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Oracle Compute Cloud@Customer X11

Oracle's fully managed, rack-scale infrastructure that lets customers use OCI compute on-premises to run application tiers in a simple subscription-based model

COMPUTE CLOUD@CUSTOMER

Oracle Compute Cloud@Customer lets you run applications and middleware using OCI Services running on high performance infrastructure in your data center and is an integral part of Oracle's distributed cloud architecture. This architecture allows customers to overcome some of the challenges of public cloud. Compute Cloud@Customer is ideal for customers who desire cloud operational and economic benefits, yet require their applications, middleware and data be located on-premises. This could be due to data residency laws, industry regulations, corporate policies, network latency, or the impracticality of moving applications away from other tightly coupled on-premises applications, databases and/or infrastructure.

Oracle Compute Cloud@Customer runs the same compute, storage and network services as in Oracle Public Cloud, delivering the simplicity, agility and elasticity of a cloud-based deployment. With this service running in your data center, customers retain control of data and physical security. The exact same APIs and tools available in Oracle Public Cloud are also available on Compute Cloud@Customer for a truly consistent application development framework.

With the ability to directly connect to Exadata Cloud@Customer, customers have the most modern, secure, available and high-performance cloud platform to run applications and databases on-premises, all managed and supported by Oracle, while benefitting from cloud operations, economics and agility.

COMPUTE CLOUD@CUSTOMER HARDWARE

Compute Cloud@Customer delivers the same compute shapes and storage capabilities as in Oracle Public Cloud – AMD E6 compute and block/file/object storage. Internal connectivity between the infrastructure components is enabled by an internal 100 Gbps Ethernet backbone. Up to 800 Gbps data center connectivity from/to Compute Cloud@Customer is provided using standard 10G, 25G, 40G or 100G Ethernet links. A low latency Direct Connect private network connection (up to 800 Gbps) to Exadata Cloud@Customer is additionally available.

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COMPUTE CLOUD@CUSTOMER SOFTWARE

Compute Cloud@Customer software stack utilizes the same infrastructure APIs, CLI and SDK as public Oracle Cloud Infrastructure which enables full compatibility with OCI, providing customers with OCI compute on-premises. This positions customers to potentially migrate workloads as needed to OCI in the future with very little effort or disruption or continue to experience OCI compute on-premises. Utilizing the infrastructure-as-code feature available with Compute Cloud@Customer, capabilities such as Software Defined Compute, Software Defined Storage and Software Defined Networking are native to Compute Cloud@Customer.

Oracle Cloud Infrastructure Kubernetes Engine (OKE)

OKE - a managed Kubernetes service - simplifies the operations of enterprise-grade Kubernetes at scale. OKE lets you deploy Kubernetes clusters and ensure reliable operations for both the control plane and the worker nodes with automatic scaling, patching and security updates. OKE on Compute Cloud@Customer brings basic cluster capabilities on-premises delivering reduced overall utilization, modernization and consolidation and lower total cost of ownership.

GPU Expansion Options for Oracle Compute Cloud@Customer

Oracle Compute Cloud@Customer featuring NVIDIA L40S GPUs is a pivotal addition to Oracle's suite of on -premises cloud solutions, which includes Oracle Dedicated Region Cloud@Customer (DRCC) and Oracle Exadata Cloud@Customer. Oracle Compute Cloud@Customer can scale up to 48 NVIDIA L40S GPUs and is the ideal choice for organizations seeking high-performance compute without the need for a full cloud region on-premises. Oracle brings AI/ML acceleration and scalable compute power to enterprises in a flexible, cost-effective solution, catering to all deployment scales and requirements of customers.

CLOUD CONTROL PLANE

The Cloud Control Plane is a sophisticated software suite which runs in the Oracle Public Cloud, also known as Oracle Cloud Infrastructure (OCI). Customers can connect to the Cloud Control Plane in OCI through a secure link using a web browser, command line interface (CLI), REST APIs, or language-specific SDKs.

The Cloud Control Plane includes a sophisticated identity management system which allows multiple departments or groups to share an Oracle Cloud Infrastructure tenancy. Compartments enable access control across resources and provide an effective mechanism to organize and control access to resources such as Compute Cloud@Customer within a single tenancy.

The Cloud Control Plane is used to deploy customer assets on Compute Cloud@Customer. It is also used to perform lifecycle operations such as provisioning, patching, backup, etc. Cloud Control Plane is also used to track customer usage of cloud resources and bill only for the resources used.

Related services

The following services are complementary to Compute Cloud@Customer:

- Oracle Cloud Infrastructure
- Oracle Compute Cloud@Customer Isolated
- Oracle Roving Edge Infrastructure
- Oracle Exadata and Exadata Cloud@Customer
- Product Support Services
- Professional Services

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Secure Cloud Control Plane Connectivity

Cloud Control Plane instructions are sent to the Compute Cloud@Customer system through a dedicated secure tunnel between the Compute Cloud@Customer and the Cloud Control Plane. Management nodes installed in the Compute Cloud@Customer rack host the secure tunnel endpoint and act as a gateway for access to the infrastructure. They also host components that orchestrate the cloud automation, aggregate and route telemetry messages from the Compute Cloud@Customer environment to the Oracle Support Services infrastructure, and host software images and updates.

Loss of connectivity between the Cloud Control Plane and the Compute Cloud@Customer system do not impact VMs and applications running on the Compute Cloud@Customer.

ORACLE OPERATOR ACCESS CONTROL

Oracle Operator Access Control (OpCtl) is an Oracle Cloud Infrastructure access management service for Compute Cloud@Customer. OpCtl provides customer interfaces to:

- Control access to Compute Cloud@Customer infrastructure by Oracle staff, limiting when they have access, components they can access, and the privileges they have to access components
- Observe and record Oracle operator commands and keystrokes Oracle staff execute on Compute Cloud@Customer infrastructure
- Terminate Oracle operator connections at the customer's discretion

OpCtl is ideal for regulated industries such as banking and financial services, energy utilities, and defence, and any industry where risk management is a key pillar of application success. These controls are a standard part of Compute Cloud@Customer and are available at no extra cost to Oracle customers.

ORACLE CLOUD OPERATIONS

Oracle Cloud Operations manages, monitors, and maintains components of the Compute Cloud@Customer via the Cloud Control Plane.

- Components managed include:
  - Storage servers and compute nodes
  - Power distribution units (PDUs)
  - Data Network switches
  - Management switches
  - Management nodes
  - Oracle KVM (hypervisor)
  - System software and all firmware
- Maintenance activities include:
  - Bug and security fixes for the infrastructure up to the hypervisor layer
  - System Software updates and upgrades

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- Proactive firmware updates and upgrades to any of the hardware components including compute, networking, and storage components

CLOUD SUBSCRIPTION OVERVIEW

Infrastructure Subscription

Compute Cloud@Customer is available through an infrastructure subscription offering that requires a minimum term of 48 months. Customers can choose a configuration starting with a base system with 552 OCPUs and 150TB of storage. Customers with additional resource requirements may choose larger Compute Cloud@Customer configurations which include higher compute and storage capacity.

Customers can also expand the compute and storage capacity during the lifetime of a subscription. Granular scalability of compute and storage servers lowers infrastructure costs by enabling customers to properly size their hardware configuration to match their workload requirements.

All the compute, memory and storage for the configuration chosen is included in the subscription price.

Detailed specifications for each Compute Cloud@Customer configuration are provided in Table 2 below.

Customers can deploy their existing software licenses on Compute Cloud@Customer. Further information about Oracle Linux, Java SE and GraalVM entitlements can be found here.

MIGRATION TO COMPUTE CLOUD@CUSTOMER

Full compatibility between on-premises applications and applications deployed on Compute Cloud@Customer makes migration to Compute Cloud@Customer simple and low risk. Oracle recommends using available cloud migration tooling as a best practice for moving workloads to Compute Cloud@Customer.

For more information on moving workloads to Oracle Cloud, visit https://www.oracle.com/webfolder/assets/digibook/cloud-migration/index.html

SECURE, ON-PREMISES MANAGED CLOUD FOR ALL YOUR APPLICATIONS

Enterprise-proven capabilities are now instantly available to maximize productivity, lower risk and accelerate time-to-value. No changes to on-premises applications are required either, enabling rapid and easy migration to the cloud, or deployment of a hybrid cloud strategy. Customers can bring existing on-premises software licenses, thus leveraging existing investments. Customers no longer need to dedicate limited IT talent to managing and maintaining infrastructure.

Oracle uniquely delivers all these benefits in both the public cloud and in customer's own data center with Compute Cloud@Customer.

For more information, visit https://www.oracle.com/compute-cloud-at-customer

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Table 1 – Oracle Compute Cloud@Customer: Infrastructure Features

	INFRASTRUCTURE	OCI INTEROPERABILITY
OCI Services and Features	**Compute** **VM Shapes** • Flex Shapes: 1-96 OCPUs, 1-64 GB per OCPU, up to 960 GB per instance • Supported guest operating systems include Oracle Linux, Oracle Solaris, 3rd Party Linux and Microsoft Windows. See product documentation for guest requirements. **Storage** **Block** • "Balanced" and (optional) "Performance" pools • On-demand and policy-based backups **File** • NFS v3, v4.1, SMB 3.1/2.0 • Snapshots **Object** • OCI object store **Network** • VCNs, Subnets, Gateways, Security Lists, Route Tables, … **Governance** • Integration with OCI IAM and Active Directory	**User & Administrative Access** **Portability** **Load Balancer**
Available OCI Resources	**Compute** • 552 – 6072 OCPUs • 6.7 – 73.7 TB memory **Storage** • 150 TB – 3.65 PB Combined Balanced Block, File, and Object storage • Up to 1.2 PB Performance Block storage	**Governance** • OCI IAM integrates with customer tenancy and can be further partitioned using compartments

Table 2 – Compute Cloud@Customer: Technical Specifications

The Compute Cloud@Customer is available in these SKU configurations in the base rack:

ITEM	3-NODE	6-NODE	9-NODE
Number of Available OCPUs	552	1104	1656
Memory Available for Guest VMs (TB)	6.7	13.4	20.1
Usable storage capacity (TB)	150	150	150

Table 3 – Compute Cloud@Customer: Expansions

The Compute Cloud@Customer configurations can be expanded using these expansion SKUs

ITEM	CONFIG
Compute Expansion	3-nodes, 552 OCPUs, 6.7 TB Memory
Balanced Storage Expansion	175 TB usable
Performance Storage Expansion	60 TB usable

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Table 4 – Compute Cloud@Customer: Environmental Specifications

METRIC	3-NODE (SMALL)	6-NODE (MEDIUM)	9-NODE (LARGE)
Height	78.66 in, 1998 mm (42 RU)		
Width	23.62 in, 600 mm		
Depth	47.24 in, 1200 mm		
Weight	1302 lbs, 592 Kg	1476 lbs, 671 Kg	1650 lbs, 750 Kg
Maximum power usage Watts	10759	14659	18559
Typical power usage[1] Watts	7531	10261	12961
Cooling at maximum usage BTU/Hr	36710	50017	63323
Cooling at typical usage BTU/Hr	25696	35011	44325
Airflow at maximum usage[2] CFM	1700	2316	2932
Airflow at typical usage[2] CFM	1190	1621	2052

METRIC	E6 COMPUTE	STORAGE ENCLOSURE DE3-24C	STORAGE ENCLOSURE DE3-24P
Height	3.42 in, 86.9 mm (2 RU)	6.89 in, 175 mm (4 RU)	3.42 in, 86.9 mm (2 RU)
Width	17.52 in, 445 mm	19 in, 483 mm	19 in, 483 mm
Depth	29.76 in, 756 mm	24.8 in, 630 mm	24.8 in, 630 mm
Weight	58 lbs, 26.3 Kg	101.41 lbs, 46 kg	52.91 lbs, 24 kg
Maximum power usage Watts	1300	285	238
Typical power usage[1] Watts	910	200	167
Cooling at maximum usage BTU/Hr	4438	973	812
Cooling at typical usage BTU/Hr	3105	875	568
Airflow at maximum usage[2] CFM	205	45	40
Airflow at typical usage[2] CFM	144	32	28

1) Operating temperature / humidity: 5 ºC to 32 ºC (41 ºF to 90 ºF), as measured by an industry grade temperature measurement device directed at the front bezel of the servers, 10% to 90% relative humidity, non-condensing

2) Operating altitude: Up to 3,048m, max. ambient temperature is de-rated by 1 ºC per 300m above 900m.

1 Typical power usage varies by application load

2 Airflow must be front-to-back

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Table 5 – Oracle Compute Cloud@Customer: System Hardware

COMPUTE	STORAGE	NETWORKING
Compute Nodes • CPU: 2x 5th Gen AMD EPYC™ processors, 96C/2.6GHz/400W • DRAM: 2.25TB, 24x 96GB DDR5-6400 • Boot: 2x M.2 480GB NVMe SSD	**Controllers** **Oracle ZFS Storage ZS11-2** Dual-controller HA cluster • CPU: 2x 5th Gen AMD EPYC™ processors, 32C/2.95GHz/210W • DRAM: 1.5TB, 24x 64GB DDR5-6400 • Boot: 2x U.2 3.84TB NVMe SSD	**Leaf Switches** 100 Gbps flexible speed switch using QSFP28 ports **Spine Switches** 100 Gbps flexible speed switch using QSFP28 ports • QSFP+ transceivers (0 to 4) • QSFP28 transceivers (0 to 4)
Management Nodes • CPU: 2x 5th Gen AMD EPYC™ processors, 32C/2.6GHz/210W • DRAM: 1.5TB, 24x 64GB DDR5-6400 RDIM • Boot: 2x 480GB M.2 NVMe • Storage: 2x 3.84TB NVMe SSD	Storage High Capacity (DE3-24C) • Minimum 1, maximum 20 disk enclosures • 20x 22TB, SAS-3, 3.5-inch, 7200 RPM HDDs • 2x read SSD accelerator • 2x write SSD accelerator High Performance (DE3-24P) • Up to 20 disk enclosures • 20x 7.68TB SAS-3 2.5-inch SSDs • 2x write SSD accelerator	**Management Switch** 48-port 1/10 Gbps Ethernet Switch

REGULATIONS[1,2,3]	CERTIFICATIONS[2,3]	EUROPEAN UNION DIRECTIVES[3]
Product Safety • UL/CSA 60950-1, EN 60950-1, IEC60950-1 CB Scheme with all country differences • UL/CSA 62368-1, EN 62368-1, IEC62368-1 CB Scheme with all country differences **EMC** • Emissions: FCC CFR 47 Part15, ICES-003, EN55032, KSC9832, EN61000-3-11, Immunity: EN55024, KSC9835	• North America (NRTL) • CE (European Union) • International CB Scheme • HSE Exemption (India) • BSMI (Taiwan) • RCM (Australia) • VCCI (Japan) • KC (Korea)	• 2014/35/EU Low Voltage Directive • 2014/30/EU EMC Directive • 2011/65/EU RoHS Directive • 2012/19/EU WEEE Directive

1 All standards and certifications referenced are to the latest official version. For additional details, please contact your sales representative.
2 Other country regulations/certifications may apply.
3 In some cases, as applicable, regulatory and certification compliance were obtained for the shelf-level systems only

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