

# Oracle Edge Cloud Portfolio Overview

Deploy Oracle Cloud Infrastructure solutions from core to edge

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## Purpose statement

This document provides an overview of products and features included in Oracle's Edge Cloud portfolio. It describes the capability to deploy cloud infrastructure services in the customer data center and at the edge of the network, focusing on compatibility, scalability, flexibility, and cost-effectiveness across Oracle's cloud offering. The document is intended solely to help you assess the business benefits of implementing Oracle's Edge Cloud products in your data centers or at remote locations where you operate.

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# Introduction to Edge Cloud

Oracle supports the widest range of cloud deployment strategies, offering more than 150 cloud services through Oracle Cloud Infrastructure (OCI), flexible hybrid cloud solutions, and infrastructure at the edge of the cloud. Depending on workload requirements, edge cloud installations extend OCI features and resources into the customer data center or remote disconnected locations.

The Edge Cloud portfolio includes solutions from core to edge, fully compatible with OCI and ready to operate in connected or disconnected mode. Each deployment is specifically adjusted to the operating environment and the scale and type of workload. We categorize products as follows:

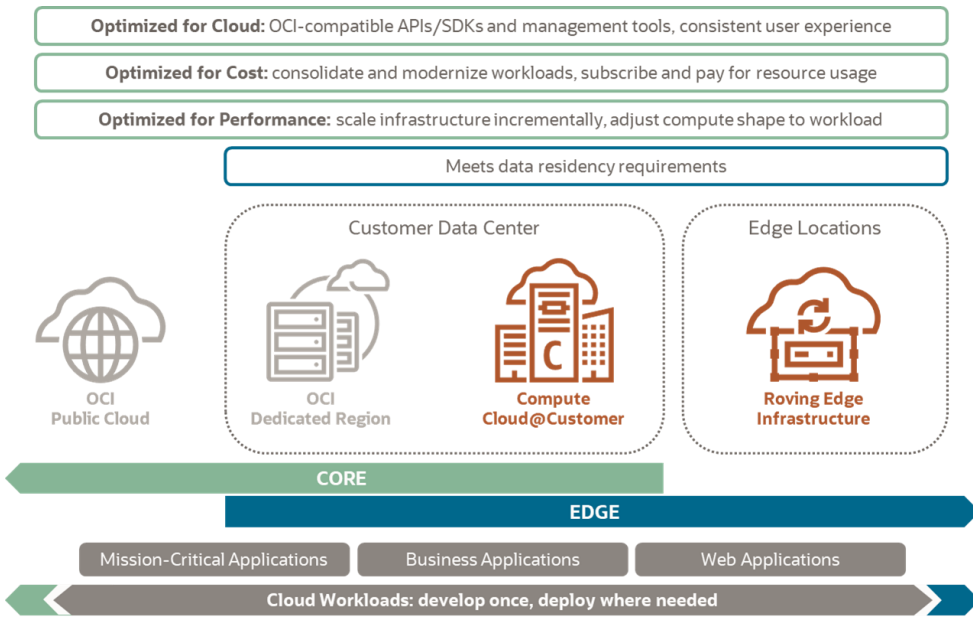
## Infrastructure as a Service

Engineered for the enterprise data center, these rack-scale infrastructure solutions are optimized for performance and availability. Run your web, business, and mission-critical applications on a cost-effective platform that provides all the benefits of a modern architecture and allows you to control where your data is stored.

## Oracle Roving Edge Infrastructure

Outside the data center, compact high-performance devices deliver fundamental cloud compute and storage functionality where your data is being generated and consumed. Oracle Roving Edge Infrastructure devices allow you to transport and set up your cloud environment wherever you need it. Computing and storage operations don't require internet access. Data is synchronized with the OCI parent tenancy when connectivity is restored.

Diagram: Oracle Cloud from core to edge



## Data Center Infrastructure as a Service

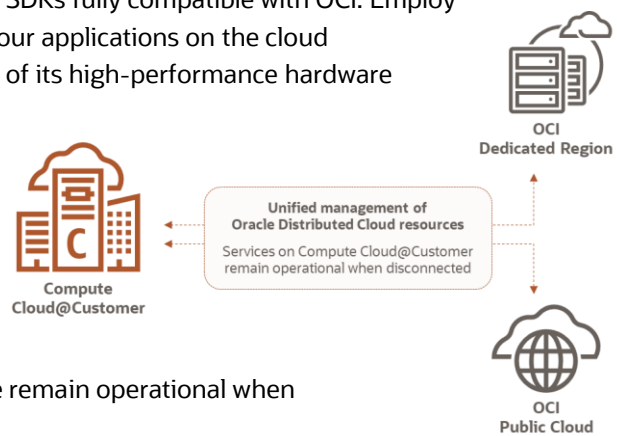
Oracle has developed an engineered system that enables a comprehensive suite of Oracle Cloud Infrastructure (OCI) services inside the secure environment of your on-premises data center. Oracle **Compute Cloud@Customer** integrates software and hardware components optimized for a variety of workloads. It allows you to leverage the capabilities of OCI, meet requirements around data residency, and expand capacity as needed.

Oracle sets up the system in your data center, connects it to your OCI tenancy, and manages the infrastructure for you. Access to Compute Oracle Cloud@Customer is centrally managed from the identity and access management (IAM) service in the parent OCI tenancy. Users deploy and manage cloud resources on the Oracle Compute Cloud@Customer infrastructure.

## OCI Compatibility

An on-premises implementation of Oracle Compute Cloud@Customer includes a comprehensive software stack, built on a modern microservices architecture, with APIs and SDKs fully compatible with OCI. Employ the same services, tools, and automation to build and run your applications on the cloud infrastructure inside your data center, taking full advantage of its high-performance hardware with low-latency local connectivity.

Workloads are portable between OCI and Oracle Compute Cloud@Customer. The user experience and skill set required are the same across both infrastructures, as well as the rest of Oracle's distributed cloud. Oracle Compute Cloud@Customer natively integrates with OCI public cloud as well as dedicated regions. Services on the local cloud infrastructure remain operational when disconnected from the cloud tenancy.



## Performance and Flexibility

Start with a configuration that fits the current workload, then expand incrementally when the need for compute power and storage capacity increases. Networking at high speed and bandwidth is built-in for all configurations. The minimum base rack deployment of Oracle Compute Cloud@Customer contains 3 compute nodes and 1 capacity tray for Oracle ZFS storage.

## Scalable Compute Resources

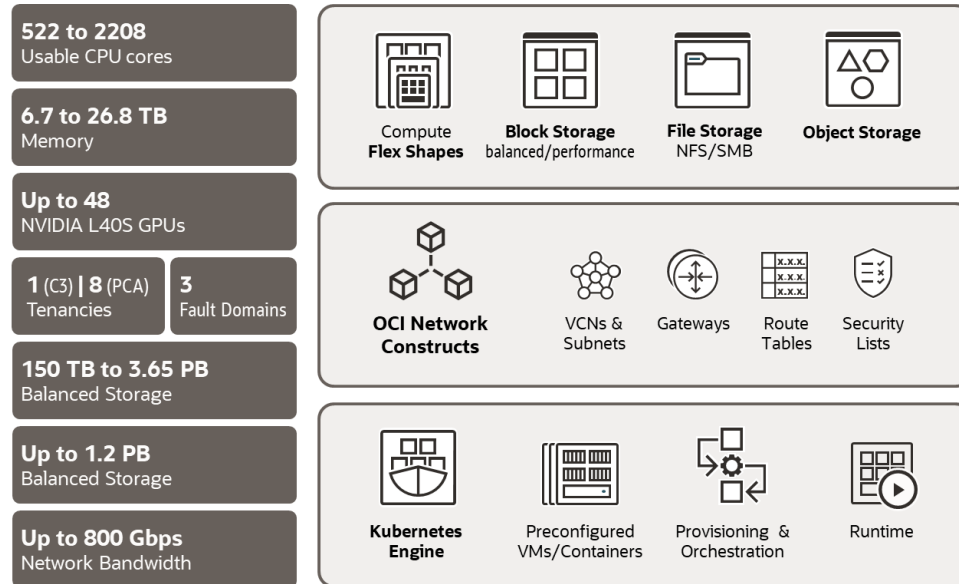
- By adding more compute nodes, the capacity of 552 cores and 6.7 TB memory can be expanded to a maximum of 2208 cores and 26.8 TB of memory.
- High-performance VM shapes provide up to 96 cores in a single instance, allowing applications of any size to be deployed. With flexible shapes, the CPU/RAM ratio can be tweaked to each application, consolidating overall resource consumption.
- Oracle Linux licensing and support is included. Multiple guest operating systems are supported, including Oracle Solaris, Microsoft Windows Server, and third-party Linux distributions. All these workloads run on a single platform.

## Flexible Storage

- Storage capacity can be scaled independently of compute resources. The Oracle ZFS Storage Appliance installed in the base rack provides block, file, and object storage to support all types of workloads.

- One standard capacity disk tray provides 150 TB of total space. With additional disk trays the storage capacity for the local cloud infrastructure can be increased incrementally up to 3.4 PB.
- High performance flash storage is optional and scales up to 1.2 PB of block storage capacity to support the most I/O intensive workloads.

Diagram: Powerful, scalable IaaS platforms with OCI building blocks



## Cost-Effectiveness

Run a fully managed cloud infrastructure platform in your data center and reduce cost with consumption-based pricing. Deploy faster with infrastructure-as-code automation and leverage the flexibility and performance of cloud resources by modernizing your applications and middleware stacks. Oracle Compute Cloud@Customer helps you maximize results through efficient resource usage.

## Subscription Model

- The infrastructure is fully managed by Oracle, so you don't need to be concerned with the complexity of monitoring, availability, security, or upgrades. Instead, IT staff can focus on their most crucial tasks, supporting your core business activities.
- Pricing is based on resource consumption: you pay for what you use and keep costs under control with an infrastructure subscription. Pay for your usage using the same Universal Credits as with OCI.
- Running cloud infrastructure and services is a 100 percent operational expense. Your subscription includes enterprise support as well as Oracle Linux and Oracle Solaris licensing. It also provides integrated support for trusted partitioning. There are no additional hidden costs.
- Take advantage of the tight integration between Oracle's hybrid cloud offerings. Bring Oracle E-Business Suite into the distributed cloud infrastructure. Protect the workloads in data centers or OCI regions using the disaster recovery orchestration of OCI to Oracle Compute Cloud@Customer as a standby site. Add Oracle Exadata Cloud@Customer as an optimized database layer for the applications hosted on Oracle Compute Cloud@Customer. Manage everything from a single pane of glass.

## Fast Modern Deployment

- Move your existing enterprise systems, middleware, and applications from on-premises platforms to Oracle Compute Cloud@Customer. Compute instances with flexible shapes provide tailored performance, resource consolidation, and simpler administration.
- Cloud-native applications are fully supported with the OCI Kubernetes Engine (OKE), a managed Kubernetes service included in your Oracle Compute Cloud@Customer subscription. It simplifies the deployment of highly available Kubernetes clusters, and reliably automates scaling, patching, and security updates of control plane and worker nodes. Transform your existing workloads and increase development productivity for a faster time to market. Modern containerized workloads also consolidate resources and decrease overall cost.
- Enable infrastructure as code in your cloud environment with OCI Terraform Provider. Automate and accelerate the deployment of cloud infrastructure as well as Kubernetes clusters. Combine with Ansible for instance configuration management.
- Develop once, deploy anywhere. Use a comprehensive suite of OCI compatible tools, such as the OCI APIs and SDK, Terraform and Ansible, OCI Designer Toolkit (OKIT), and OCI Kubernetes Engine (OKE). Consolidate and modernize existing Oracle and third-party applications. Deploy the same stack across Oracle Compute Cloud@Customer, OCI, and the rest of Oracle's distributed cloud.

## Optional GPU Expansion

Oracle Compute Cloud@Customer is ready to power the next generation of data center workloads, including generative AI, LLM training, 3D graphics rendering and digitization, media streaming, and HPC applications. To enable these GPU-accelerated workloads, the cloud infrastructure in the data center can be expanded with server nodes that have GPUs installed.

GPU nodes are installed in a dedicated expansion rack and connected to the high-speed low-latency network of the Oracle Compute Cloud@Customer base rack. Each GPU node contains 4 NVIDIA L40S GPUs with 48 GB GDDR6 memory and 1466 peak FP8 TFLOPS. The infrastructure can be scaled up by one node at a time. Two racks with 6 nodes each can be attached for a maximum of 48 GPUs.

### Specifications

Table: key specifications of the GPU expansion hardware

Item	Description
<b>GPU</b>	NVIDIA L40S (PCIe card) GPU, 48 GB GDDR6
<b>GPU Node</b>	Oracle X10-2c GPU L40S Compute Server with the following usable capacity: <ul style="list-style-type: none"> <li>• 4x NVIDIA L40S PCIe GPU</li> <li>• 108 OCPU (Intel Xeon® Platinum 8480+)</li> <li>• 960 GB DDR6 memory</li> <li>• Up to 400 Gbps bandwidth over front end network (no RDMA support)</li> </ul>
<b>GPU VM Shape</b>	VM.GPU.L40S.1-4: <ul style="list-style-type: none"> <li>• VMs with 1-4 passthrough GPUs</li> <li>• 27 OCPUs per GPU</li> <li>• 200 GB VM memory per GPU</li> </ul>
<b>GPU Expansion Rack Capacity</b>	<ul style="list-style-type: none"> <li>• Minimum 1 node (4 GPUs), up to 6 nodes (24 GPUs) per expansion rack</li> <li>• Expandable to 2 racks with 12 nodes for a maximum of 48 GPUs</li> <li>• Distance from base rack to expansion rack is maximum 25 meters</li> </ul>

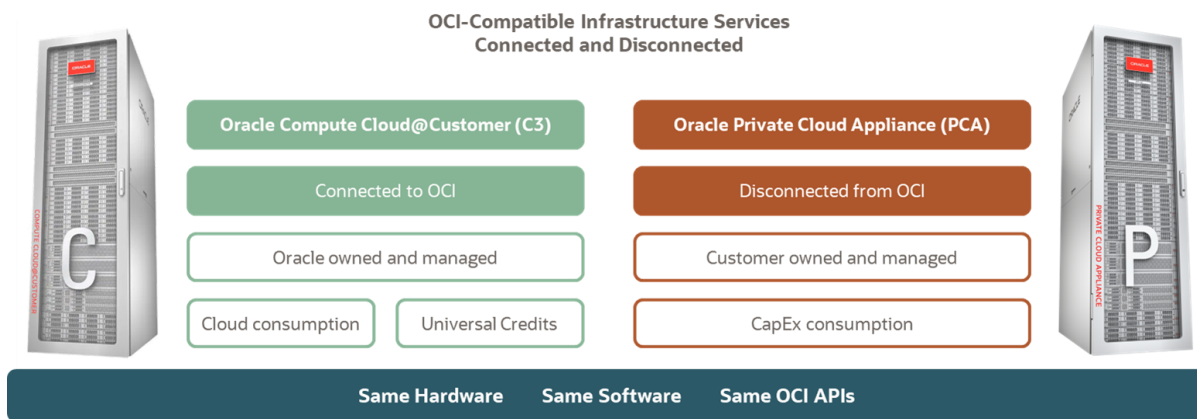
<b>Rack Power</b>	<ul style="list-style-type: none"> <li>• 1x GPU node: max 3.76 kW, typical 2.6 kW</li> <li>• 6x GPU node: max 17.51 kW, typical 12.3 kW</li> <li>• Modular rack fits into existing air-cooled data centers</li> </ul>
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## Oracle Private Cloud Appliance

If you need the scale, performance, and flexibility of Oracle Compute Cloud@Customer, but prefer to maintain total control over your infrastructure, then choose Oracle Private Cloud Appliance. The hardware platform and controller software stack are exactly the same, but the customer purchases and manages the appliance instead of leasing it through the subscription model.

Oracle Private Cloud Appliance operates disconnected from OCI. Identity and Access Management is performed from the locally running IAM service. Authorized administrators use the Service Enclave to monitor the appliance hardware platform and microservices, and to perform configuration and maintenance tasks including upgrade and patching.

Diagram: Oracle Compute Cloud@Customer and Oracle Private Cloud Appliance side by side



While ownership, cost, and division of responsibilities are different compared to Oracle Compute Cloud@Customer, choosing Oracle Private Cloud Appliance is a question of business requirements and cloud strategy. Both systems provide the same benefits:

- OCI services and resource constructs designed for compute, networking, storage, etc.
- OCI-compatible tools and interfaces: OCI CLI/API/SDK, Console-like UI, Terraform, Ansible
- Incrementally extensible on-premises infrastructure that meets security, data residency, and latency requirements, and is ready to integrate with other engineered systems and Oracle cloud solutions
- Flexible and scalable VM resources to efficiently run diverse workloads, portable across Oracle’s distributed cloud
- Cloud-native development and deployment thanks to the OCI Kubernetes Engine (OKE)
- Oracle Linux and Oracle Solaris licensing are included, and trusted partitioning is supported
- Access to Platinum Support



## Oracle Roving Edge Infrastructure

Oracle Roving Edge Infrastructure solutions are designed to extend cloud services and applications to the edge of the network. Roving Edge hardware has a compact form factor, optionally available with a ruggedized enclosure, making it ideally suited for deployment in remote locations.

These portable server nodes let you take cloud infrastructure to wherever you need it, and quickly set up an operational remote site. Running cloud compute and storage services at the location where data is being collected, provides performance and low latency for faster processing and faster data insights. Internet access on location is not required.

### OCI-Integrated Service

Oracle Roving Edge Infrastructure is an extension of your Oracle Cloud Infrastructure tenancy. From the OCI Console, you create and configure *device node resources*. These nodes correspond with Oracle Roving Edge devices, and are translated into procurement requests. Oracle pre-provisions the selected compute instances and other resources from your OCI tenancy on the devices. Oracle Roving Edge Infrastructure devices are billed per day of resource possession.

User experience is consistent with OCI, making Oracle Roving Edge Infrastructure straightforward to adopt and deploy. Remote workloads can run completely disconnected at a remote site, without internet access. You can synchronize your object storage datasets with the OCI parent tenancy later, after establishing a network connection on the Roving Edge Device.

Oracle Roving Edge also provides a solution for managing data migration and synchronization between edge environments, on-premises data centers, and OCI object storage. It facilitates data transfers of up to 45 TB, through high-speed connections like OCI FastConnect, or in environments with limited bandwidth. Roving Edge as Data Transfer Gateway ensures reliable connectivity and strong data security with advanced features such as secure data synchronization and robust protocol support, including NFS v4.1.

### Oracle Roving Edge Infrastructure Use Cases

Common uses for Oracle Roving Edge Infrastructure include:

- Storage and processing of large volumes of images, video, audio, and internet of things (IoT) sensor data generated in environments where WAN connection is latent or unavailable. You can preprocess, filter, compress, and secure the data locally, then transfer it to OCI where it can be further processed in the cloud.
- Compute and I/O intensive applications, where low latency is paramount, such as tactical reconnaissance or 5G communications.
- Cloud development, deployed at the edge. Develop, deploy, and maintain all applications and data in the cloud and deploy them to the edge as needed, controlled from a single pane of glass.
- Seamless deployment of applications to remote facilities of an organization. For example: embassies and consulates, government offices, military bases, and remote campuses.
- Remote computing requiring elevated security and airtight containment of data.
- AI and machine learning at the edge. Models trained in the cloud are using built-in GPUs or attached VPU/TPU accelerators on deployments in disconnected locations. Faster processing without relying on network connectivity improves efficiency, intelligence, and productivity.

## Hardware Options

Oracle Roving Edge Infrastructure devices are available in two form factors:



**Oracle Roving Edge Device 2 (RED 2)** – daily possession 80-100 USD

A 2U size system, 3U with rugged case, available in three configurations: standard, GPU-optimized, and storage-optimized.



**Oracle Roving Edge Ultra (Ultra)** – daily possession 45 USD

An ultracompact (7.4" L x 6.3" W x 2" H) and lightweight (3.75 lbs /1.7 kg) device, contained in a backpack-like transporter, optionally delivered with battery pack.

RED 2 is a portable high-powered server that has been ruggedized to operate in remote environments. Ultra has less storage and computing capabilities, but can be operated by a single person in the most difficult circumstances, and doesn't require a separate power source.

Table: Oracle Roving Edge Infrastructure hardware overview and key specifications

Roving Edge Ultra	(NEW) Oracle Roving Edge Device 2		
	Standard	GPU Optimized	Storage Optimized
8 usable CPUs, 16 threads	48 usable CPUs, 96 threads	48 usable CPUs, 96 threads	48 usable CPUs, 96 threads
64 GB memory	512 GB memory (raw)	512 GB memory (raw)	512 GB memory (raw)
--	--	<b>3x NVIDIA L4 GPU</b>	--
7.68 TB raw storage	61 TB raw storage	61 TB raw storage	<b>123 TB raw storage</b>
2x 1GbE (1 active)	<b>3x quad port Intel X710 10GbE</b>	1x quad port Intel X710 10GbE	1x quad port Intel X710 10GbE
55 W power output	1100 W power output	1100 W power output	1100 W power output
Voyager1+ <b>battery option</b> (120 W output / 65 W backup)	--	--	--
FIPS140-2 Level 2	FIPS140-3 Level 2	FIPS140-3 Level 2	FIPS140-3 Level 2
MIL-STD-810G/H MIL-STD-461F	MIL-STD 810H MIL-STD 461G	MIL-STD 810H MIL-STD 461G	MIL-STD 810H MIL-STD 461G

## Oracle Roving Edge Station

For situations that require the mobility and remote installation capabilities of Oracle Roving Edge Infrastructure, combined with data center capacity, availability, and security, Oracle offers the expeditionary data center Oracle Roving Edge Station.

Station is a self-contained mobile data center, designed with US DoD and IC standards in mind for accreditation of classified workloads. It is capable of housing Oracle Roving Edge Infrastructure nodes, Oracle Compute Cloud@Customer (2 full racks), and other Oracle systems and hardware.

Product Highlights

Table: key properties and specifications of Oracle Roving Edge Station

Item	Description
<b>Data Center Services</b>	<p>An integrated data center solution with redundant services</p> <ul style="list-style-type: none"> <li>• Power management: N+1 topology with a redundant 20 kVA power module inside the UPS providing 14 min EOL UPS autonomy time for critical load</li> <li>• UPS capacity: 40kVA (N+1)</li> <li>• HVAC: PX cooling technology in N+1 configuration</li> <li>• Hot/cold aisle operations</li> <li>• Fire suppression system: active fire protection with VESDA heat and smoke detection and 3 smoke detectors</li> </ul>
<b>Mobility</b>	<p>A compact 25 ft / &gt;35,000 lbs expeditionary data center, transportable via military aircraft, ship, or truck. Supports shore power and generator with switchover. Capable of running on standard DoD TEP 30kW TQGs Generator.</p>
<b>Security</b>	<ul style="list-style-type: none"> <li>• Environmental monitoring server</li> <li>• CCTV: 4 exterior cameras and 2 interior cameras with DVR</li> <li>• Terminal with two forms of authentication: biometrical sensor and card reader with PIN</li> <li>• Additional GSA-approved X-10 main entrance lock</li> <li>• Shielded and EMI-filtered for MIL-STD-461 emanation abatement</li> </ul>
<b>Connectivity</b>	<p>Applications in the field can run connected or disconnected.</p> <p>Standard Ethernet is installed for local runtime. Mount points are available for StarLink Satellite dishes, and FastConnect VPN can be used to link to an OCI region.</p>
<b>Unified User Experience</b>	<p>Consistent with OCI, Station provides the same APIs, familiar user interfaces, and management tools. Organizations can confidently develop, deploy, secure, and manage a single software stack across Oracle's distributed cloud.</p>

Station Use Cases

The intended use of Oracle Roving Edge Station includes:

- Edge/Mobile command, control, communications, and computing (C4).
- Disaster relief, emergency response services, and humanitarian assistance.
- Supporting mobile, disconnected, or remote hospital operations.
- Large capacity data analysis for mining and mineral exploration, extraction, and operations.
- Managing AI/ML closer to data source. Proliferation of sensors and the data generation can be analyzed and filtered at location, reducing latency problems and bandwidth cost.
- Running operations during construction or for manufacturing sites without data center space.



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