

BUILDING BLOCKS FOR TOMORROW'S TOP-EFFICIENCY INFRASTRUCTURE:

Introducing Hyve Solutions Modified ORv3 Portfolio



The largest hyperscalers set the bar for datacenter infrastructure. However, while many of the principles employed by these massive enterprises can and should shape industry practices, they often involve proprietary approaches unavailable to most companies. Next-wave hyperscalers and/or colocation datacenters can still embrace these industry-leading concepts as implemented in open industry standards. Hyve's new, modular rackmount server product family, based on a modified approach to the Open Rack version 3 (ORv3) specification, offers optimized, world-class infrastructure opportunities for every one without reinventing the wheel.

HYVE'S ORv3 OVERVIEW

Since 2011, the [Open Compute Project](#) (OCP) has worked to promote open, standards-based technologies that improve efficiency and scalability across enterprise infrastructure from the edge to the datacenter core. Several initiatives focus on rack design and rack-level DC power distribution. In particular, the ORv3 specification provides for a single, shelf-format power zone with 48V output. This marks a 4x increase in power output to better accommodate increasingly dense and high-power rack resources while simultaneously reducing conduction losses by a factor of sixteen for better electrical and thermal efficiency.



LL2 HOST-JUNCTION CITY MB

ORv3 defines both the specifications for the power supplies that slot into rack power shelves and the rack power management controller. This includes battery backup modules which can be added to power shelves. Additionally, ORv3 defines DC busbar specs for power distribution, which is key for safety and widespread adoption now that manufacturers offer sled-mounted servers that plug directly into rack busbars. The power efficiency increases provided ORv3 also play into the rising tide of environmental/sustainability directives. Given that most datacenters either want to or must become Environmental, Social, and Corporate Governance (ESG)-compliant, an industry-wide shift to ORv3 power and design standards now seems almost inevitable.

The biggest hyperscalers have already taken their in-house paths to these rack-level improvements. OCP adopters can now walk a parallel road without the costly and time-intensive development process.

WHAT HYVE MODIFIED AND WHY

Hyve Solutions spawned from SYNnex a decade ago specifically to focus on datacenter infrastructure needs, and the company continues to provide leadership in bringing OCP innovation to enterprises around the globe. As such, Hyve is among the first manufacturers to deliver an ORv3-based server line. Initial offerings will begin rolling out in 2021, with the complete server family set for availability in 2022. This positions Hyve to have fully compatible, vetted ORv3 solutions to market in a timely fashion for hyperscaler adoption.

To better fit the needs of next-wave hyperscalers and colocation datacenters, Hyve implemented a few noteworthy modifications in its ORv3 server series. Perhaps reflecting OCP's roots within Facebook, the ORv3 standard specifies a 21" rack width. Since the clear majority of colos and similar-scale datacenters have invested in 19" rack infrastructure, Hyve followed suit and built its new servers for this dimension. Similarly, whereas ORv3 specifies an 800mm depth, Hyve servers will extend to 960mm for more flexibility. This greater depth allows for four-socket designs and space for I/O configurations in other systems.

HYVE'S MODIFIED ORv3 PORTFOLIO

The entire Hyve ORv3 server line is built around modularity. Every server secures into a 1U compute sled, with a configuration that emphasizes CPUs from Intel or AMD accompanied by expansive memory capacity and sufficient I/O to accommodate base-level SSD and GPU resources. Hyve's initial model will be a dual-socket design based on Intel's 3rd Gen Intel Xeon Scalable processors.

HS9420

Efficient 4S Eagle Stream server with four CPUs up to 205W TDP. One OCP v3 NIC, 2 SSD and one PCIe card,



HS9220

2S Eagle Stream system with 1/2 OCPv3 NIC or one LFF NIC, 2-4 SSD. Two in-chassis IO options.



HS9120

Two nodes in 1U of 1S Eagle Stream. Each system supports one OCPv3 NIC and three IO options within chassis.



HS9121D

Two nodes in 1U of 1S Genoa. Each system supports one OCPv3 NIC and three IO options within chassis.



HYVE'S MODIFIED ORv3 PORTFOLIO (CONT.)

Extending its modular design theme, Hyve will also release its “JBOx” line. Just as conventional JBOD storage extends server disk resources, the JBOx series will provide 1U sleds that connect to any Hyve compute sled via PCI Express Gen4 or higher. Three JBOx product types will reach market alongside Hyve’s ORv3 servers:

JBOD

Contains up to 16 3.5” HDDs. Compatible with any host-side SAS or RAID HBA.



JBOF-PCIe Switch BD

Contains up to 16 hot-pluggable E1.S or E1.L flash SSDs. Interfaces with two x16 PCIe Gen4 or higher host ports.



JBOG-PCIe Switch BD

Contains up to four FHFLDW 350W graphics cards or eight FHFLSW 150W graphics cards. Interfaces with two x16 PCIe Gen4 or higher host ports.



Between the ORv3 compute nodes and JBOx storage and graphics nodes, Hyve has modularized rack resources in an open, standardized way, effectively creating building blocks for I/O disaggregation.

ENDING SKU SPRAWL

Disaggregation is something of a Holy Grail in the infrastructure space. For many years now, IT groups have pursued the benefits of server disaggregation, such as seamless inter-node pooling and load balancing of resources as well as right-size rack-scale resources for workloads. Such optimizations have largely been sought through virtualization, which adds its own layers of complexity and cost. With Hyve’s compute and I/O building blocks, disaggregation can now be easily implemented at the hardware level. IT can add or swap whatever compute or JBOx sleds are needed without being tied to unnecessary attached resources in each node.

Hyve’s modular approach to ORv3 implementation enables compute and I/O disaggregation in ways that alleviate traditional datacenter challenges. For example, many enterprises suffer from “SKU sprawl,” the inevitable mishmash of servers that accumulate over time as workload needs shift. One project might have needed compute-centric machines, another storage, and another GPGPU resources. Each project results in its own scattering of 1U, 2U, and 4U servers, and each of those arrives with its own complement of supporting disks and processors. Hyve’s modular approach puts an end to this SKU sprawl and escalating TCO.

With Hyve’s resource disaggregation, many combinations of compute, storage, and graphics nodes become possible. Hyve’s ORv3-based, modular server line signals that it’s finally time to build hyperscale data infrastructures that are flexible, scalable, and able to extend investment value for many years to come.