



HARSHPRO

SUNLIGHT

WHITEPAPER

UNLEASHING HYPERCONVERGED INFRASTRUCTURE FOR TRUE EDGE COMPUTING PERFORMANCE

How Hyperconverged Infrastructure (HCI) works on the edge and the considerations needed to truly reap the rewards of hyperconvergence.

Overview

With the exponential boom of Internet of Things (IoT) technology, enterprise workloads are increasing significantly with the addition of high-performance workloads like artificial intelligence, machine learning and big data that needs to be processed and analysed in lightning-quick time to be truly useful.

Edge computing manages and processes these massive streams of data close to the source, which reduces latency and data transmission costs incurred by traditional cloud computing. While this may seem like the answer, it isn't without its tradeoffs as it creates new pressures on infrastructures at the edge to be more powerful and efficient than ever.

The solution for many enterprises is a shift to **Hyperconverged infrastructure (HCI)**, combining compute, storage, networking and management into a single virtualized system to reduce data centre complexity and increase its scalability. This paper takes a closer look at how HCI works on the edge and the considerations needed to truly reap the rewards of hyperconvergence.

The challenges of edge computing today

Edge computing moves the workload away from a central cloud data center to reduce latency and data transmission costs, consequently it places more demand on the hardware and resources on the edge which often lack server-class CPUs and sufficient DDR memory and are not optimized to handle the increased workload.

As organizations seek to unlock value from their data by deploying highly strategic workloads such as artificial intelligence and machine learning on the edge, the limitations of current edge computing infrastructure will be increasingly evident. Considerable investment and increased support will be needed to ensure 24/7, high performance edge infrastructure.

For example, industries in remote locations with resource constraints, like palm oil mills located in far-flung forests with low bandwidth in Indonesia and Malaysia may not be able to support the requirements needed for a powerful data center on site. In addition, sending staff to install and maintain equipment on the edge will be time consuming and costly.

There is also the unpredictability of actual physical conditions on the edge. Harsh environments like oil rigs face issues like wide ranging temperatures and corrosion by sea water, while hazardous areas like coal mines are often potentially explosive. The complexity and costs required to build and maintain properly resilient infrastructure for these environments can quickly become astronomical when all these factors have to be considered.



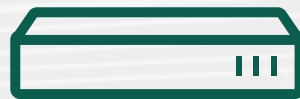
How Hyperconverged Infrastructure optimizes edge computing

Hyperconvergence has emerged as a way to manage these modern workloads that require massive data processing while minimizing the issues that come with working at the edge.

In a nutshell, HCI is a software-defined system that combines traditional data center components of compute, storage, networking and management into a converged, virtualized system.



Traditional Infrastructure



Hyperconverged Infrastructure

HCI is designed as a 'plug and play' system that is easy to deploy and manage – virtual machines and software defined infrastructure make it easy to eliminate hefty infrastructure costs as well as the inherent network and configuration challenges often faced on the edge like laborious manual processes and lack of operational expertise.

By reducing complexities of data centers, hyperconvergence increases scalability and reduces latency, which leads to:

- ✓ maximizing efficiency
- ✓ lower operational expenses
- ✓ reduced total cost of ownership (TCO)

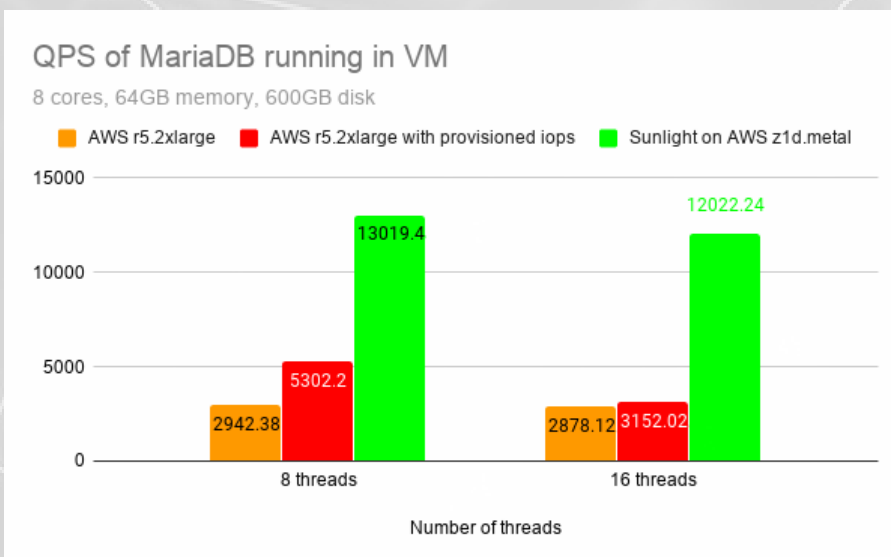
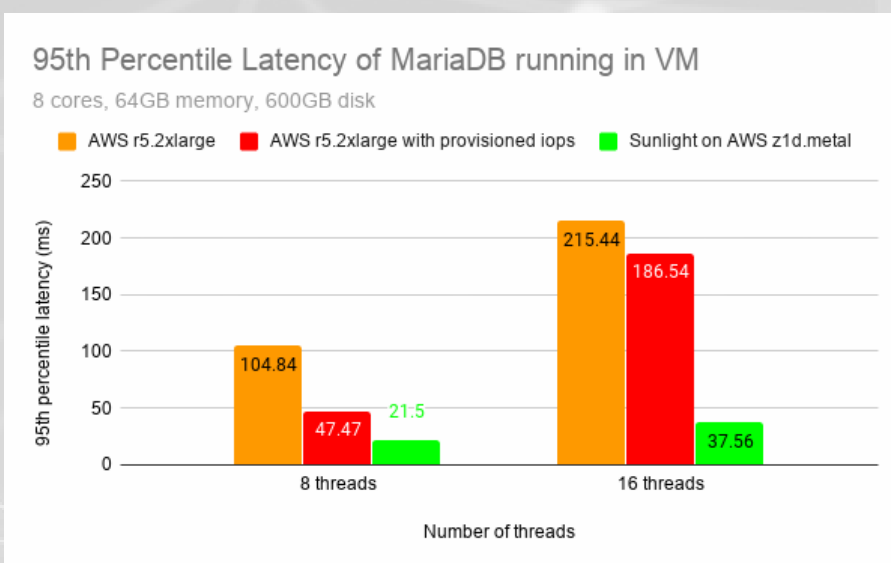
An optimized HCI experience for true industrial edge computing

The hypervisor is the heart of HCI but not all hypervisors are created equal. Traditional virtualization technologies aren't always architected to keep up with the exponential data growth today. This results in a massive loss of performance when the hardware is virtualized, and having to dedicate a significant percentage of physical resources just to running the HCI stack, and makes the virtualization process prohibitively expensive by requiring more infrastructure than necessary.

Pairing the Sunlight HCI stack with the HarshPro™ IP66 Server allows for a truly

optimized HCI experience and data center grade edge computing in harsh and hazardous environments.

The Sunlight HCI stack was created to virtualize low-power processors and enable applications to provide consistent bare metal performance wherever it is installed, even on the edge. The Sunlight NexVisor is a hypervisor that supports the fastest NVMe and network hardware while maintaining highly efficient resource usage, consuming only 8% of server resources to run the HCI stack compared to around 30% with traditional HCI.



The right equipment supports performance at the edge

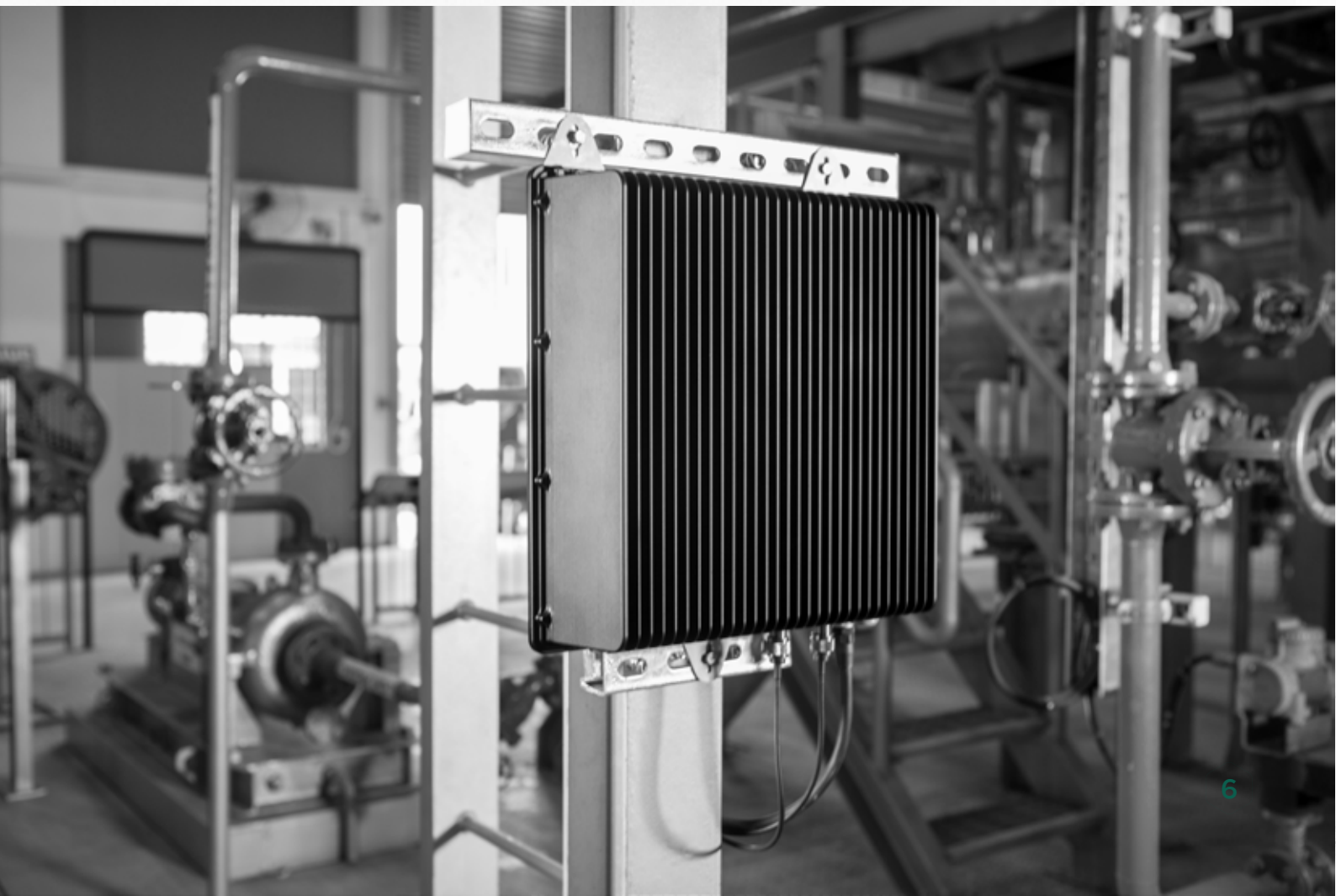
The HarshPro IP66 Server lets you get the most out of the Sunlight HCI Stack with a 16 hyper-threading multi-core, up to 128GB RAM and multiple NVMe SSD slots to serve even the most resource-intensive needs and demanding workloads. The server provides up to six M.2 PCIe slots that can accommodate up to 2TB, a maximum capacity of 12TB.

It is optimized for cloud-native, localized cloud functionality and application containerization. The server supports automated provisioning and remote management, with built-in functionality for remote administration down to the BIOS level.

The HarshPro IP66 Server is a rugged server that with a powerful Intel® Xeon®-D processor that's engineered to work in the harshest conditions where other servers fail.

With an IP66 rated enclosure that's weatherproof and built for wide ranging operating temperatures from as low as -20°C to as high as 50°C , and an innovative fanless passive cooling design and no moving parts, the HarshPro Server enables Sunlight HCI to push deeper into edge environments, where there are waterproof or dustproof requirements.

Cost-wise, the bulk of costs in edge deployment set up typically is linked to the amount of hardware needed. With Sunlight and HarshPro Servers, you require less equipment while being able to do more, which can result in reduced overhead, significant cost savings and a reduced form-factor.



Conclusion

Edge computing is becoming essential but not all enterprises are equipped with the right infrastructure to truly reap the benefits. Hyperconvergence and HCI may be the solution needed to optimize edge computing and allow for scalability, more efficient deployment and lower costs.

Learn how Sunlight and HarshPro Servers can work hand in hand to help.

**For more information about
Sunlight hyperconverged infrastructure stacks,
contact Sunlight at info@sunlight.io**

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**For more information about HarshPro™ Servers,
contact LanternEdge at partnerwithus@lanternedge.com**



LANTERNEDGE

Technologies to enable intelligence in
harsh and hazardous environments