Generation 2 Cloud Autonomous Infrastructure

Autonomous Database → First Step on the Way → Autonomous Cloud

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Safe Harbor

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Generation 2 Cloud

Autonomous + Secure

+

Generation 1 Cloud

Serverless + Elastic

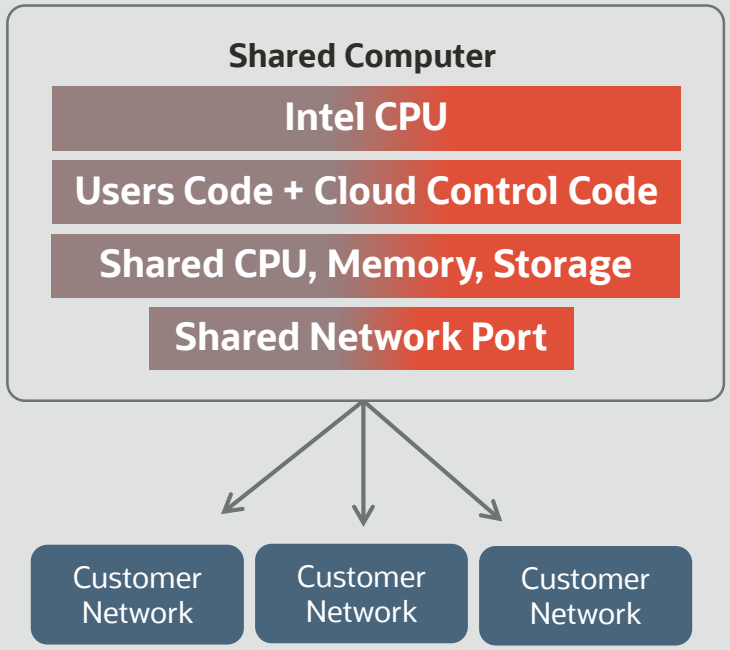
Autonomous Systems: Benefits

Eliminate Human Labor – Eliminate Human Error

- Clouds are Complex… It's Easy to Make Mistakes
- **Machine Learning** Enables Autonomous Systems
- Pay-per-Use Resource Sharing: Key Economic Promise of Gen 1 Cloud
- Eliminate Human Labor: Key Economic Advantage of Gen 2 Cloud
- Eliminate Human Error: **Only** Way to Prevent Data Theft

Gen 1 Cloud

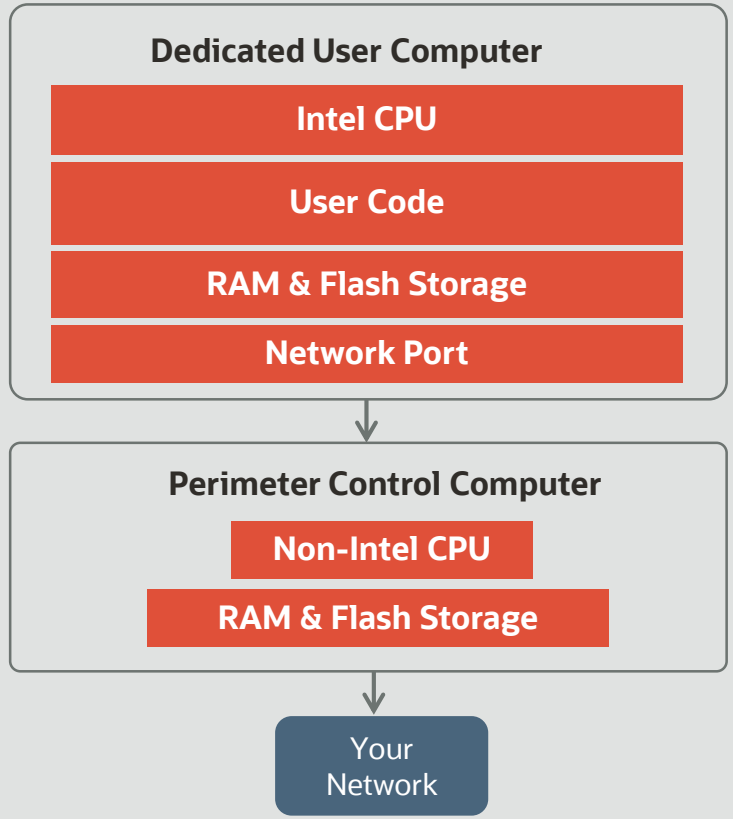
Shared Computers
User Code + Cloud Control Code



Create any Instance

Gen 2 Cloud

Perimeter Control Computers
No User Code



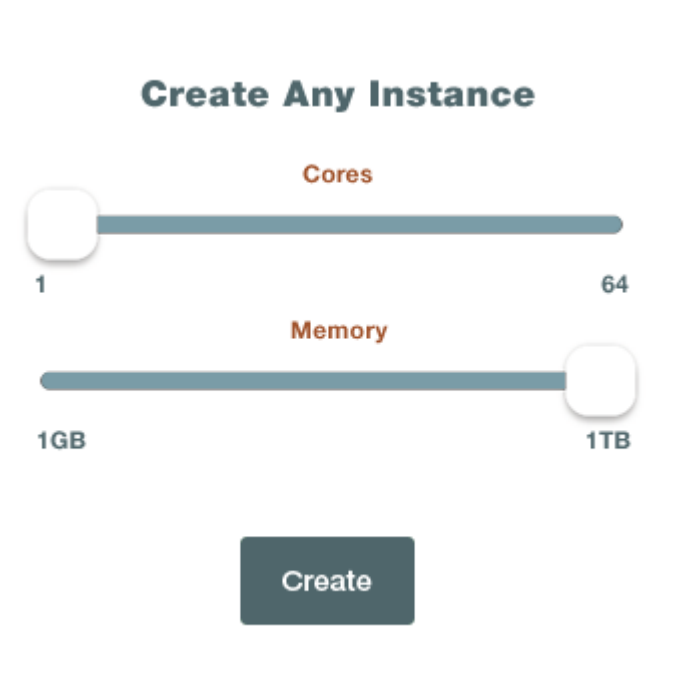
Shared Cloud Control Computer Vulnerabilities

- Cloud Provider Can See Customer Data
- User Code Can Access Cloud Control Code

Separate Network of Perimeter Control Computers

- Oracle Cannot See Customer Data
- No User Access to Perimeter Control Computer or Code

Announcing: OCI Next Gen Compute Platform



✓ **True Flexibility**

Pick exactly the number of cores you need

✓ **True Elasticity**

Autonomously scale cores up/down

✓ **True Availability**

Zero Downtime even when auto-scaling cores

Announcing: OCI Next Generation Storage Platform

Attach Storage

- ✓ **True Flexibility and Elasticity**
  Pick starting amount of storage
  Auto-scale up while running as needed
- ✓ **Performance On Demand**
  Optimize between high-performance and low-cost
- ✓ **Always Available**
  Zero downtime. Period.

Announcing: Cluster Networking

Available Now

- Seamless deployment of Bare Metal RDMA Clusters in OCI

- Instances Supported:

  - **Available Today:** HPC Instances: 36 cores, 3.7Ghz, 384GB RAM, 6.7TB NVME, 100G RDMA

  - **Coming Soon:** GPU Bare-Metal Instances: 8x GPUs, 2TB RAM, 25TB NVME, 8x 100G RDMA

Announcing: Dedicated VM Hosts

Available Now

Security of Bare Metal with Easy-to-Use VMs

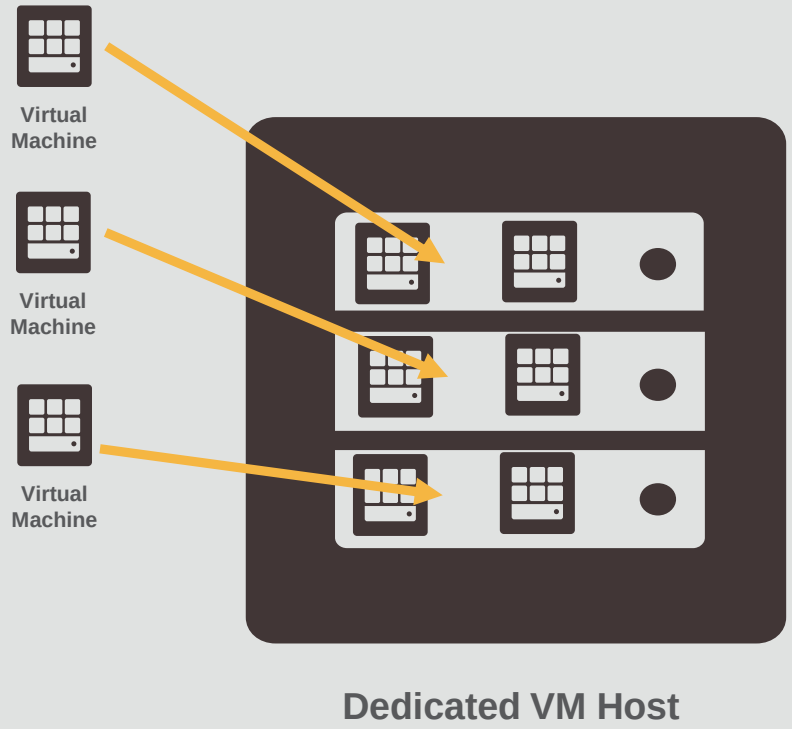
Single-Tenant Secure Isolation Zone

No shared hardware or other customer's VMs

Barrier of Perimeter Control Computers

Pay only for the Dedicated VM Host

No additional charge for VMs running on it



Oracle Gen 2 Cloud

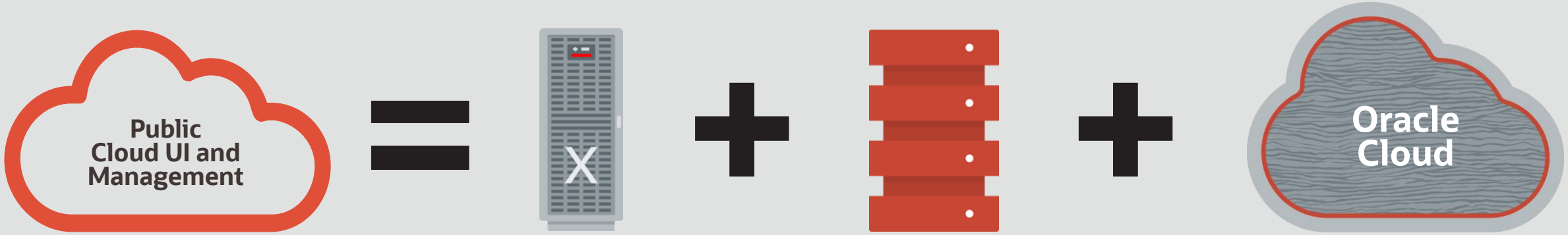
One Simple Rule to Prevent Catastrophic Data Loss

Rule #1: Store your Data in an Autonomous Database

No Human Labor – No Human Error – No Data Loss

Oracle Autonomous Database

Hides Database & Infrastructure Complexity



Complete Infrastructure Automation

Complete Database Automation

Automated Data Center Operations and **Machine Learning**

Oracle Autonomous Database

Eliminates Human Errors – Tolerates HW and SW Errors

Automatic Fault Tolerant Failover, Backup & Recovery

- Eliminates human errors: No human labor – no human error
- Continues to run during database server failure
- Continues to run during a database software failure
- **99.995% Availability**: total downtime less than 2.5 minutes per month
- Amazon databases stop running during these failures

Keep Your Data Safe

Another reason why Oracle is… **25x more reliable than Amazon**

Oracle Autonomous Database

Converged Features

Multitenant for Efficient, Agile Database Clouds
In-Memory for Database Acceleration
Sharding for Hyperscale and Geo Distribution
Native JSON for Document Data
In-Memory Ingest for Fastest IoT
Cloud SQL for integrating Object Store Data Lake
AutoML for simple integrated Machine Learning
Persistent Memory Store for Lowest Latency
Blockchain Tables for Preventing Fraud
Spatial and Graph for Mapping and Social Networks
And many more …


Multitenant


In-Memory Analytics

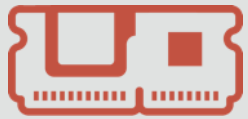

Hyperscale

JSON


In-Memory IoT


Cloud Integration


Blockchain


Persistent Memory


Machine Learning


Spatial


Graph

Announcing...

Oracle Autonomous Linux

—

World's First Autonomous Operating System

Available Now

Oracle Autonomous Linux

Runs Gen 2 Cloud Infrastructure & Applications

Oracle Public Cloud Runs Autonomous Linux

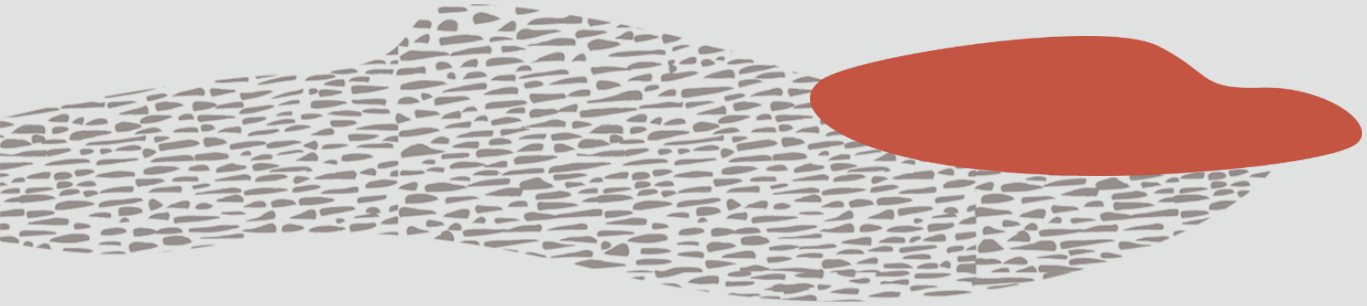
Applications
Infrastructure
100,000s of servers
100s millions of tx/day

Oracle's Engineered Systems Run Oracle Autonomous Linux

Exadata
Big Data Appliance
Database Appliance
Private Cloud Appliance

We Develop Our Products on Oracle Autonomous Linux

Applications
Database
Middleware
10,000s of developers



99.995% High-Availability

Oracle Autonomous Linux

Always Reliable — Always Secure

The World's only Autonomous Operating System

- Automatic Provisioning
- Automatic Scaling
- Automatic Tuning
- Automatic Online Patching and Updating
- Automatic Security Monitoring and Remediation

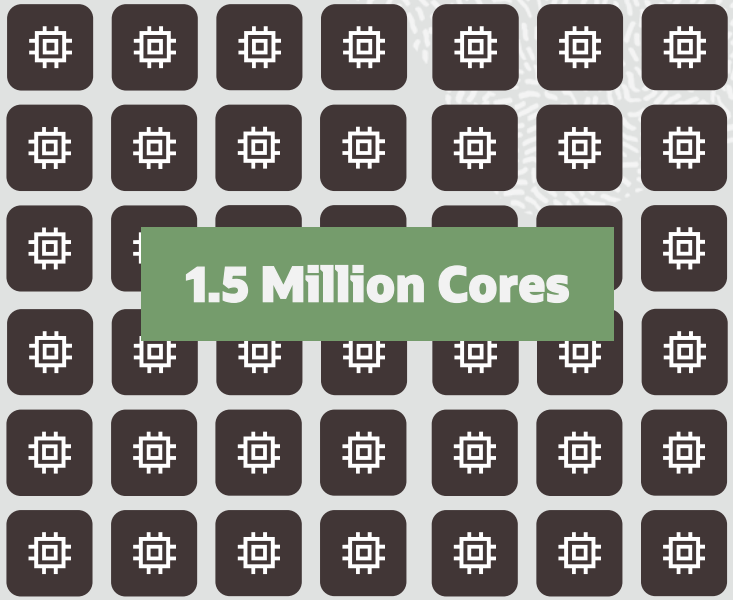
100% IBM RedHat Compatible

Oracle Autonomous Linux

Ksplice Live Real-Time Online Patching

4 hours

Applied to



150M patches applied in Gen 2 Cloud in 4 hours for Spectre/Meltdown Bugs – No Downtime

Announcing:

Oracle Data Safe

—

Autonomous Database Security Automation

Announcing:

Oracle Data Safe

Unified Database Security Control Center

- Security Configuration Assessment
- User Risk Assessment
- User Activity Auditing
- Sensitive Data Discovery
- Data Masking

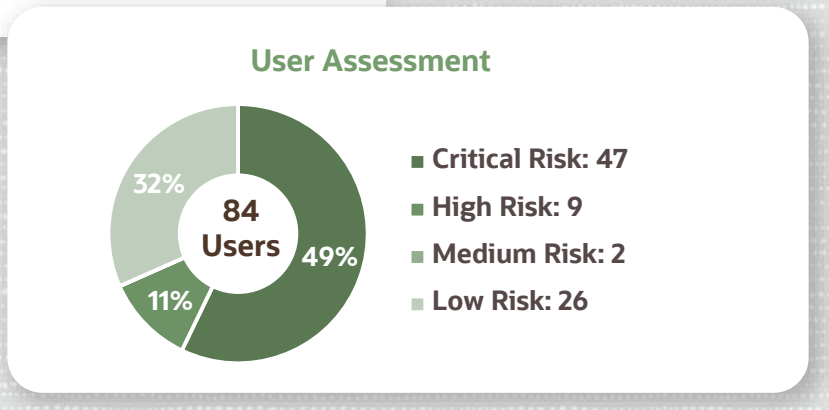
Saves time and mitigates security risks

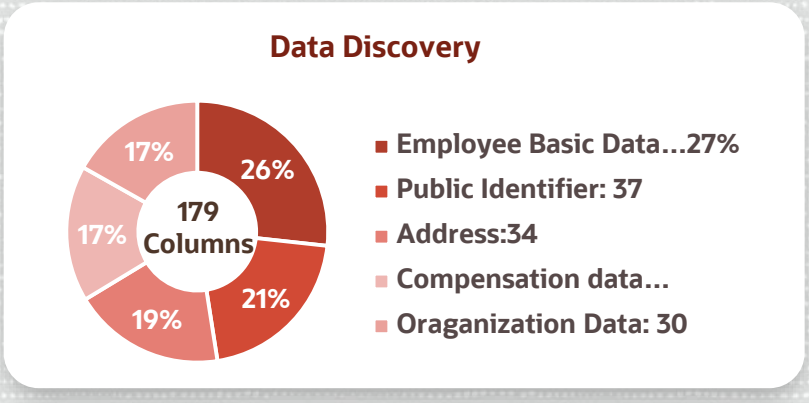
Defense in Depth for all customers

No special security expertise needed

Available in the Oracle Cloud at no additional cost

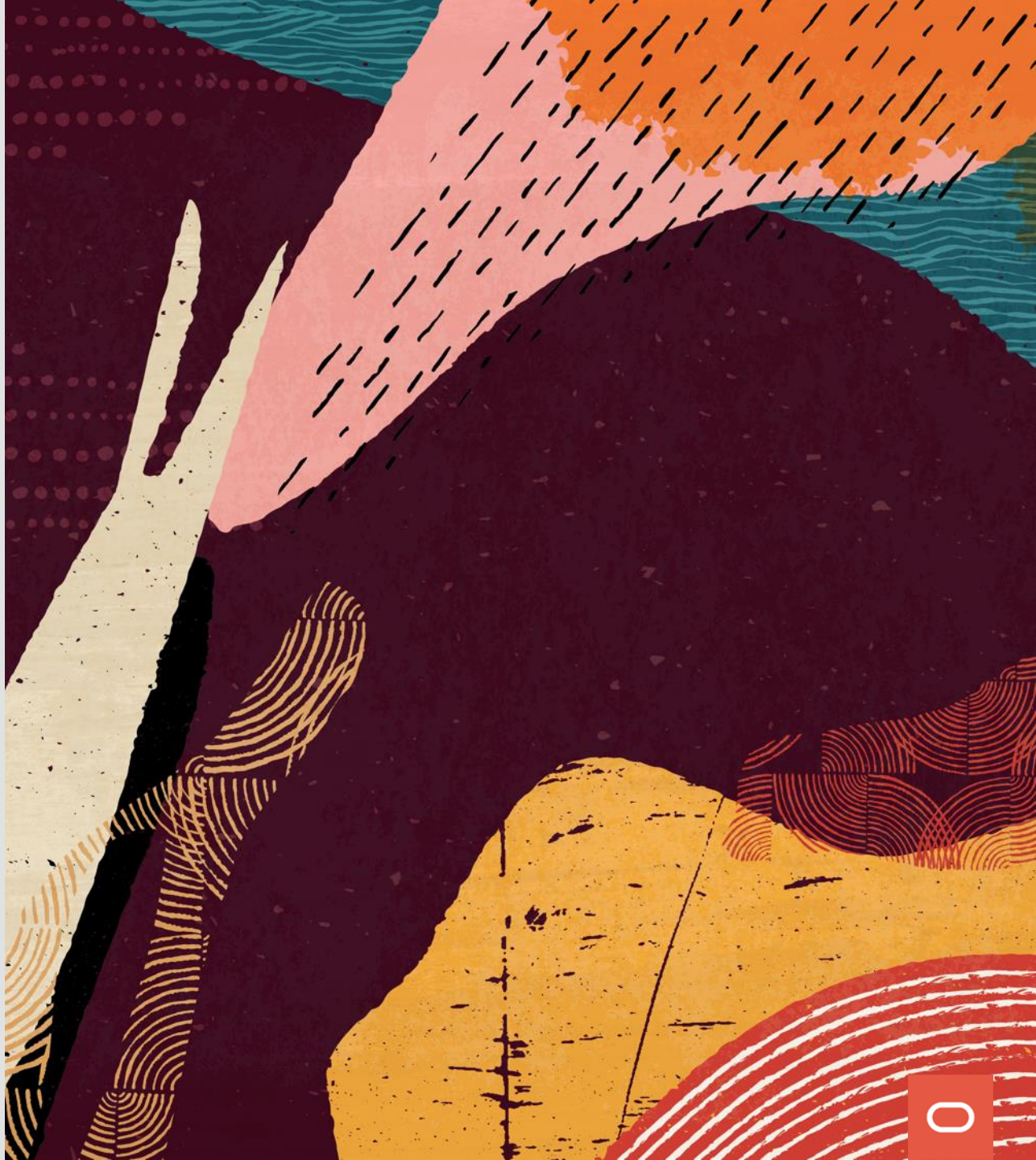
Availability: **OOW 2019**





Cloud@Customer

Gen 2 Exadata Database Cloud@Customer

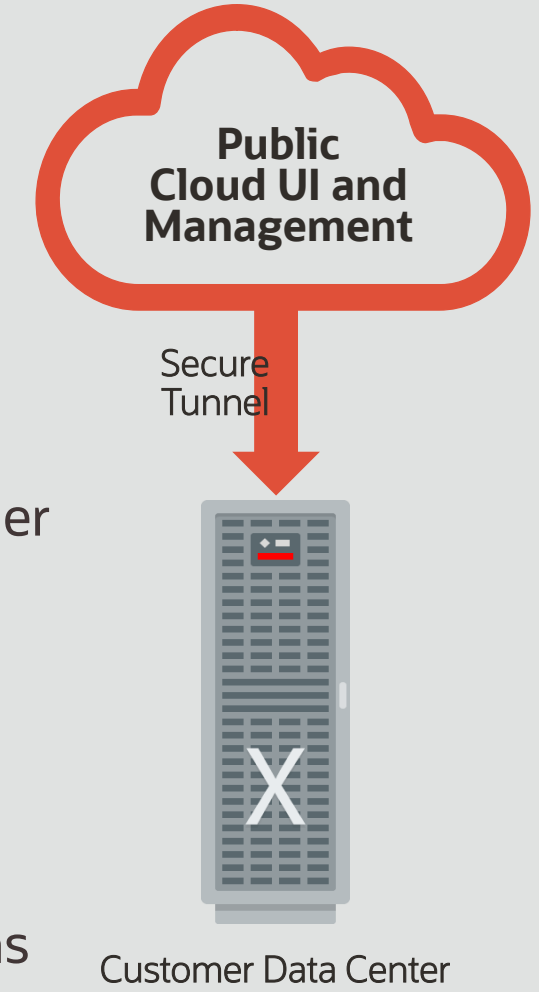


Announcing:

Gen 2 Exadata Cloud@Customer

Availability: **Now**

Best Database on the Best Cloud Infrastructure Runs in Your Data Center

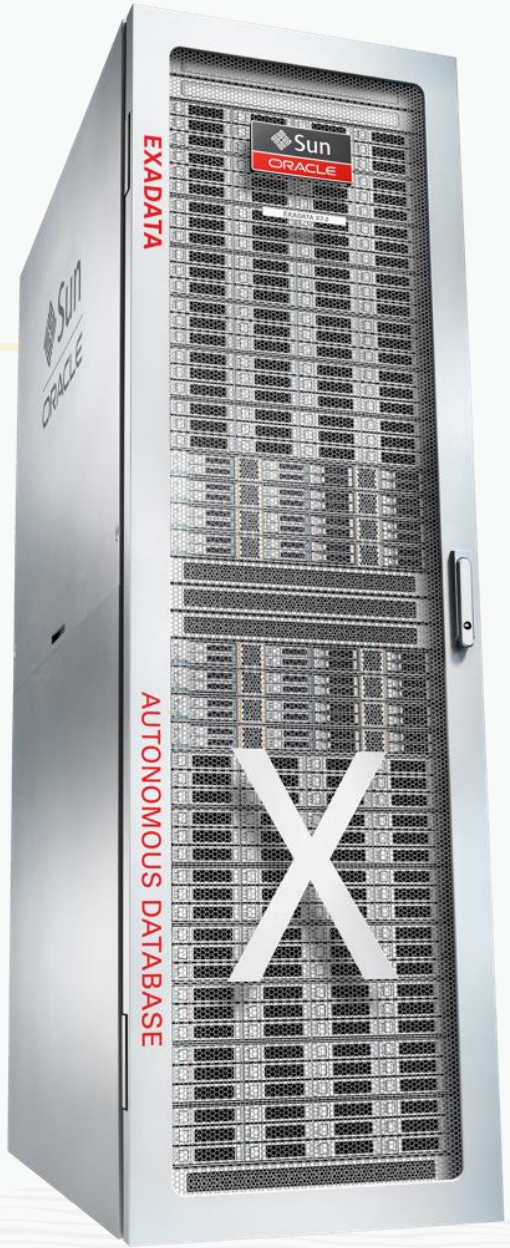


Public Cloud Manages Gen 2 Exadata Cloud@Customer

- Looks Exactly Like Oracle Database Running in the Public Cloud
- Much Easier to Install and Use than Gen 1 Database Cloud@Customer
- Fully Autonomous Oracle Database at Customer in 2020

New Faster Exadata X8 Infrastructure

- Latest CPUs with 2 more cores, 28% faster clock than Exadata X7
- 140% more storage cores than Exadata X7 to accelerate Smart Scans
- 40% more usable database storage than Exadata X7



Announcing Exadata X8M

Exadata X8M

World's Fastest Database Machine

Available Now

Faster 100 Gb/sec RoCE Network (RDMA over Converged Ethernet)

New Intel® Xeon® Platinum Processor

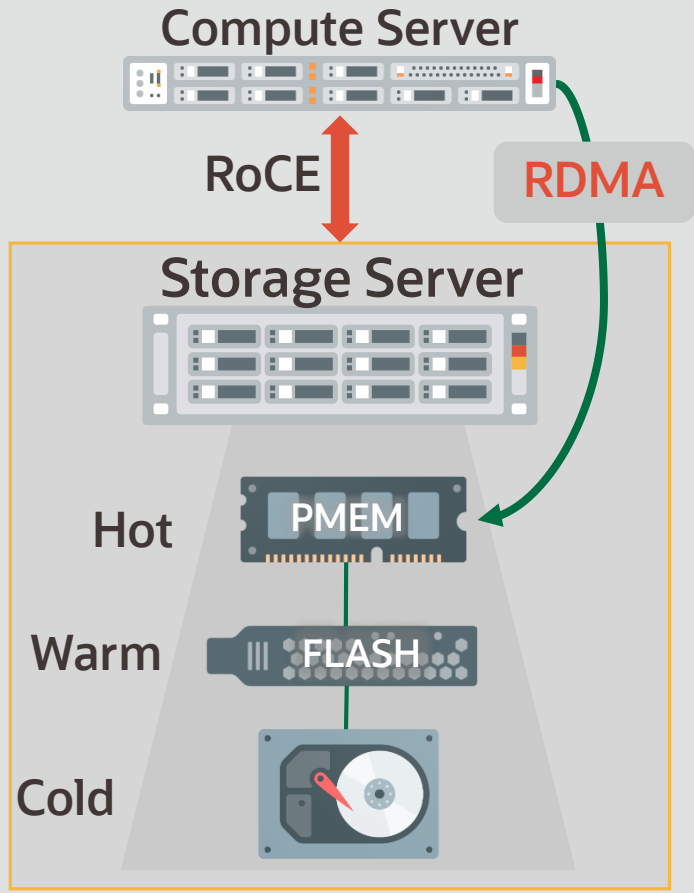
Storage and In-Memory Performance

- With all Benefits of Shared Storage
- For both OLTP and Analytics
- 16 Million OLTP 8K Read IOPS (2.5x faster than Exadata X8)
- < 19 µs OLTP I/O latency (10x faster than Exadata X8)

Persistent Memory: Highest Performance & Lowest Latency

- 1.5 TB Intel® Optane™ DC Persistent Persistent Memory per storage server

Enhanced consolidation using **Linux KVM**

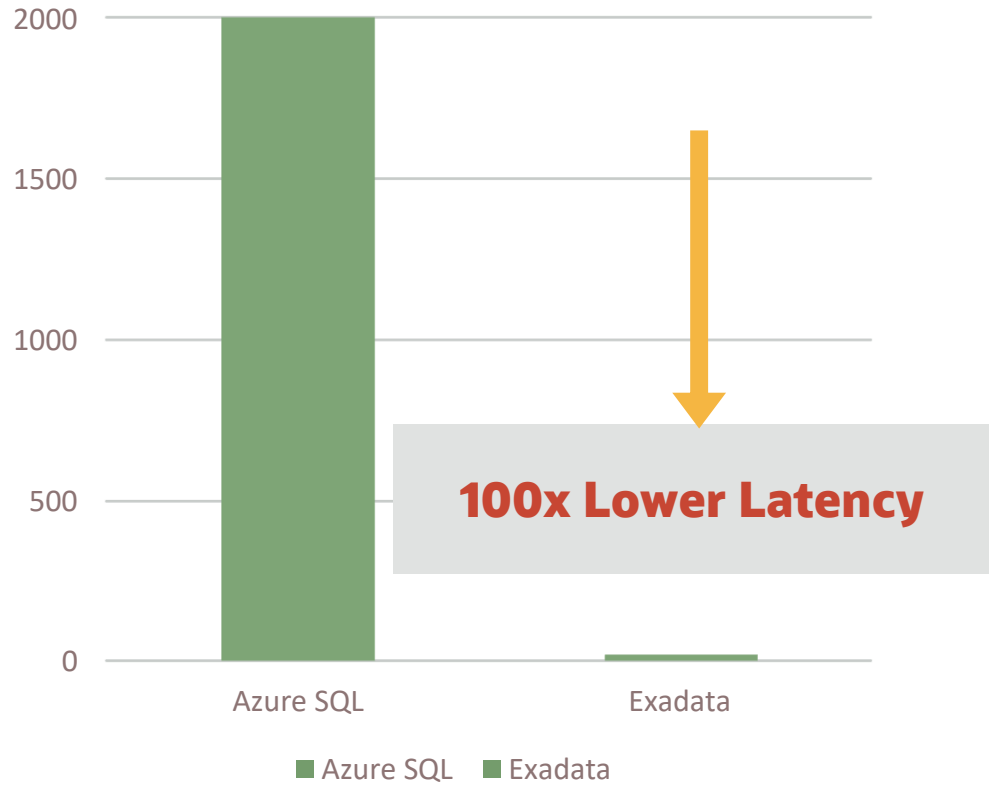


Exadata X8M Storage with Persistent Memory

>50x Faster than AWS or Azure * All Flash * Storage

AWS vs. Exadata

Azure vs. Exadata



Ecosystem & Partnerships

Announcing: Marketplace Paid Listings

Launch Third-Party ISV Applications

Available Now

- Ecosystem of enterprise 3rd party applications
- Pay for 3rd party applications: Universal Credits
- Consolidated billing for Oracle plus 3rd party services
- Deploy complex applications: Pre-configured stacks
- Receive support for ISV solutions deployed to OCI

FORTINET
SCYLLA.
H2O.ai
Couchbase NoEQUAL
aviatrix
PYRAMID ANALYTICS
SHIELDIO
sesame SOFTWARE
blueprism
CIS Center for Internet Security
stromasys legacy server emulation
compellon
paloalto NETWORKS
Solution-Soft
A10
AVI Networks

Multi-Cloud Innovation:

Available Now

A True Multi-Cloud Promise for Enterprise

- Leverage existing investments in Oracle and Microsoft technology
- Connect best-in-class cloud services across both companies
- New expanded Regions to run your global applications and services
  - **Available** Ashburn (Virginia, US)
  - **Announcing** London availability today
  - **Coming Soon**: US West, Government, Asia, and Europe regions

Announcing: Microsoft SQL Server on OCI

Available Now

- Support for Microsoft SQL 2016 Enterprise and Standard Editions
- Supported OS Platform – Windows 2016
- Microsoft SQL License provided by OCI
- Images Available on OCI Marketplace
- **Coming Soon:** Windows Server 2019, SQL Server 2014

Multi-Cloud Innovation:

Available : Q4 2019

ORACLE + vmware

VMware on Oracle Cloud Infrastructure

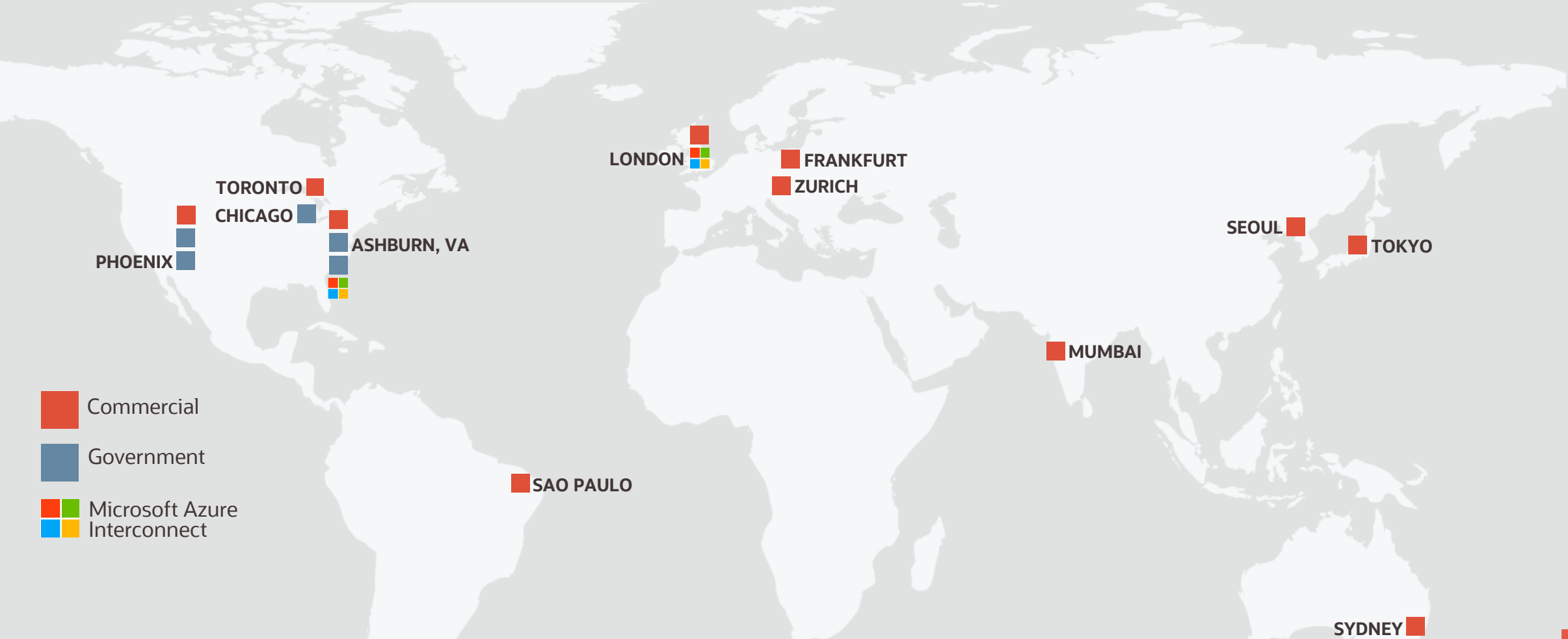
- Only cloud that lets you manage your own VMware-certified stack
  - You control version management, operations, upgrade time…
- Extend on-premise VMware environments to OCI
- Access to modern Oracle offerings like Autonomous Database and Exadata
- Lift-and-shift of VMware workloads to OCI
  - Leverage existing tools
  - Leverage existing operational procedures

Worldwide Regional Expansion

Rapid Growth…

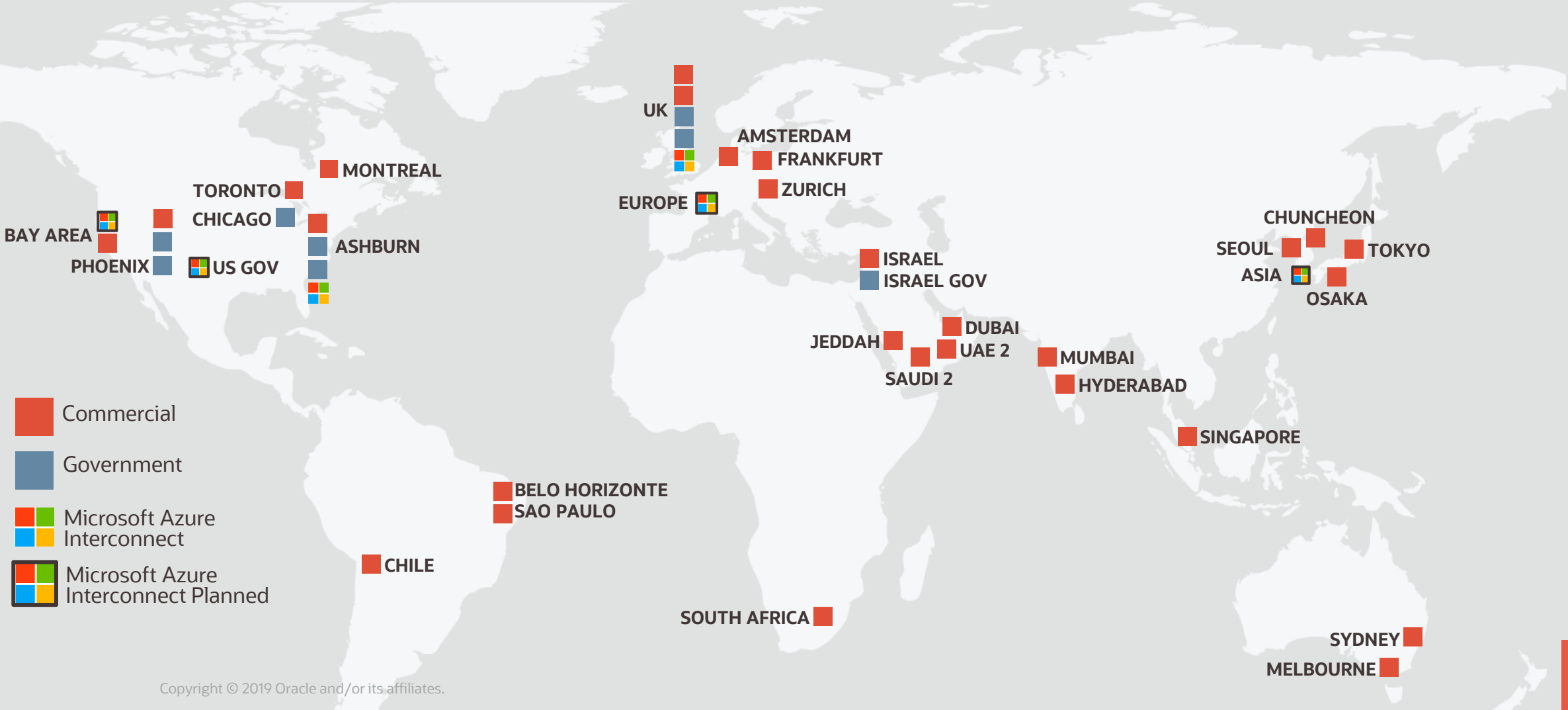
Oracle Cloud Infrastructure Global Footprint

Today: 16 Hyper-Scale Regions



Oracle Cloud Infrastructure Global Footprint

Next Year: 36 Oracle Regions vs 25 AWS Regions



One More Announcement…

$$$ Always Free $$$
Oracle Cloud

Always Free – It's for Everyone

- **Developers** - prototype, build, and run your next big idea for free
- **Students** - learn on the most modern and most mission-critical cloud
- **Oracle Academy** - fast and easy to build courses with real-world labs
- **Enterprises** - prototype for free, easy upgrade to paid for higher scale

Always Free – What's Included

Autonomous Database

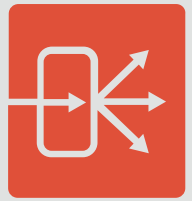
2 x Databases
20 GB each

Compute

2 x VMs
1 GB Memory each

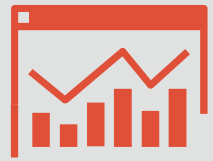
Storage

100 GB Block
10 GB Object
10 GB Archive



Networking/ Load Balancing

10 Mbps LB
10 TB Outbound Data Transfer



Monitoring / Notifications

500M Metrics Ingestion
1B Metrics Retrieval
1M Notifications
1K Emails

Available to All New and Existing Cloud Accounts

Thank You

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