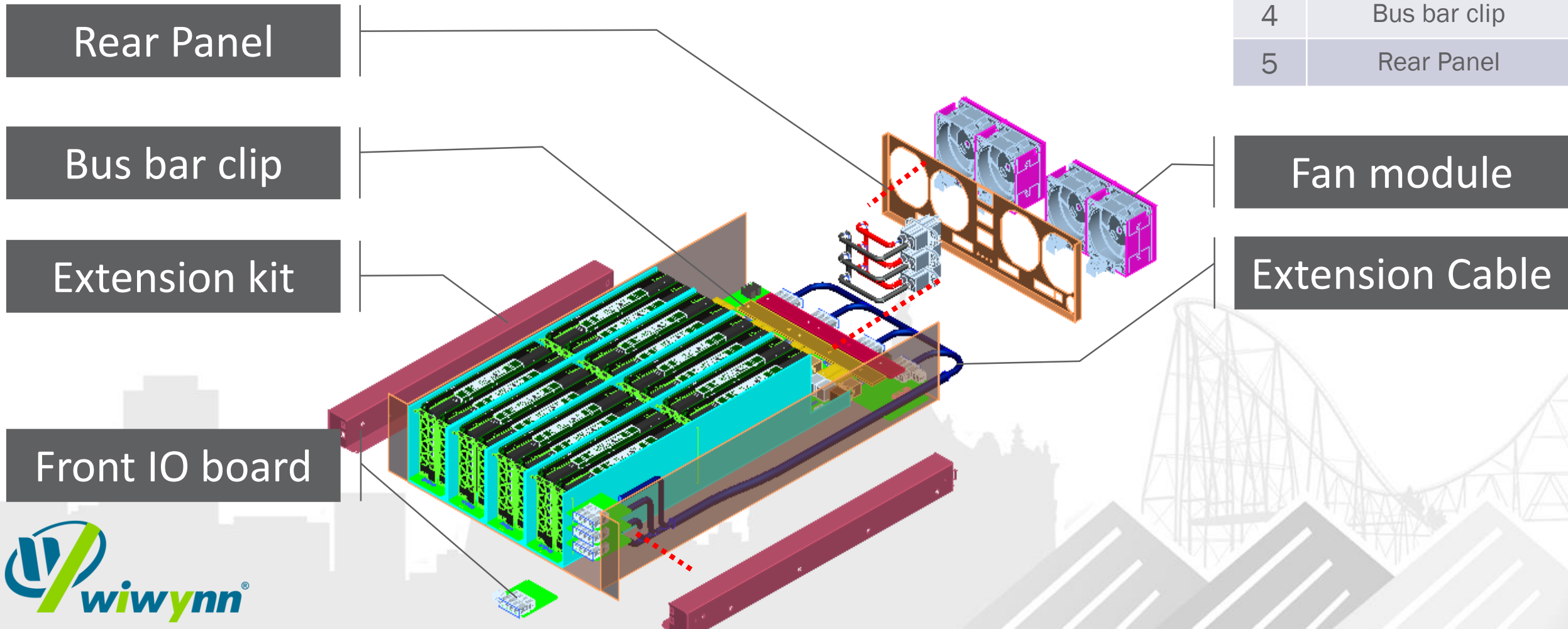


- * RU: Rack Unit 1.75" height
- * OU: Open Unit 1.8" height

Dr. Know for OCP 21" Rack

Additional option kits are needed to install Dr. Know in OCP 21" rack

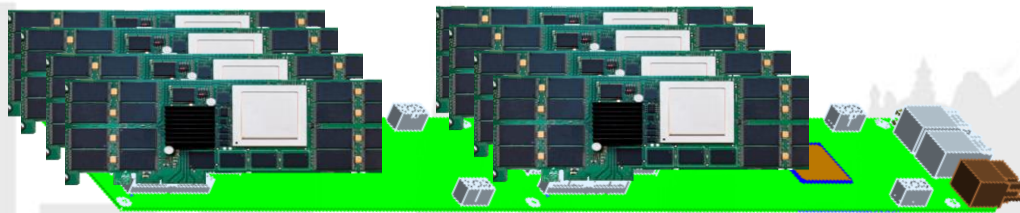
No.	Option Kit
1	Extension kit
2	Front IO board
3	Extension Cable
4	Bus bar clip
5	Rear Panel



Optional Baseboard Design

- To have 8 x 8 standard PCIe slots for flash cards
 - Total support up to 32 cards in the system

8 PCIe FLASH CARDS





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