



vesper



OPEN

Compute Project®

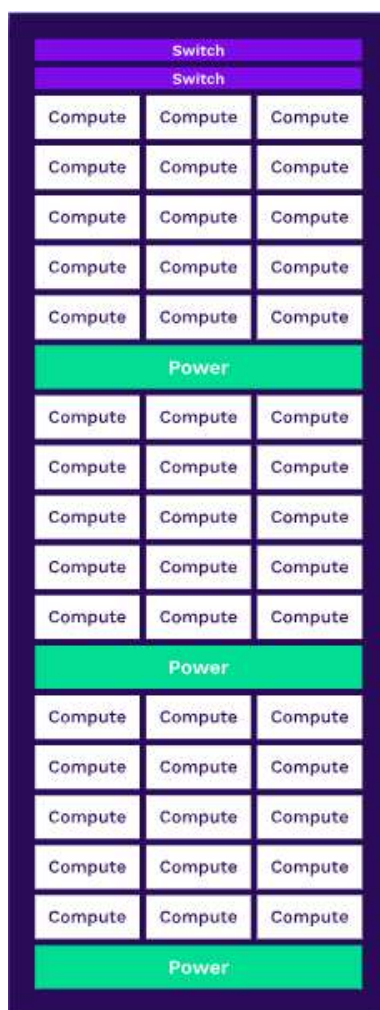
Recertified OCP: cheaper, better, greener

Vesper are proud to be part of a global initiative to repurpose decommissioned OCP infrastructure.

The supply chain is fuelled by the aggressive hardware refresh policies practiced by hyperscale operators. It provides us with an enormous volume of high performance, well-maintained systems which we use to develop solutions encompassing all the benefits of OCP design principles yet at a fraction of the cost of buying new.

The hardware itself is highly modular and cab layout can be customised according to use case.

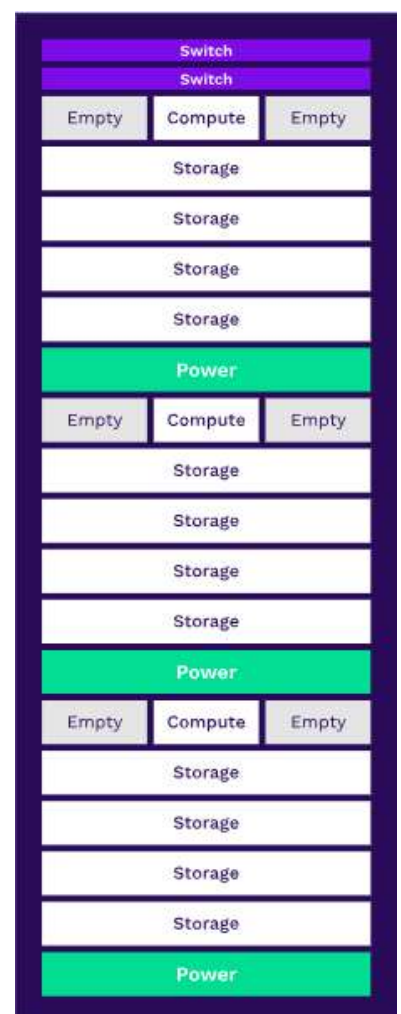
Compute Optimised



Hybrid



Storage Optimised

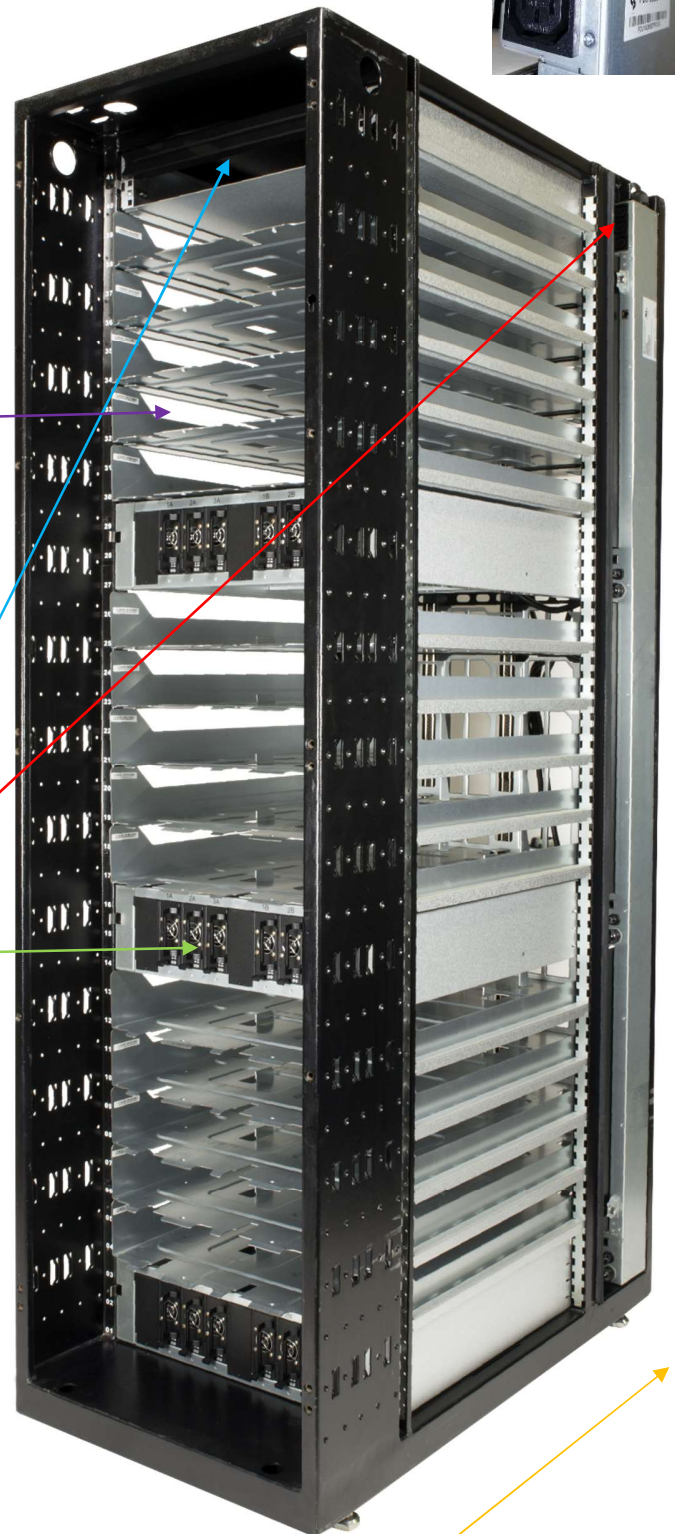


Open Rack V1 (AC/AC) EURO – Front View



FAQ

- External dimensions are exactly the same as Standard 19" racks:
600mm (W) x 2100mm (H) x 1067mm (D)
- Internal dimensions are 21". This is because traditional mounting pillars/cable routing are not used. The cab uses "shelves" instead.
- Each shelf = 2 Open U (OU). There are 15 shelves.
- Each shelf will house either 3 Compute nodes or 1 x storage enclosure (KNOX JBOD). Maximum compute capacity is therefore 45. Maximum storage capacity depends on ratio of compute nodes to JBOD.
- There is space for 2 switches top of rack. Switches are entirely standard. The mounting area is adapted to be slightly narrower than the rest of the cab.
- Power for the switches is provided by C13 connections high on the rear pillars of the cab.
- The cab is divided into 3 "zones" which are segregated by 3 power shelves.
- Each power shelf houses up to 6 x 2100W PSU providing 3+3 redundancy to its respective zone.
- There are no side panels or doors, but these can be provided if required.
- Hot & cold aisle containment is not required. the cab is air cooled.
- Air flows front to back.
- Service / Maintenance / network cabling is all managed entirely from the front of the cab. OCP is designed for quick and easy access and so all systems have a toolless design. Nodes and enclosures simply "slide into position".
- Unladen weight = 350KG

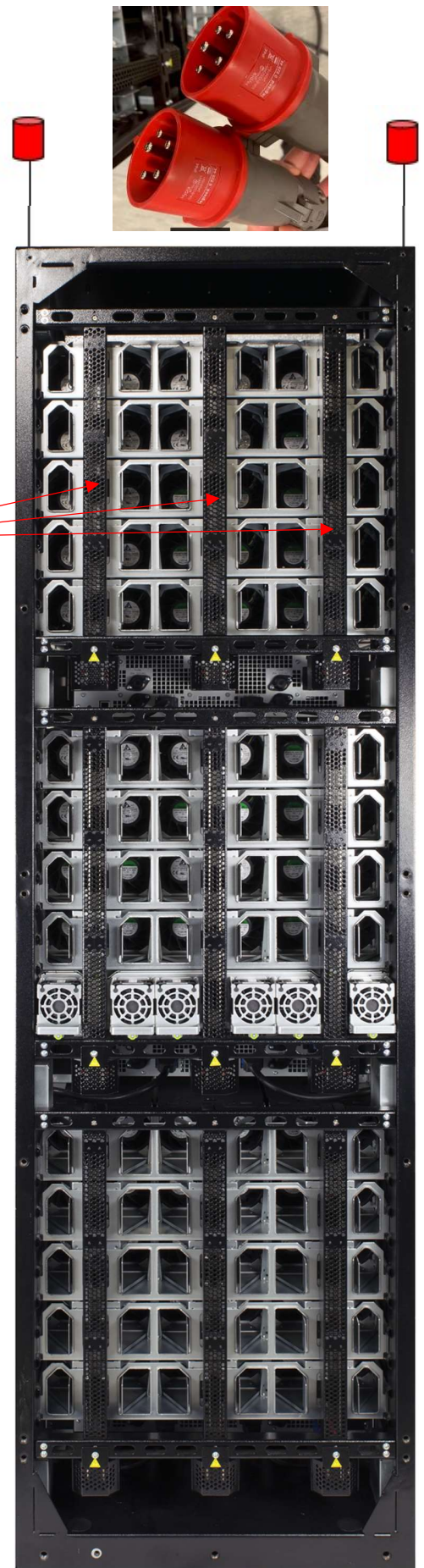
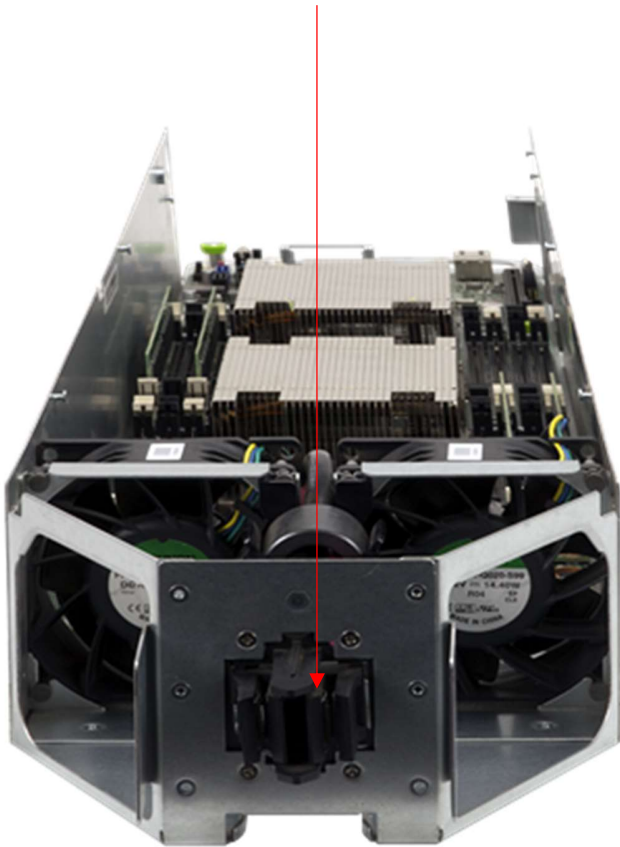


Airflow

Open Rack V1 (AC/AC) EURO – Rear View

FAQ

- Power cables run from the top of the cab.
- Power cable length is customisable.
- Power input to the cab is via 2 x 415V AC PDU 32A (3P+N+G)
Maximum power draw = 18KW.
- Power to the compute nodes and storage enclosures is distributed by 3 vertical 12.5V bus bars.
- Nodes “plug in” to the power bar. There are no power cables as with traditional servers.
See rear view of a Winterfell node below:



Winterfell Compute Node

2 x high efficiency 80mm rear fans spin at lower RPM which is much more power efficient than the 6 or 8 x high RPM fans in a traditional 1U 19" server

Dual Socket E5-2680V2
10/20C, 25M Cache, 2.80 GHz
115W TDP. C600 Chipset

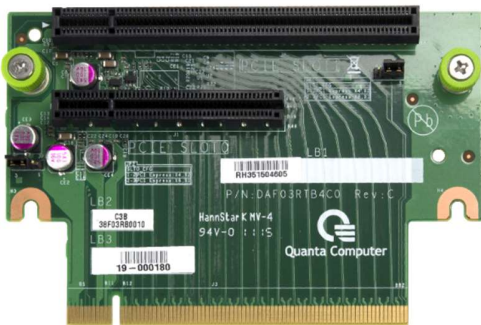
16 x DDR3 Memory Slots
Up to 512GB

RJ45 Management Port

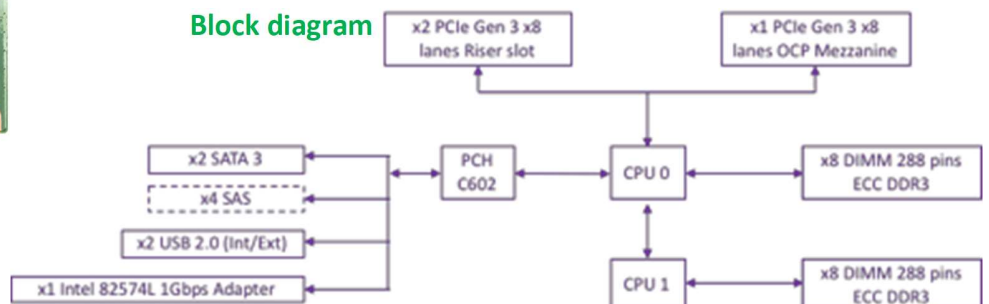
2 x 8x PCIe Riser (one is populated with a controller if the node is connected to JBOD). Can be used for additional NiC or local NVME. Can also be used as 1 x 16x.

OCP form factor NiC.
Single Port 10G shown
Can be dual 10 / 25G.

Single 3.5" HDD shown.
Can also be 1 x 2.5" or 2 x 2.5".



Block diagram



KNOX JBOD

The KNOX JBOD consumes 2 OU of rack space (or 1 complete shelf). It is connected to an LSI 9285CV-8E controller (1GB Cache, RAID levels 0, 1, 5, 6, 10, 50, and 60 + pass through) in the compute node by mini SAS cables and supports 6G SATA or SAS 3.5" or 2.5" drives.



The system has 2 drive trays each housing up to 15 drives. Each drive tray supports up to 2 SAS modules. Using 2 SAS modules per tray provides higher throughput. Depending on how the JBOD is cabled, compute nodes will see either a single tray (15 drives) or both trays (30 drives). KNOX JBOD can also be daisy chained together to provide even higher density in storage optimised cab layouts.



As with all OCP hardware the KNOX is designed for toolless maintenance. There are no caddies or screws – drives quickly snap into place.



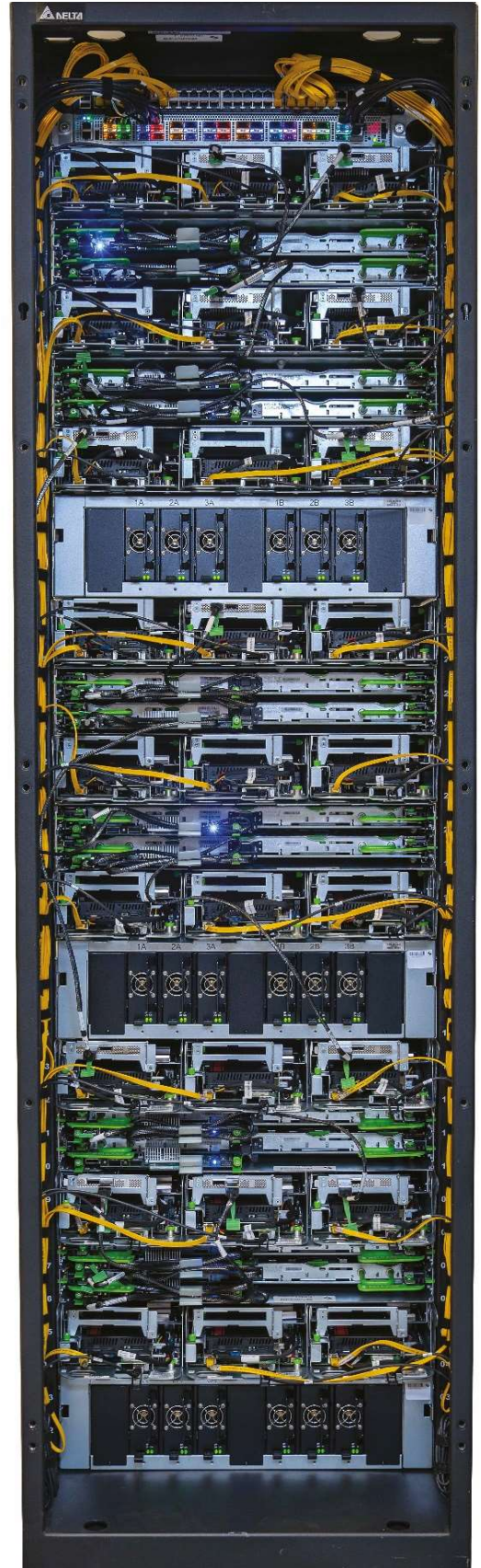
Open Rack V1 (AC/AC) EURO – Fully integrated

Here is an example of a fully integrated cab that we recently supplied. It is a hybrid solution and so includes a balance of storage (CEPH - BlueStore) and compute resources.

The goal was to design a highly cost optimised solution and So the layout was not designed to provide resilience.

Primary Features were as follows:

- Single Management switch (yellow cat6 to the nodes)
- Single 32 Port 100G TOR switch (Wedge) running Cumulus Linux NoS.
- 18 x Winterfell Compute Nodes
- 6 x OSD Nodes connected to KNOX.
- 6 x storage enclosures (KNOX) each with a single SAS module housing 1.2PB RAW storage.
- 3 x Management Nodes
- 2 x Mellanox ConnectX-4 25G ports per node cabled using 100G to 4 x 25G breakout DAC.
- Single 240GB SATA SSD OS/Boot volume.
- 20 Cores, 256GB RAM per compute node



Shipping

Cabs are transported in palletised wooden rack crates

