BLOG POST

OCI Architecture and Regions Make the Infrastructure Ideal for Enterprise Workloads and More

Oracle Designed and Operates an Advanced Cloud Infrastructure That Brings Enterprise Quality to Everyone

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INTRODUCTION

Since the launch of Oracle Cloud Infrastructure (OCI) 2.0, Oracle has made massive strides to make OCI the best cloud for enterprise workload operation. Obviously, that benefit has been the case for native Oracle tech stack workloads, but with advances over recent years, OCI has become a viable cloud option for non-Oracle and cloud-native workloads as well.

| Business Themes			
Data-to-Decisions	Technology Optimization	Digital Safety & Privacy	New C-Suite

WHAT ARE THE KEY QUALITIES FOR CLOUD?

There are many reasons for enterprises to move their workloads to the cloud. The following are five primary drivers that determine the success of a cloud infrastructure vendor (see Figure 1).

1. **Elasticity is key.** The very nature of the cloud is its elasticity—the ability to assign all computing resources (compute, storage, network) in an elastic fashion. Workloads that need more computing resources receive more, and when they require less, those computing resources are made available for other users. The elastic nature of the cloud on the architecture side is also reflected on the commercial side with "pay as you use" mechanisms that charge enterprises only for the computing resources they have consumed.

2. **Workload fit is paramount.** Enterprises have different workloads that operate their processes. For instance, the nature of an email server is very different from the nature of a transactional system, and both are very different from the nature of an analytical system. The difference in workload natures requires clouds to be flexible in terms of provisioning different footprints (often called "shapes") that are ideal for the nature of the workload in question.

Figure 1. Five Key Cloud Qualities
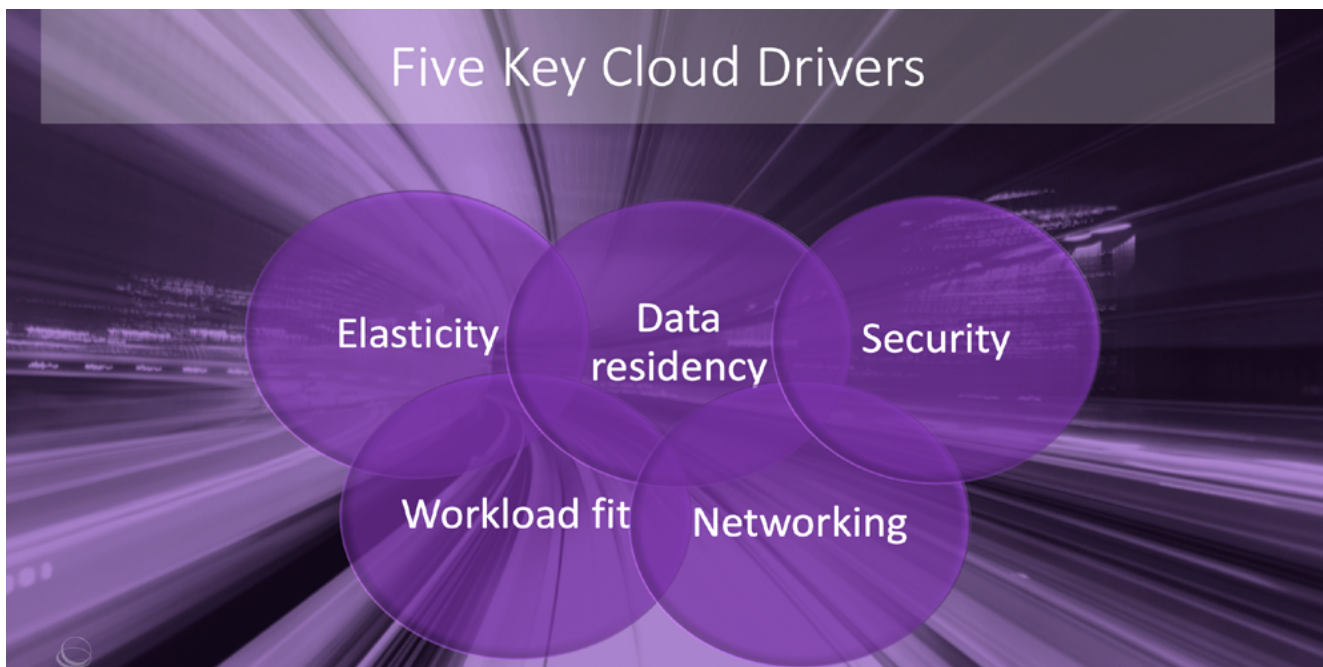
Source: Constellation Research

3. **Data residency matters.** Compliance in data privacy and residency has become a hot topic, with more and more countries introducing data residency mandates. This creates a headache for enterprises, which need to comply with these mandates or otherwise face fines. The good news is that cloud providers are rapidly expanding their footprint to give enterprises more and more choices inside different countries.

4. **Network is the secret sauce.** The long-neglected network is really the success factor of cloud infrastructure, both from an extranet perspective—how different cloud data centers are connected— and from an inside-the-data-center perspective—how dynamic and resilient the computing resources connected for powering certain workloads are. Both the performance and the cost of cloud workloads are determined largely by a cloud provider's network capability.

5. **Security rules it all.** Security is pivotal for cloud computing, not only to convince the last cloud skeptics that the cloud data centers are operating in a more secure way than the average corporate data center but also to reduce harm to cloud customers from nefarious actors, be they criminals or even state agents.

WHAT ARE THE KEY OCI DIFFERENTIATORS?

Over the past several years, Oracle has built out its differentiators for OCI. The following are most prominent among them:

- **An enterprise cloud from an enterprise tech vendor.** Oracle has been serving enterprise technology needs since the very start of the company, so it is no surprise that its cloud is best at operating enterprise workloads. And Oracle knows that enterprises do not use Oracle products exclusively, so the provision of fast interconnects with Microsoft Azure in eight regions is critical to reflect real-world enterprise IT landscapes.

- **A superior network approach.** Oracle operates a dedicated virtual network in each data center, eliminating the "noisy neighbor" challenge and providing consistent network performance and low latency for enterprise applications. Similarly, cloud-based layer 2 networking enables key on-premises technologies such as VMware and Oracle Real Application Clusters (RAC), enabling high availability

(HA) for OCI customers without rearchitecting many existing apps. And with Remote Direct Memory Access over Converged Ethernet (RoCE), Oracle is efficient at scaling its Exadata workloads and high-performance-computing (HPC) workloads.

- **A proven cloud operational model.** Oracle has created a cloud control computer that automates the secure delivery of isolated compute instances within moments, including bare metal. In addition to autoscaling by adding more instances, OCI can also flex up and down for most enterprise workloads with custom shapes from one to 64 cores, custom memory, adaptive block storage that shifts input/output operations per second (IOPS) as needed, and flexible network balancing. OCI strikes a balance between providing elasticity and maximum security and performance isolation for each customer.

- **A complete cloud infrastructure platform.** OCI enables enterprises to operate Oracle, custom, and independent-software-vendor (ISV) applications next to each other. It offers developer services, containers, functions, compute, and storage as well as application integration, analytics and business intelligence (BI), networking, support for Oracle Database, machine learning and AI, a data lakehouse, open source databases such as MySQL, and support for any operating system as well as native VMware—all operated by OCI security, observability, and management and compliance services. Finally, OCI offers free choice of deployment across public clouds (there is a government cloud as well), hybrid cloud with Cloud@Customer, and on-premises deployment with Oracle Dedicated Region and the Oracle Roving Edge platform.

- **Oracle apps and Oracle infrastructure in one cloud.** Operating not only the infrastructure-as-a-service (IaaS) and platform-as-a-service (PaaS) layer but also the software-as-a-service (SaaS) layer in the same cloud infrastructure brings advantages to enterprises from a data access, performance, and total-cost-of-ownership (TCO) perspective.

- **A cloud region strategy in line with enterprise demands.** Enterprises already operate globally or must become more global by the day. With 33 regions currently live (as of November 9, 2021) and 11 more coming soon, OCI is growing faster than the other cloud service providers (CSPs) and is keeping pace with the speed of enterprise globalization (see Figure 2) and data residency regulations. OCI's hybrid cloud strategy further supports data locality needs.

Figure 2. Map of Oracle's OCI Regions—Present and Planned

Oracle Cloud Infrastructure Global Footprint

November 2021: 33 regions live, 11 planned, 8 Azure Interconnect Regions

Commercial
Commercial planned
Government
Microsoft Interconnect Azure
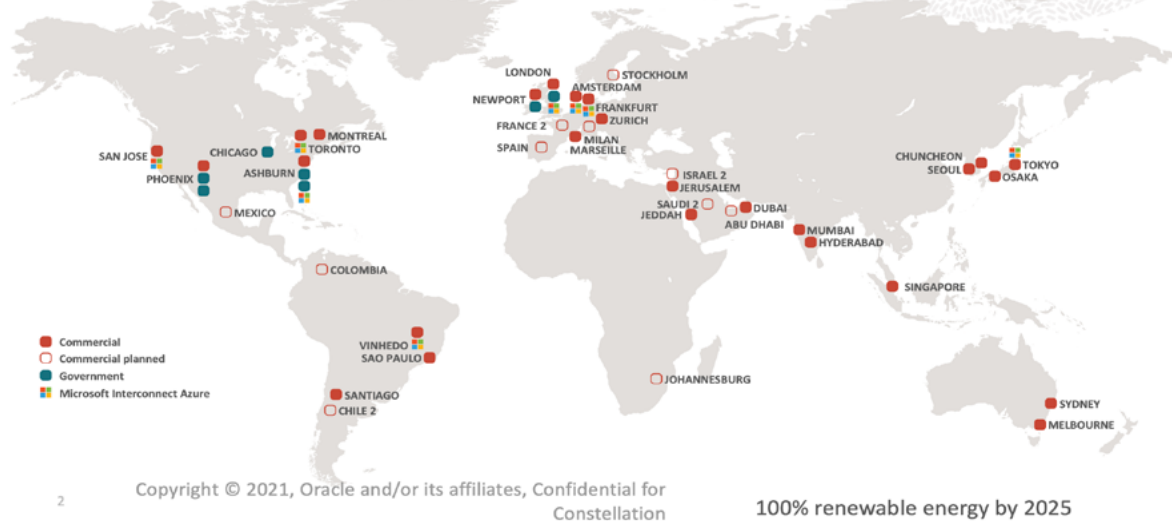
100% renewable energy by 2025

Source: Constellation Research

- **A high security standard.** Oracle has built its own custom security chip, which helps ensure clean compute for every workload and every customer. This architecture and zero-trust network isolation act as a foundation for layers of data and application security.

ADVICE FOR CXOS

Constellation has the following recommendations for CxOs regarding OCI:

1. **Understand what OCI can do for your enterprise.** Unfortunately, current common thinking is that all clouds are more or less the same. That is not the case: Each of the public clouds available today has a different origin and history and is developed and maintained by a vendor with its own corporate DNA. Across all the cloud vendors, Oracle has the most enterprise DNA, and that shows in OCI.

2. **Realize that cloud architectures matter.** The cloud is inevitable (long-term) as a platform, and enterprises need to run in the cloud. Pick the cloud that works best for your enterprise, but pick carefully, because data gravity (data pulls in more data) is real and data egress costs are real as well. Oracle's policy of having almost no data egress cost makes OCI an attractive cloud offering.

3. **Account for functional richness.** OCI not only features the richness of the Oracle PaaS platforms but also offers all Oracle SaaS offerings. In case a SaaS application is needed for enterprise demands in the future, Oracle offers SaaS automation in OCI that eliminates data transfers, port and networking configurations, and other headaches.

4. **Evaluate OCI as an existing Oracle customer.** The cloud is inevitable for enterprises, and Oracle has made a lot of progress with OCI, so Oracle customers should evaluate OCI and see if it brings their enterprise TCO advantages over operating on-premises or via their current cloud setup.

5. **Conduct a cost/benefit analysis as an Oracle prospect.** There are only a few public cloud platforms, and even if an enterprise is not an Oracle customer, it makes sense for it to evaluate OCI and see what kind of cost/benefit it can achieve.

6. **Consider OCI for next-generation applications.** Enterprises need to build next-generation applications that reflect the new best practices in the era of Infinite Computing[1]. All use cases for next-generation applications require cloud infrastructure, making OCI an offering that is worth CxO consideration.

7. **Practice commercial prudence.** As always, CxOs need to practice commercial prudence when it comes to platform decisions. One-time costs, ongoing costs, capex versus opex, and lock-in effects are their key considerations before making platform decisions. Cloud platform decisions are no exception to the need for commercial prudence in all phases of the purchase, adoption, and usage cycle.

MYPOV

Enterprises need to innovate, become more productive, and practice enterprise acceleration. Adopting cloud platforms is a key and proven strategy for getting there.

It is good to see Oracle finding momentum with OCI. This is welcome news for both Oracle's current customers and the industry overall, which needs more competition with the current triumvirate of AWS, Microsoft, and Google. Oracle's track record with enterprise software, its lack of any consumer-goods-related ambitions, and its disruptive pricing approach to lower TCO make OCI an attractive cloud offering for enterprises.

RELATED RESEARCH

For the Market Overview, see: Holger Mueller, "Next-Gen Computing: The Enterprise Computing Model for the 2020s," Constellation Research, September 14, 2018. https://www.constellationr.com/research/next-gen-computing-enterprise-computing-model-2020s

For a Constellation ShortList™ on IaaS vendors, see: Holger Mueller, "Constellation ShortList™ Global IaaS for Next-Gen Applications," Constellation Research, February 17, 2021. https://www.constellationr.com/research/constellation-shortlist-global-iaas-next-gen-applications-1

Holger Mueller, "The Era of Infinite Computing Triggers Next-Generation Applications," June 1, 2018. https://www.constellationr.com/research/era-infinite-computing-triggers-next-generation-applications

For the people-leader perspective on the skills shortage and the need for enterprise acceleration, see: Holger Mueller, "Why People Leaders Must Embrace Enterprise Acceleration," Constellation Research, July 3, 2018. https://www.constellationr.com/research/why-people-leaders-must-embrace-enterprise-acceleration

For more best-practice considerations for PaaS offerings, see: Holger Mueller, "As PaaS Turns Strategic, So Do Implementation Considerations," Constellation Research, May 9, 2018. https://www.constellationr.com/research/paas-turns-strategic-so-do-implementation-considerations

For more on next-gen applications and PaaS offerings, see: Holger Mueller, "Why Next-Gen Apps Start with a Next-Gen Platform as a Service," April 5, 2018. https://www.constellationr.com/research/why-next-gen-apps-start-next-gen-platform-service

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For additional IaaS and PaaS selection criteria, see: R "Ray" Wang and Holger Mueller, "Key Questions for Every Public Cloud IaaS/PaaS Decision Matrix," Constellation Research, January 24, 2018. https://www.constellationr.com/research/key-questions-every-public-cloud-iaaspaas-decision-matrix

For an example of digital transformation, see: Holger Mueller, "Lufthansa Digitally Transforms the Workplace for Flight Managers," Constellation Research, February 27, 2018. https://www.constellationr.com/research/lufthansa-digitally-transforms-workplace-flight-managers

Check the Constellation Research website at www.constellationr.com *for more Offering Overviews for the vendors covered in "Market Overview—Next-Gen Computing: The Enterprise Computing Model for the 2020s."*

For information on enterprise application platforms, see: Holger Mueller, "Constellation ShortList™ Enterprise Application Platforms," Constellation Research, February 10, 2021. https://www.constellationr.com/research/constellation-shortlist-enterprise-application-platforms

For more on next-gen databases, see: Holger Mueller, "Constellation ShortList™ Next-Gen Databases: RDBMS for On-Premises," Constellation Research, February 10, 2021. https://www.constellationr.com/research/constellation-shortlist-next-gen-databases-rdbms-premises-4

For more on next-gen computing platforms, see: Holger Mueller, "Constellation ShortList™ Next-Generation Computing Platforms," Constellation Research, February 10, 2021. https://www.constellationr.com/research/constellation-shortlist-next-generation-computing-platforms-2

Oracle-Related Research

For information on Oracle Application Express (Oracle APEX), see: Holger Mueller, "Oracle Makes Its Great Database Even Better—and Adds Low Code to It," Constellation Research, February 10, 2021. https://www.constellationr.com/research/oracle-makes-its-great-database-even-better-and-adds-low-code-it

For information on logging and observability, see: Holger Mueller, "Oracle Brings Holistic Observability to the Enterprise," Constellation Research, November 19, 2020. https://www.constellationr.com/research/oracle-brings-holistic-observability-enterprise

For information on Oracle Exadata Cloud Service, see: Holger Mueller, "Oracle Exadata Cloud Service X8M Brings Leading Elasticity to Enterprise Needs," Constellation Research, October 19, 2020. https://www.constellationr.com/research/oracle-exadata-cloud-service-x8m-brings-leading-elasticity-enterprise-needs

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For information on Oracle Dedicated Region and Oracle Autonomous Database, see: Holger Mueller, "Oracle Raises the Stakes in the Next-Gen Compute Platform Market," Constellation Research, July 22, 2020. https://www.constellationr.com/research/oracle-raises-stakes-next-gen-compute-platform-market

ENDNOTE

[1] *Mueller uses the term* Infinite Computing *to describe how computing resources have become nearly infinite for enterprise purposes, effectively eliminating the need to size hardware resources. For more details, see: Holger Mueller, "The Era of Infinite Computing Triggers Next-Generation Applications," Constellation Research, June 1, 2018.* https://www.constellationr.com/research/era-infinite-computing-triggers-next-generation-applications

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Prior to joining Constellation Research, Mueller was VP of products for NorthgateArinso, a KKR company. He led the transformation of products to the cloud and laid the foundation for new business-process-as-a-service (BPaaS) capabilities. Previously he was the chief application architect with SAP and was also VP of products for FICO. Before that he worked for Oracle in various management functions—on both the application development (CRM, Fusion) and business development sides. Mueller started his career with Kiefer & Veittinger, which he helped grow from a startup to Europe's largest CRM vendor from 1995 onward. Mueller has a Diplom-Kaufmann degree from the University of Mannheim, with a focus on information science, marketing, international management, and chemical technology. A native European, Mueller speaks six languages.

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