

# SUNLIGHT

## Delivering High Performance, Integrated, Efficient **Edge Computing with Sunlight**

### Edge HCI that gets out the way

The Sunlight solution consists of a next-gen HCI stack and a cloud-based central management platform. Able to be deployed at the Edge on your hardware platform of choice. The hyper-efficient HCI stack means more resources are available for running, processing and managing your workloads. Deploy Sunlight at your Edge today.

### 20%

Sunlight is 20% of the footprint compared to traditional HCI

### 10 min.

Sunlight takes 10 min to get an Edge cluster up and running

### 2M+

Sunlight delivers 2M+ IOPS in a 2 node Edge cluster

## Why Edge Computing?

Edge Computing exists to mitigate 4 key constraints that exist in cloud computing today:

**Latency** - many applications such as machine vision or analytics require near-real-time decision making at the location the data is captured.

**Data volumes** - the data collected at the Edge can be huge - a Smart Factory can produce 5Pb of data a day - pushing this data up to a core cloud can be slow and expensive, even over 5G.

**Autonomy** - Edge locations need to work even when disconnected for substantial periods of time - especially where data connections are unreliable or intermittent - perhaps on an oil platform.

**Privacy, security and compliance** - sometimes data cannot leave the location where it is generated, or needs sufficient processing before it can safely be sent to the core cloud.

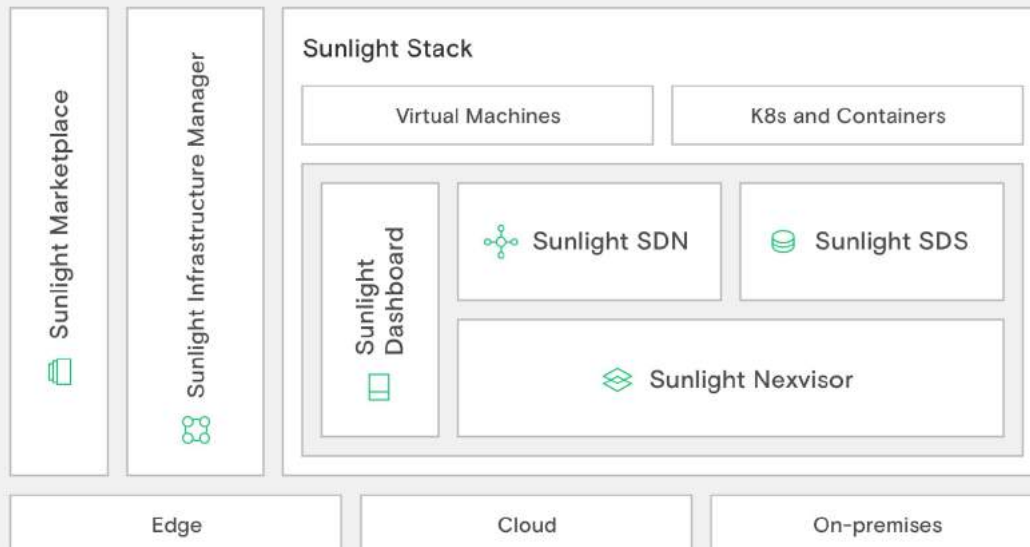
However, building an infrastructure to meet these needs requires a new approach to application infrastructure that is very different to the traditional cloud data centers we are used to. This paper will look at some approaches to building a new Edge architecture.



**Sunlight's power and performance are a natural fit with the HarshPro™ Server range, enabling enterprises to deploy high-performance data processing capabilities in harsh & hazardous Edge environments**

Mark Mooney, COO at LanternEdge

## Sunlight Converged Infrastructure Platform



## What is the Edge?

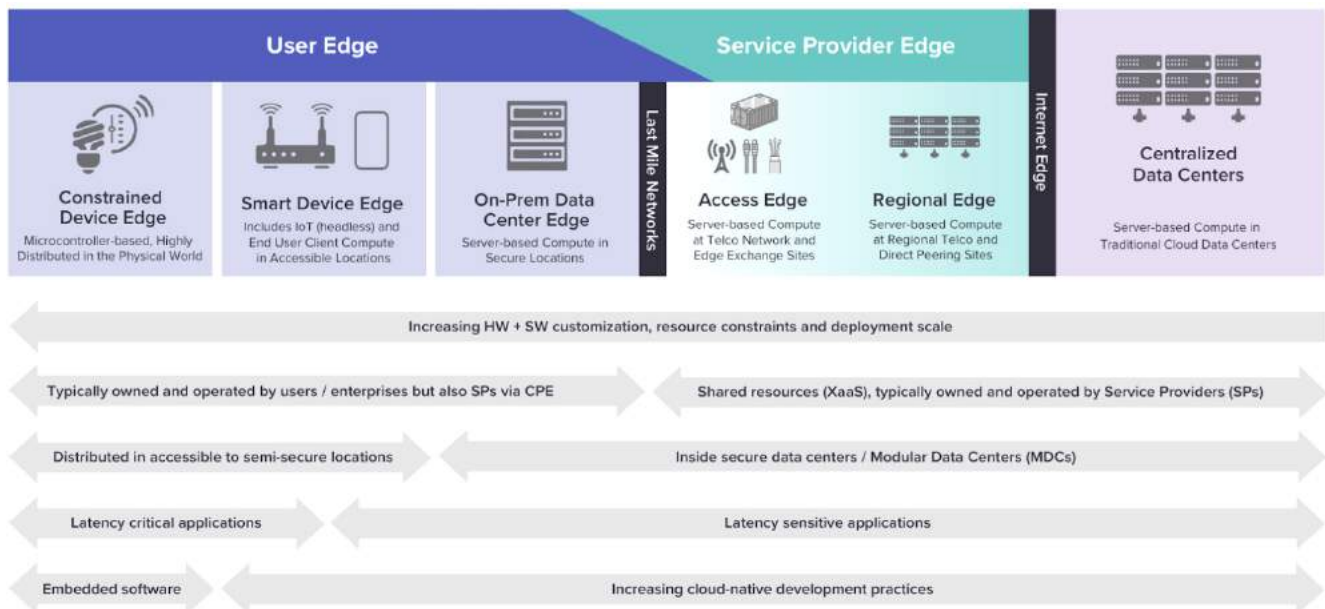
Edge Computing moves processing power away from the data center and closer to where data is produced and consumed.

The Linux Foundation's LF Edge has created a formal taxonomy that has received many accolades and is getting widespread adoption. The LF Edge taxonomy visualises Edge Computing through the continuum of physical infrastructure that comprises the internet, from centralized data centers to devices.



**Deloitte Global predicts that in 2021, the global market for the intelligent Edge will expand to \$12 billion, continuing a compound annual growth rate of about 35%.**

By locating services at key points along this continuum, developers can better satisfy the latency requirements of their applications. The figure summarises the Edge Computing continuum, spanning from discrete distributed devices to centralised data centers, along with key trends that define the boundaries of each category. This includes the increasingly complex design tradeoffs that architects need to make the closer compute resources get to the physical world. The explosion of data is driving a necessary increase in processing at the Edge for reasons including latency, bandwidth savings, security, privacy and autonomy. However, deploying compute at the distributed Edge is especially challenging because the landscape is inherently heterogeneous, comprised of a diverse mix of technologies, legacy investments and skill sets. In order to scale Edge Computing, we need to support a variety of deployment models in a more standardised and open way.



The Linux Foundation's LF Edge

## Deployment models

**Edge Computing** works hand-in-hand with the cloud to provide a flexible solution based on the data collection and analysis needs of each organisation. For real-time collection and analysis, the Edge is ideal for certain workloads. At the same time, the cloud can provide a centralised location for large scale analytics. In this way these two models are complementary.

**Edge-in to cloud** describes an architecture in which Edge applications, servers and gateways are designed and built independently from any public cloud they may connect to for application services, such as analytics.

**Cloud-out architectures** are where we see public cloud architectures pushed to the Edge as a complete platform solution, the Application Programming Interface (API) and Identity and Access Management (IAM) of the public cloud providers are extended out to the Edge. This allows for applications built on the cloud provider's platform to be deployed at the Edge.

Instead of replacing cloud computing, it's safe to say that Edge computing will complement it. It is a type of hybrid cloud, in which all data doesn't have to be transferred back to the cloud for processing. This can help make decisions quicker at the Edge.

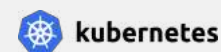
## VM vs Containers

In a study done by the Eclipse Foundation, containers accounted for 36% of Edge Workloads. When it comes to Operating Systems for virtual machines (VMs), they found 43% were Linux based and Windows users grew to 31% between 2019 and 2020. This report highlighted a need for an intelligent Edge platform that can run both virtual machines and containers. Sunlight delivers this platform for you at the Edge.

Bare Metal	SUNLIGHT
Single tenant	✔ Multitenant
Limited HA/FT	✔ Highly Available/ Fault Tolerant
No isolation	✔ Secure
Limited manageability	✔ Remote management
✔ Low power CPUs	✔ Low power CPUs
✔ High performance	✔ High performance

### Microservices run better on Sunlight:

- ✔ Smaller infrastructure
- ✔ Better uptime
- ✔ Improved manageability
- ✔ Better security
- ✔ ...and all the performance of bare metal




## Edge HCI vs Traditional HCI


Hyper Converged Infrastructure (HCI) has become the dominant architecture in the data center. The main objective of HCI has been to simplify the management of data centers. HCI is a software-defined, unified system that combines all the elements of a traditional data center: storage, compute, networking and management. This integrated solution uses software and x86 servers to replace expensive, purpose-built hardware.


This approach has helped in the data center but is not a good model for the Edge. Many Edge deployments require different hardware and rely on lower power CPUs such as the Intel Xeon D or ARM. Traditional HCI was not built to run effectively on these. A new approach is needed and this is where Sunlight comes to the fore with its platform. Centrally manage all your Edge locations from the Sunlight Infrastructure Manager. Running the Sunlight Stack at the Edge gives you the confidence your VMs and Containers are getting the best performance from the Edge hardware.


## Sunlight Converged Infrastructure Platform


Sunlight is the fastest converged infrastructure platform for commodity hardware consisting of:


 **Sunlight NexVisor**  
Built from the ground-up to support today's high performance hardware, and with a tiny footprint

 **Sunlight SDS**  
Distributed Software Defined Storage for easy scaling and low latency

 **Sunlight SDN**  
Software Defined Networking enabling creation of ethernet-based virtual private networks

 **Sunlight Dashboard**  
The easy to use Sunlight Dashboard and API to configure, monitor and manage your virtual datacenter

 **Sunlight Infrastructure Manager**  
Enabling centralised management and seamless movement of your services across the cloud, on-premises and the Edge

 **Sunlight Marketplace**  
Automated, API driven deployment of VMs, Containers and Applications based on Ansible

## Sunlight's Approach to Edge Infrastructure

The Sunlight Infrastructure Manager (SIM) comprises a graphical Dashboard and a REST API. The SIM provides a simple integration point from which a customer can deploy their Infrastructure as Code policy.

The SIM is the fastest and recommended way to deploy and manage Sunlight clusters both in AWS and your On-Premises environments, including the Edge. It provides a single pane of glass to manage and monitor resources, take backups, move workloads around and to deploy clusters.

Integrated into the SIM is the Sunlight Marketplace. The Sunlight Marketplace is where customers can choose Recipes to deploy VMs, Containers and Applications. Recipes are built using the Ansible framework. The Sunlight recipes provided are fully opensource and these can be adapted or customised for the customer's environment. New Recipes can be built and stored in your own Recipe Library, making application deployment fully automated and tailored to each environment.

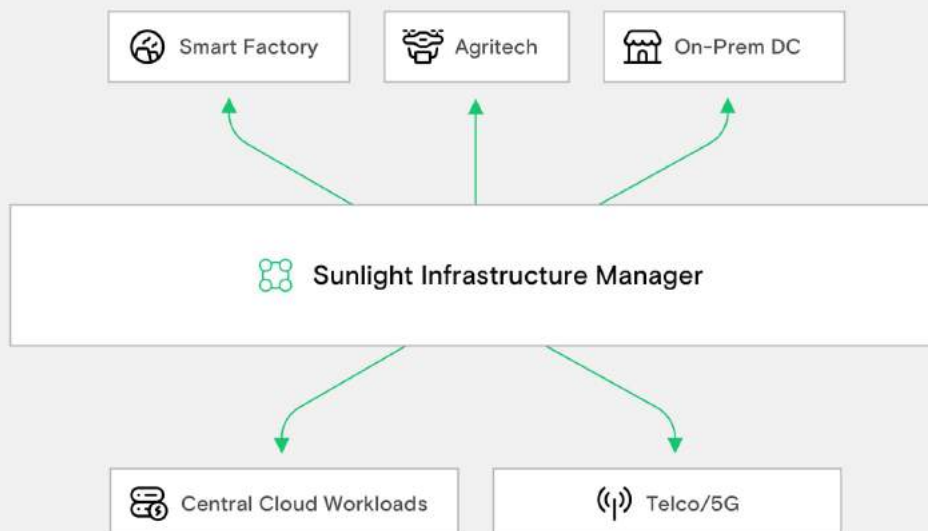
Application deployments using tools such as Terraform can integrate easily with the Sunlight infrastructure via the Sunlight Ansible Recipe framework.

Full application lifecycle management is supported via the Sunlight marketplace, including deployment, initial configuration, runtime configuration changes, scale-up/scale-down and version control/upgrading of deployed applications.

SIM can be deployed instantly on-demand from the **AWS marketplace** as a free product so you can be up and running within minutes.

- ✔ SIM configures the **infrastructure environment**, such as deploying clusters of nodes in AWS or your Edge platforms, to host the application.
- ✔ SIM configures the **execution environment** including CPU cores, storage datastores, network objects and virtual machine instances in an optimal setup required for the application.
- ✔ SIM configures the **application environment** to install the appropriate application software, configure it as required and start the application if appropriate.

## Sunlight Infrastructure Manager and Marketplace



## Sunlight's Approach to Edge Infrastructure



All Clusters managed from a single platform, hosted in cloud or On-Prem



Small footprint, power efficient



Zero-touch Edge device onboarding



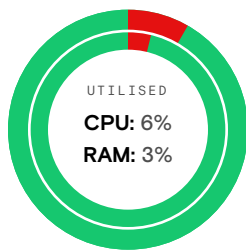
Single API for integration with Infrastructure as Code toolsets



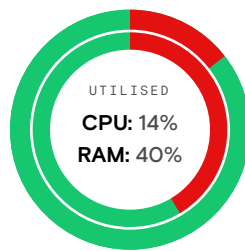
Support for Virtual Machines, Containers and Kubernetes distributions



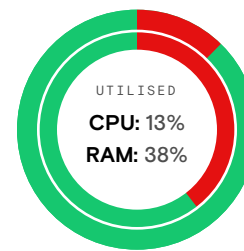
Support for GPUs for AI, vision and Machine Learning use cases



SUNLIGHT



vmware



NUTANIX

## Sunlight HCI Stack

Sunlight NexVisor, the core of the next-gen HCI stack, which has been specifically designed from the ground up to fix the performance gap that exists in the market. Sunlight has architected a complete hyperconverged infrastructure stack that can efficiently handle the most demanding workloads with bare metal performance and without sacrificing on virtualisation flexibility.

Sunlight NexVisor takes full advantage of NVMe flash storage and the latest generation of super-fast networking, giving you the ability to achieve bare metal performance at a manageable cost compared to running on legacy virtualisation. This extends to your AWS workloads - which can continue to run in AWS on Sunlight with no changes. Workloads can be scaled elastically and with linear performance - giving you maximum flexibility.

Sunlight NexVisor supports hybrid deployments and can run on-prem, in the cloud (AWS) or at the Edge.



**“By 2025, 175 zettabytes (or 175 trillion gigabytes) of data will be generated around the globe. Edge devices will create more than 90 zettabytes of that data.”**

IDC Data Age 2025 report The Digitization of the World: From Edge to Core

## Deployment

Sunlight can be deployed anywhere – on premises, in the cloud and at the Edge with single pane-of-glass manageability of the entire hybrid infrastructure. Sunlight is the only complete HCI stack that can be deployed on anything from regular data center servers to constrained far-Edge compute devices running on factory floors or harsh environments. Unlike other HCI stacks, Sunlight is fast to deploy – taking around 10 minutes to install on a server, or deployable on-demand in AWS.



AMD



### On-premises

Run on commodity data center servers with your choice of NVMe storage

### Cloud

Run in AWS with full integration with AWS networking

### Edge

Run on low-power CPUs such as Intel Xeon-D, Atom and ARM

## Workloads



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📍 Castle Park, Cambridge, United Kingdom

# SUNLIGHT

V1.0 – 21 APR 2021

Sunlight makes performance possible anywhere – from the cloud to the edge. Demanding applications like AI, Big Data, Analytics and Rendering run 3x faster on Sunlight compared to legacy virtualisation, and because Sunlight has a tiny footprint – it's perfect for the edge.

Enterprises and MSPs use Sunlight to cut the costs of delivering high performance IT by 70%. Sunlight is a complete HCI stack that can be deployed on-premises, in AWS, and on resource-constrained far-edge devices.

[www.sunlight.io](http://www.sunlight.io)

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