# Power the enterprise with Oracle Engineered Systems

Ciprian Pustianu

Principal Solution Specialist

November 2nd

# Safe harbor statement

The following is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. The development, release, timing, and pricing of any features or functionality described for Oracle's products may change and remains at the sole discretion of Oracle Corporation.
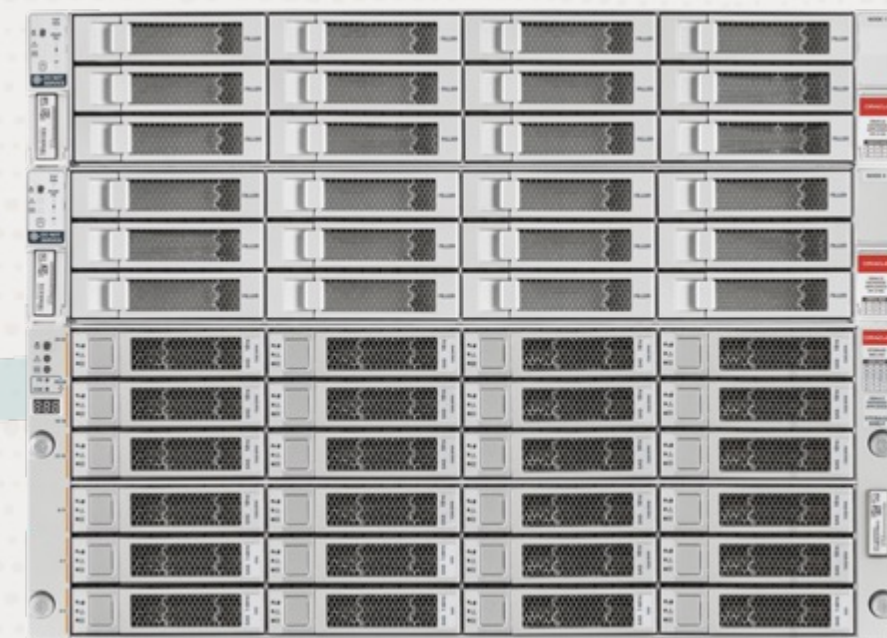
# Agenda

**Oracle Engineered Systems:**
integrated, full-stack solutions

**Oracle Cloud Infrastructure:**
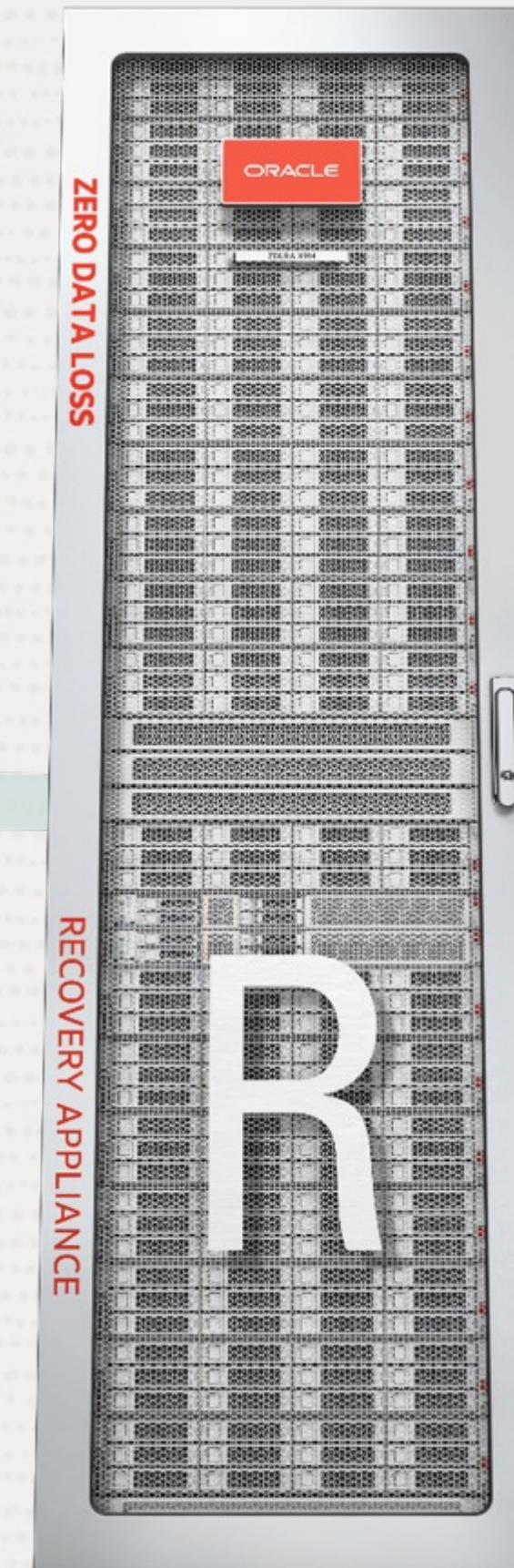A complete platform for every workload
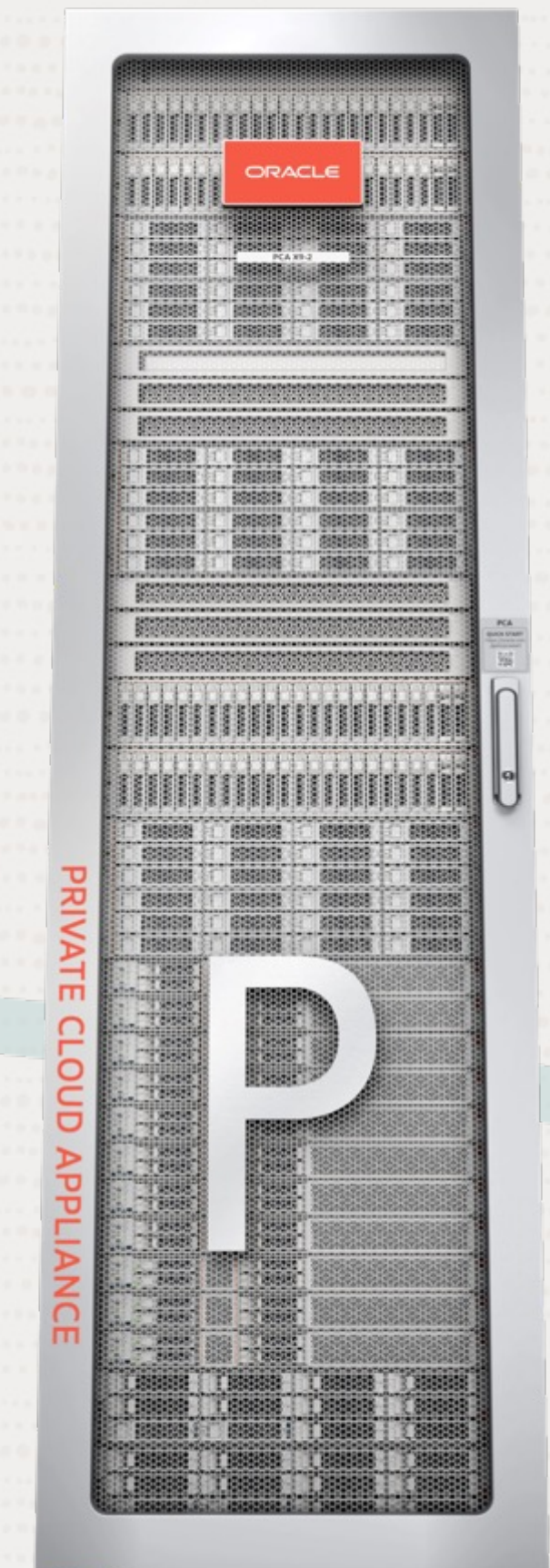
# Oracle Engineered Systems – The Family

X
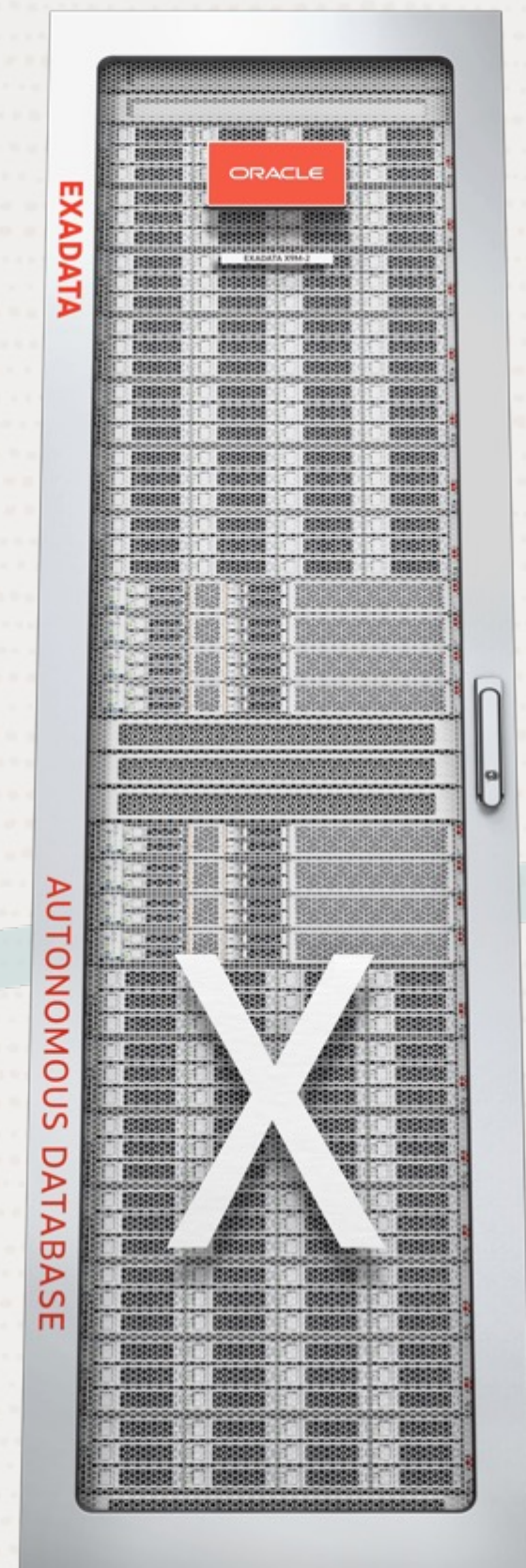
Oracle Exadata
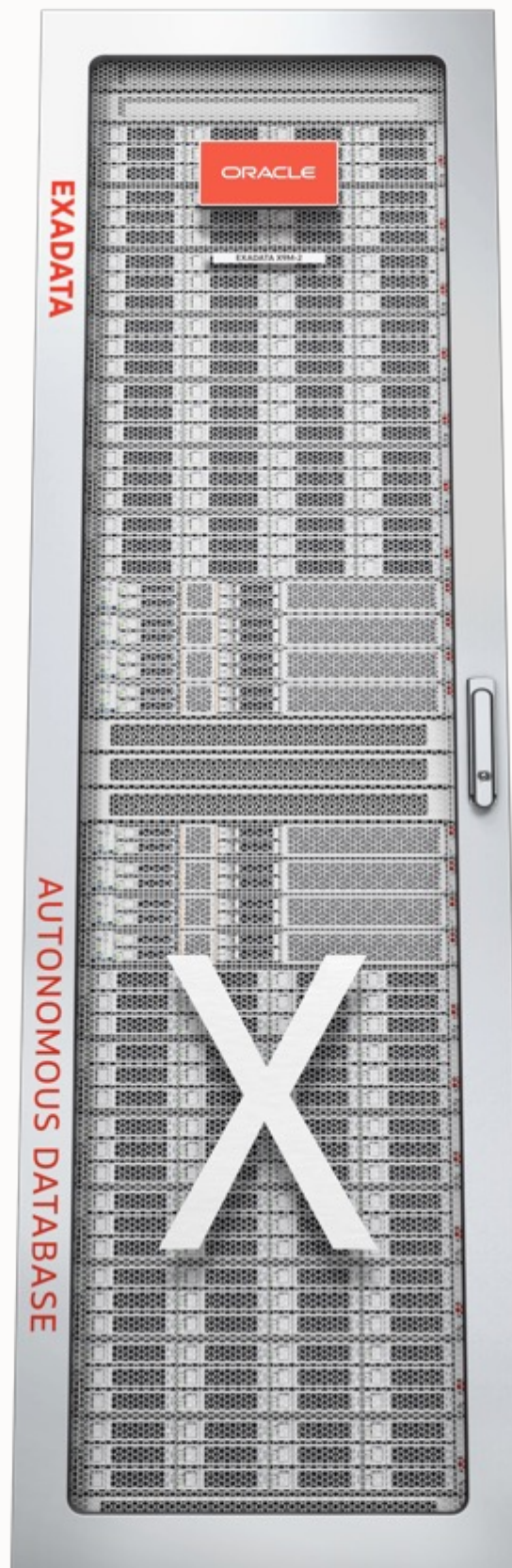Database Machine

Oracle Database
Appliance

R

Oracle Zero Data Loss
Recovery Appliance

P

Oracle Private
Cloud Appliance

# Exadata Vision
## Extreme Performance and Availability, Lowest Cost, Available Everywhere

**Ideal Database Hardware**

Scale-out, database optimized compute, networking, and storage

**Database Aware System Software**

Unique algorithms vastly improve OLTP, Analytics, and Consolidation

**Automated Management**

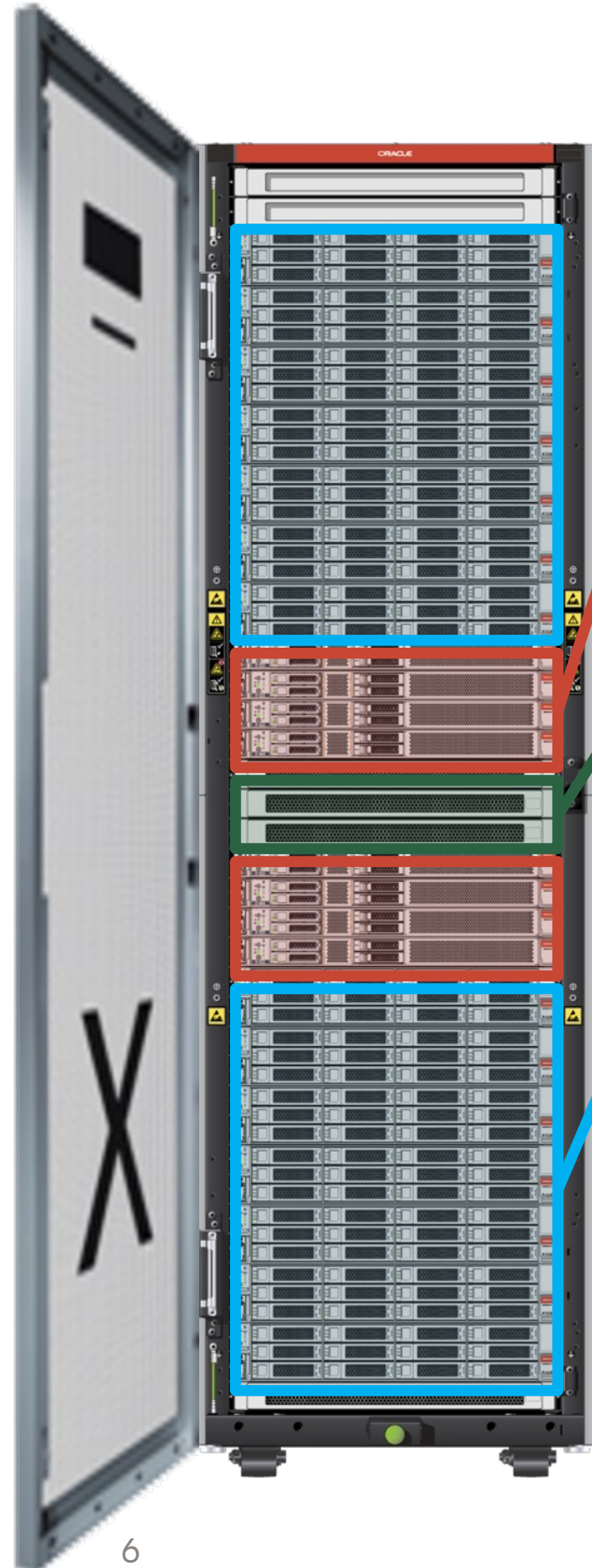Fully automated and optimized end-to-end

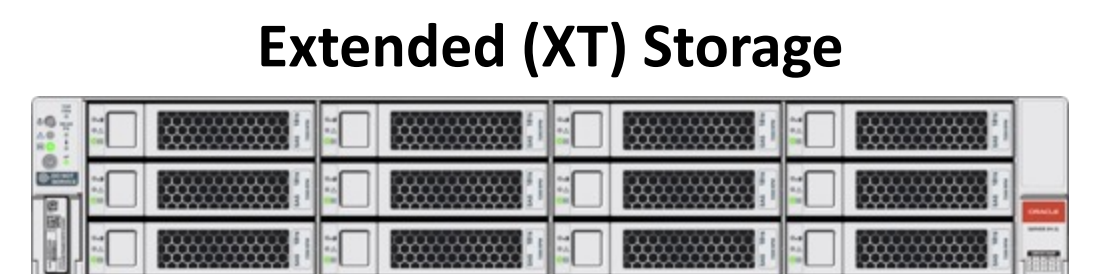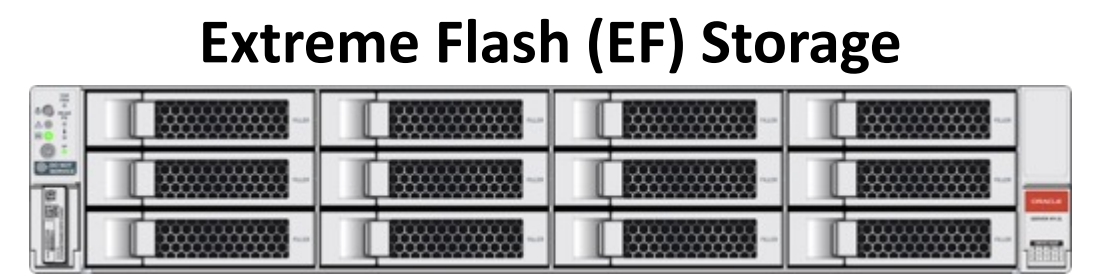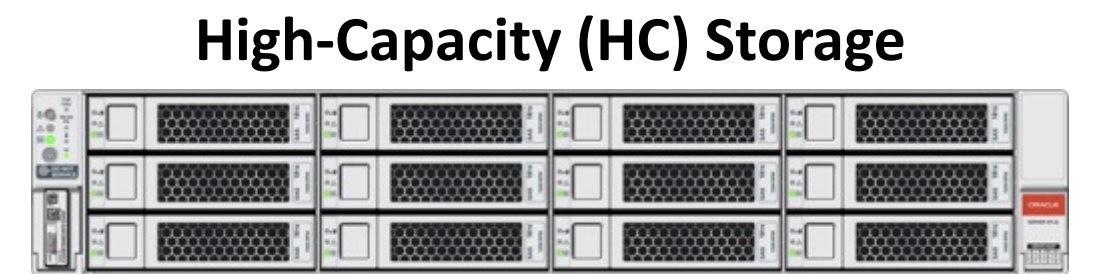**Available**

On Premises

Cloud@Customer

Oracle Cloud

# Exadata X9M: Extreme Performance Scale-out Database Platform

- Scale-Out 2 Socket Database Servers
  - Latest 32-core Intel Ice Lake CPUs
  - Up to 2TB Memory
  - 8-socket database server for SMP workload

- Ultra-fast 100Gb/s RDMA over Converged Ethernet (RoCE) Internal Fabric

- Scale-Out *intelligent* 2-Socket Storage Servers
  - Latest 16-core Intel Ice Lake CPUs
  - 1.5 TB Persistent Memory per storage server
  - Three tiers of storage: PMem, NVMe Flash, HDD

**Each rack has up to...**

| Compute Capacity | Storage Capacity |
|---|---|
| 1,216 DB Cores | 576 Storage Cores |
| 38 TB Memory | 27 TB PMem |
| | 920 TB NVMe Flash |
| | 3.8 PB Raw Disk |

**Database Server**

**High-Capacity (HC) Storage**

**Extreme Flash (EF) Storage**

**Extended (XT) Storage**

6

# Exadata Smart System Software Highlights

## Fastest OLTP

- **Fastest OLTP I/O** with scale-out storage, RDMA, Persistent Memory, and NVMe flash

- **Fastest scale-out** with unique RDMA algorithms for inter-node cluster coordination

- **Fastest recovery** from failed or sick components

## Fastest Analytics

- **Unique Smart Scan** automatically offloads data intensive SQL operations to storage

- **Unique Smart Flash Cache** and **Storage Index** automatically accelerate database I/O

- **Unique Columnarization** automatically converts data to fast In-Memory Columnar format in flash

## Best Consolidation

- **Unique Prioritization** of latency sensitive or important workloads through full stack

- **Unique Workload Isolation** of multiple tenants or workloads through full stack
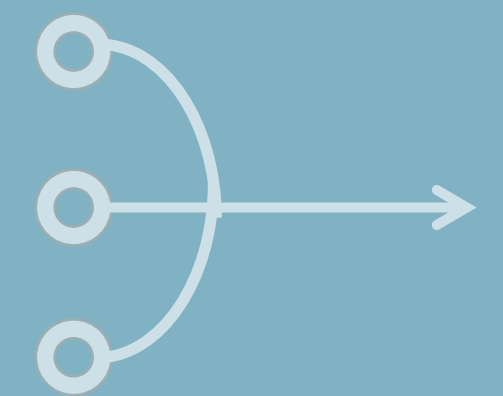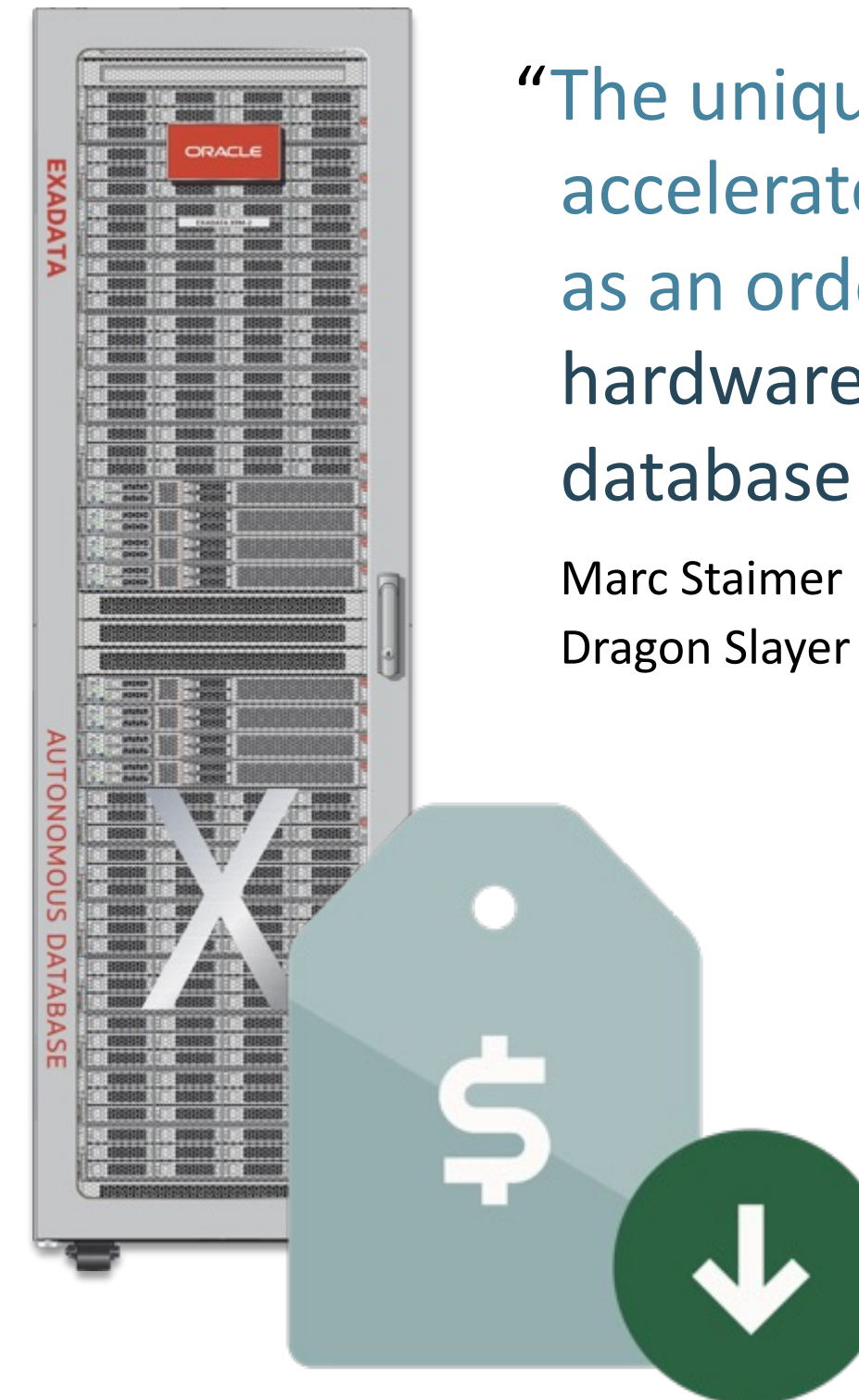
# Extreme **Performance** and **Consolidation**

## Reduce Costs by Doing More

- Deploy more Databases

- Process more Data

- Support more Users

- Consolidate more Workloads

- Complete more Transactions

- Perform more Analysis

**... than on any other platform, including DIY custom configurations**

**Less hardware, software and data center infrastructure spend**



"The unique Exadata software that accelerates the Oracle Database by as much as an order of magnitude means less hardware is required to achieve the same database objectives."

Marc Staimer
Dragon Slayer Consulting

https://www.oracle.com/a/ocom/docs/engineered-systems/exadata/dsc-on-x8m-openworld.pdf

# Oracle Database Appliance | High-Availability Configuration
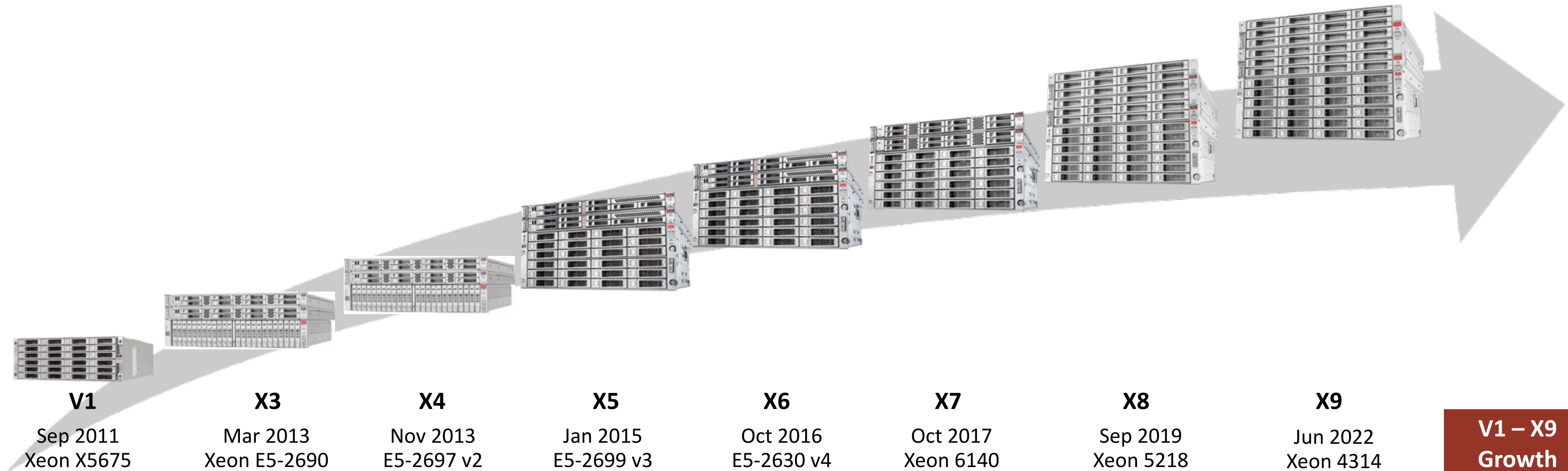
| | V1<br>Sep 2011<br>Xeon X5675 | X3<br>Mar 2013<br>Xeon E5-2690 | X4<br>Nov 2013<br>E5-2697 v2 | X5<br>Jan 2015<br>E5-2699 v3 | X6<br>Oct 2016<br>E5-2630 v4 | X7<br>Oct 2017<br>Xeon 6140 | X8<br>Sep 2019<br>Xeon 5218 | X9<br>Jun 2022<br>Xeon 4314 | V1 – X9<br>Growth |
|---|---|---|---|---|---|---|---|---|---|
| SSD Storage (TB, raw) | --- | --- | --- | 3.2 | 48 | 128 | 368 | 368 | 115 X |
| HDD Storage (TB, raw) | 12 | 36 | 36 | 128 | --- | 300 | 504 | 648 | 54 X |
| CPU (cores) | 24 | 32 | 48 | 72 | 40 | 72 | 64 | 64 | 2.7 X |
| Max Memory (TB) | 0.2 | 0.5 | 0.5 | 1.5 | 1.5 | 1.5 | 1.5 | 2.0 | 10 X |
| Ethernet (Gb/s) | 48 | 80 | 80 | 80 | 80 | 100 | 300 | 300 | 6 X |
| Max Read IOPS | 4,466 | 6,500 | 6,500 | 300,000 | 2,250,000 | 2,250,000 | 2,250,000 | 2,880,000 | 645 X |
| Bandwidth (GB/sec) | 3.0 | 5.3 | 5.3 | 6.0 | 22.2 | 22.2 | 22.2 | 23.0 | 7.7 X |

# Oracle Database Appliance X9 Model Family

**What's New?**
- Latest Intel Xeon processor technology
- Increased storage capacity
- 33% more capacity and faster RAM

PERFORMANCE → HIGHER

**Oracle Database Appliance X9-2S**
Single-instance
16 Cores
256 GB Memory, expandable to 512 GB
Up to 3x Public Network Cards
13.6 TB Data Storage (Raw)

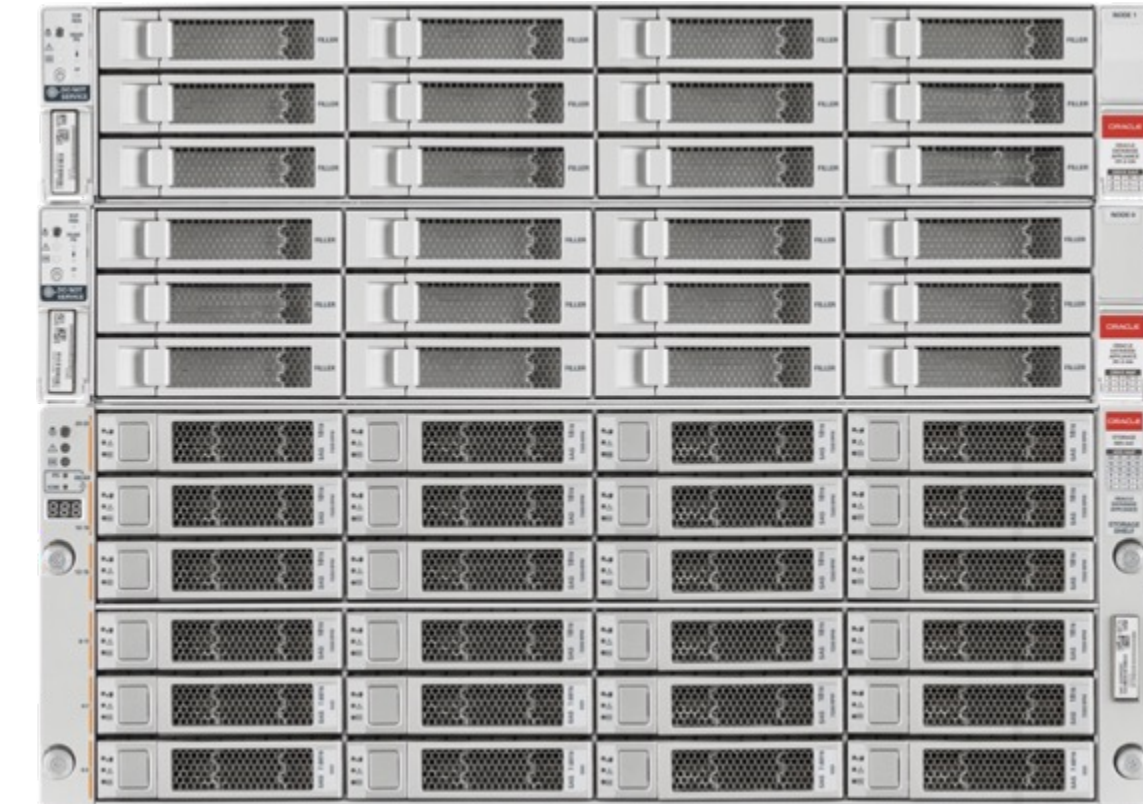**Oracle Database Appliance X9-2L**
Single-instance
32 Cores
512 GB Memory, expandable to 1 TB
Up to 3x Public Network Cards
13.6 TB Data Storage,
expandable up to 81.6 TB (Raw)

**Oracle Database Appliance X9-2-HA**
Single-instance and RAC
64 Cores
1 TB GB Memory, expandable to 2 TB
Up to 3x Public Network Cards per Server
46 TB SSD Data Storage, expandable up to
368 TB SSD or up to 92 TB SSD / 648 TB HDD (Raw)

**CAPACITY** → HIGHER
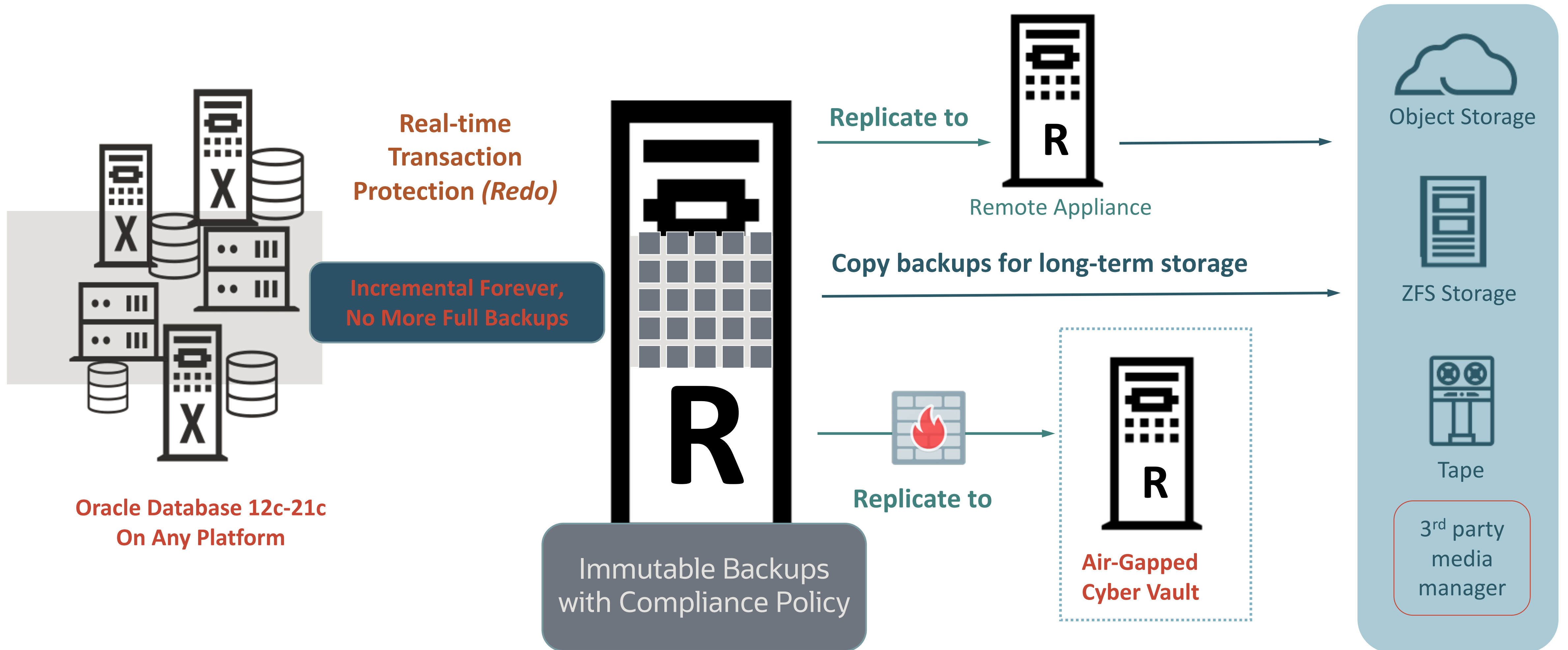
# Recovery Appliance Overview

## 2000+ PB Protected Databases

Leading Financial Services, Semiconductor, Insurance, Utilities Transportation, Manufacturing, and Government organizations
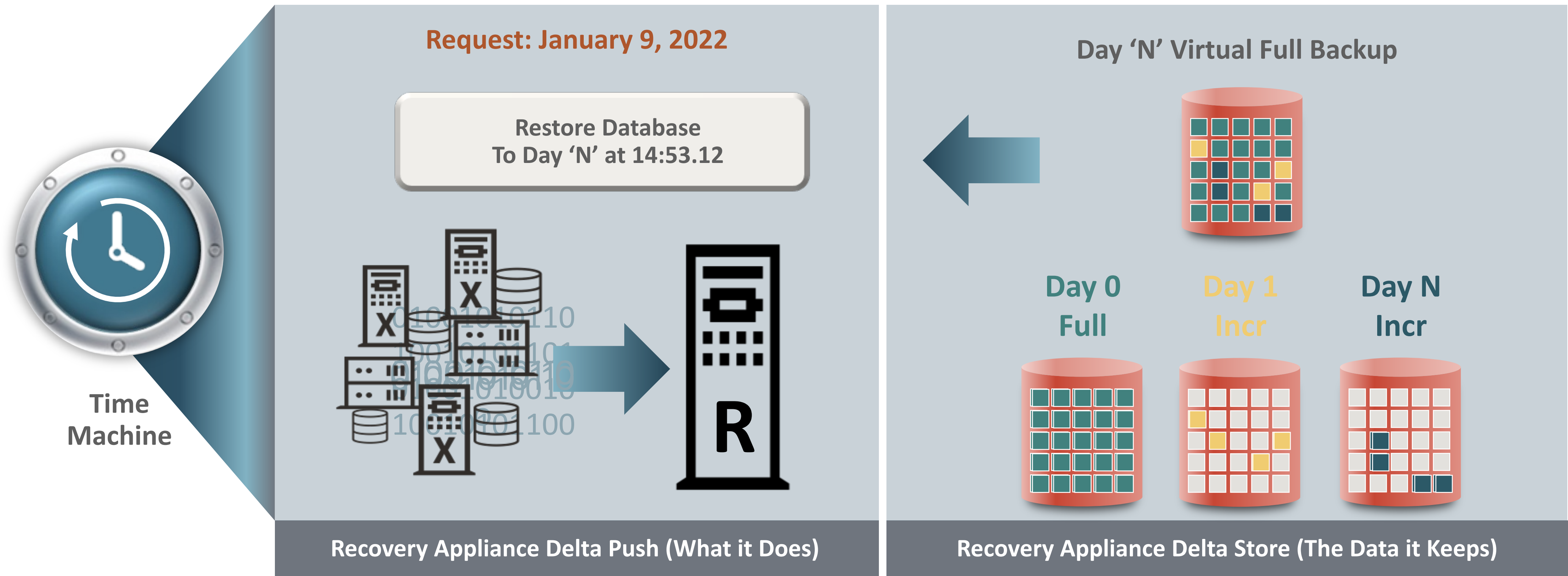
# Recovery Appliance X9M

## Continuous data protection and multi-tiered backup addressing compliance requirements

**Real-time Transaction Protection** *(Redo)*

**Incremental Forever, No More Full Backups**

**Oracle Database 12c-21c On Any Platform**

**Immutable Backups with Compliance Policy**

**Replicate to**

Remote Appliance

**Copy backups for long-term storage**

**Replicate to**

**Air-Gapped Cyber Vault**

Object Storage

ZFS Storage

Tape

3rd party media manager

# Recovery Appliance X9M

Minimal impact incremental forever backup with virtual full restore

**Request: January 9, 2022**

Restore Database
To Day 'N' at 14:53.12

**Time Machine**

**Recovery Appliance Delta Push (What it Does)**

**Day 'N' Virtual Full Backup**

**Day 0**
**Full**

**Day 1**
**Incr**

**Day N**
**Incr**

**Recovery Appliance Delta Store (The Data it Keeps)**

# Private Cloud Appliance X9: Optimized Modern infrastructure

**Optimized for Performance – 33% more cores/server**

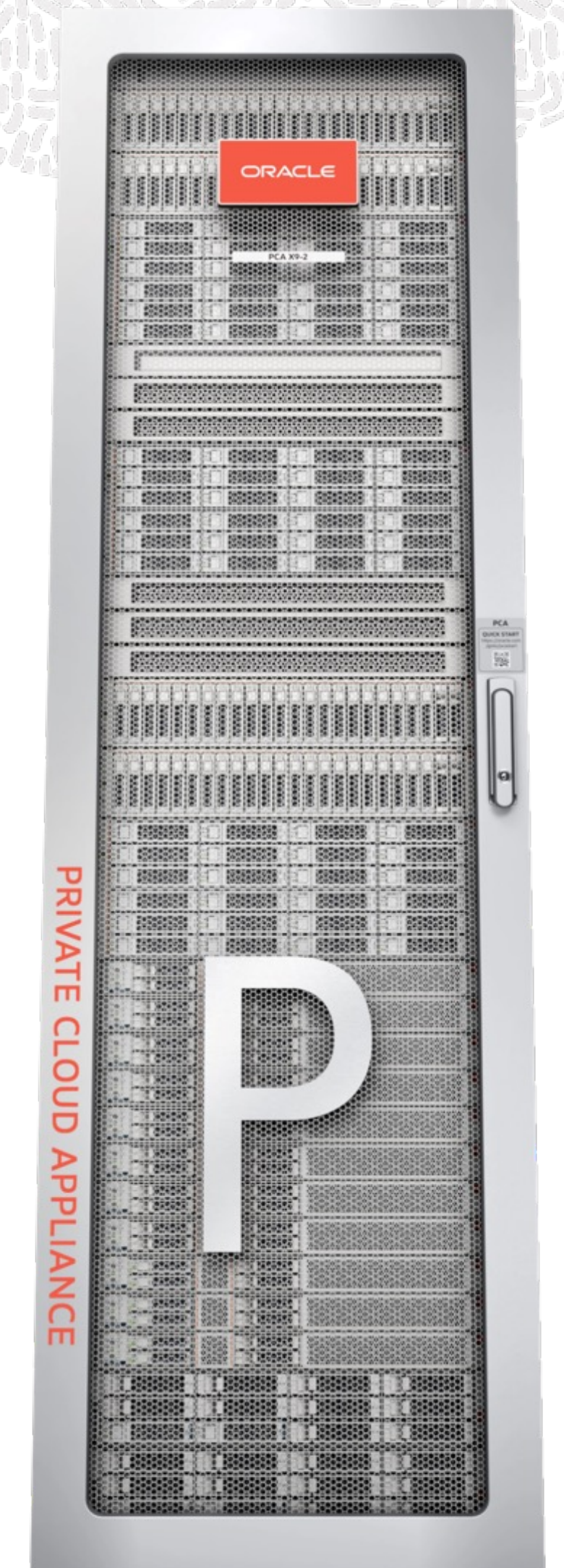**Optimized for Cost - Reduce TCO by over 40%**

**Optimized for Cloud – OCI compatible APIs, services, and management tools**

| Mission-Critical Applications | Business Applications | Web Applications |
|---|---|---|

*Develop once, deploy where needed*

PRIVATE CLOUD APPLIANCE

# Private Cloud Appliance X9 Integration and Scalability

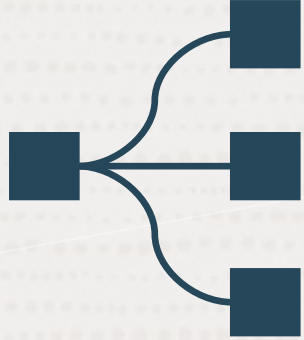| | |
|---|---|
| **Tenancies** | **Up to 8** |
| **Services**<br>    **Compute shapes**<br>    **Storage**<br>    **Containers**<br>    **Network** | **Fixed VM Shapes**<br>**Block, File, Object**<br>**VCN, Gateways** |
| **Fault Domains** | **3** |
| **Usable CPU Cores** | **180 to 1080** |
| **Service Enclave - Servers** | **3** |
| **Customer Enclave - Servers** | **3 to 18** |
| **Storage Capacity** | **180 TB to 8.4 PB** |

# Oracle Cloud Native Environment on PCA X9
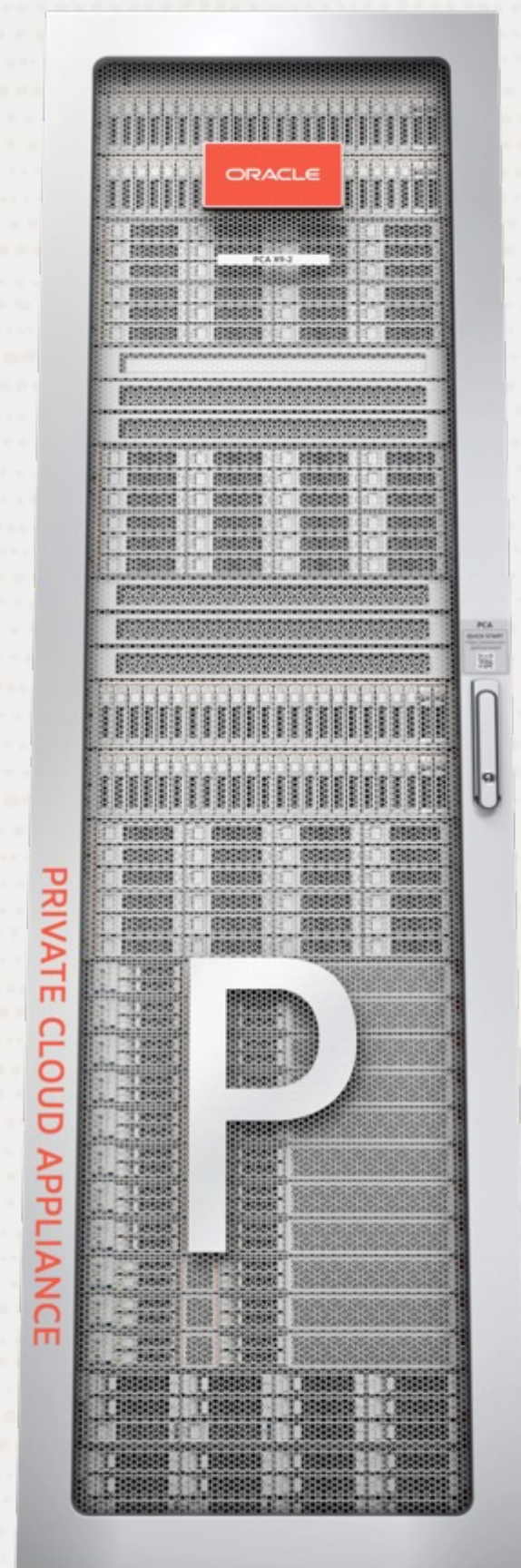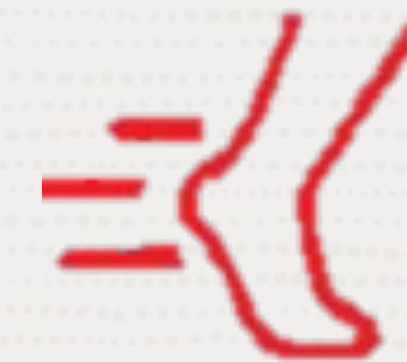
**Oracle Private Cloud Appliance Cloud Native Capabilities**
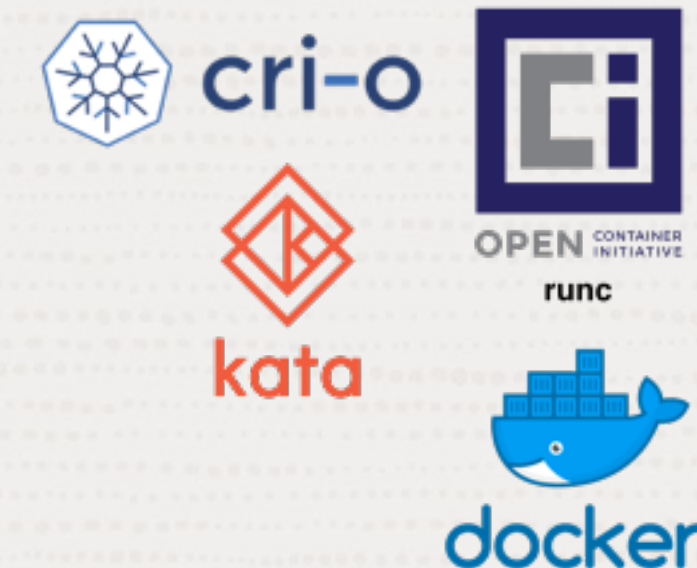


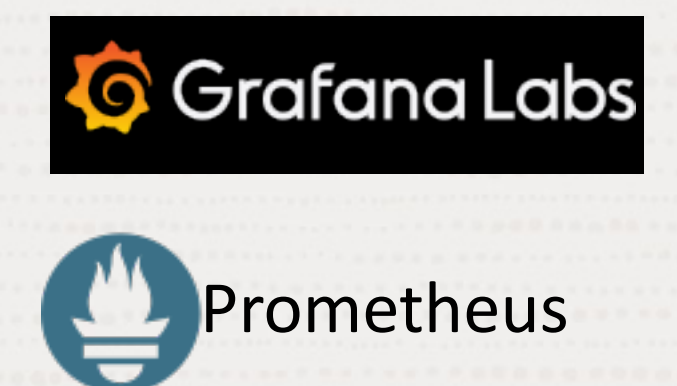**Preconfigured VM/Container Infrastructure**
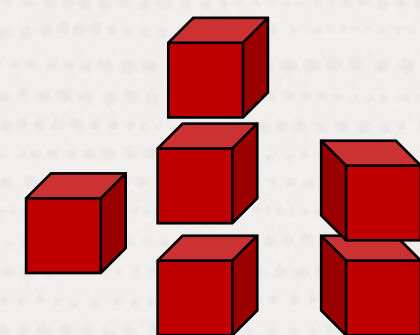
**Provisioning**

**Kubernetes Orchestration & Management**

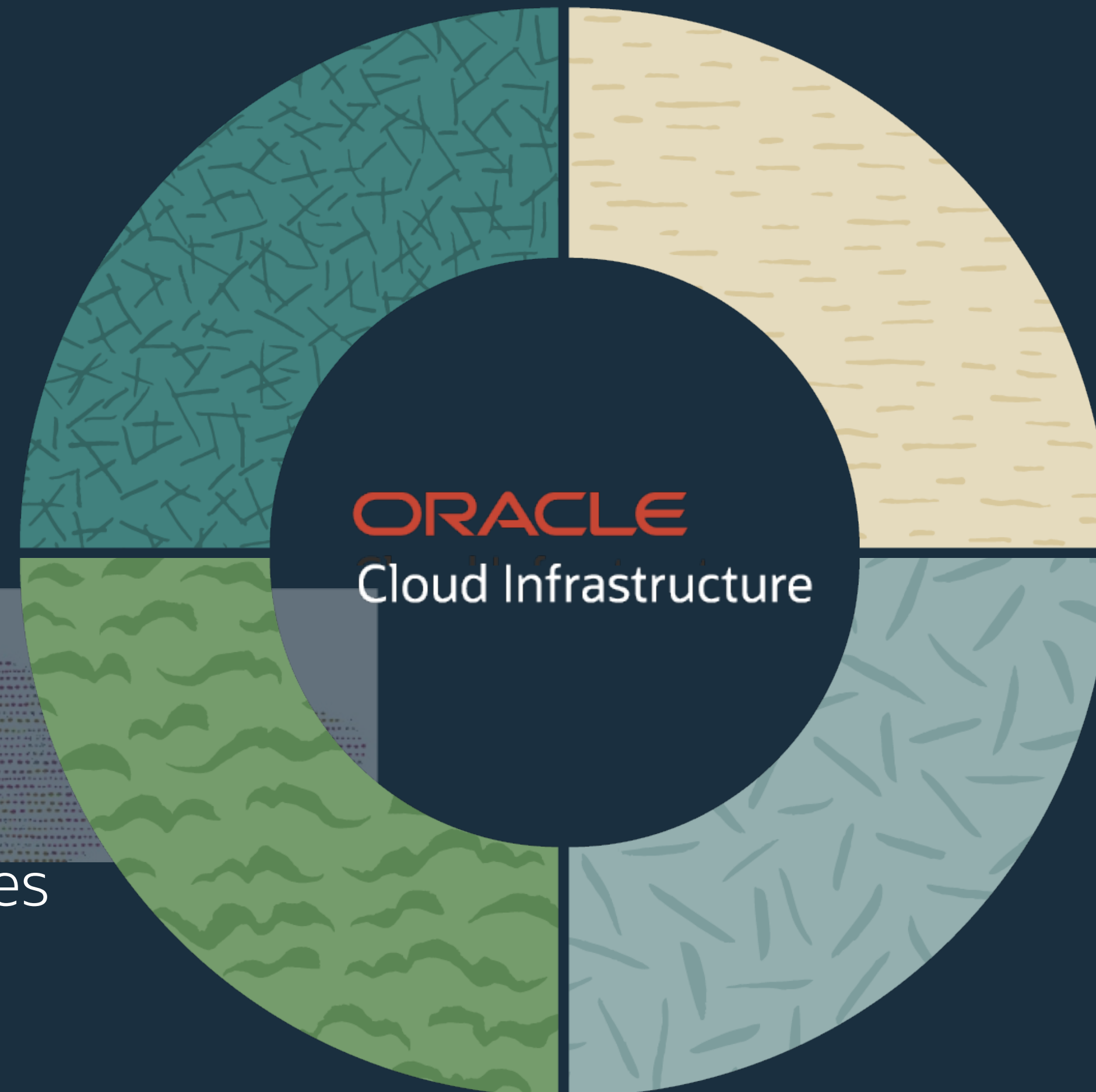**Runtime**

**Observability & Analysis**

# Oracle meets you where you are with a distributed cloud strategy

## Multicloud

Our products work with your other providers

## Hybrid cloud

We bring cloud services to you

ORACLE
Cloud Infrastructure

## Public cloud

Access OCI cloud services from 40 global regions

## Dedicated cloud

A cloud just for you

# OCI's hybrid cloud services

- **Exadata Cloud@Customer**

  - Customer sites in over 60 countries

- **Compute Cloud@Customer**

  - OCI Extension to customer's data center

  - Available early CY2023

    **RESOURCES**

    - Cloud-Ready Infrastructure Blog - link



**Oracle Compute Cloud @ Customer**
Extend Oracle Cloud (OCI) to secure customer applications and data behind customer's firewall

**OCI extension to customer's data center**
- Provides customers control over location of services, applications, and data
- Integrated with customer's OCI tenancy, Identity and Access management
- Uses OCI Console, OCI APIs, CLI, SDK, UI, Application images and OKIT
- Same consumption-based pricing for compute and storage as OCI
- Cloud Operations delivered from OCI

**Transparent hybrid cloud**
- Partition workloads between private and public cloud
- OCI as target for backup and disaster recovery



Distributed cloud for telcos innovation | Oracle Live

Krishna Srinivasan
SENIOR DIRECTOR, PRODUCT MANAGEMENT
ORACLE

# OCI's dedicated cloud services

- ## Oracle Alloy

- New cloud infrastructure platform that enables service providers, integrators, ISVs, to become cloud providers.

- Offer a full set of cloud services, brand and tailor the experience to meet the specific needs of markets and industry
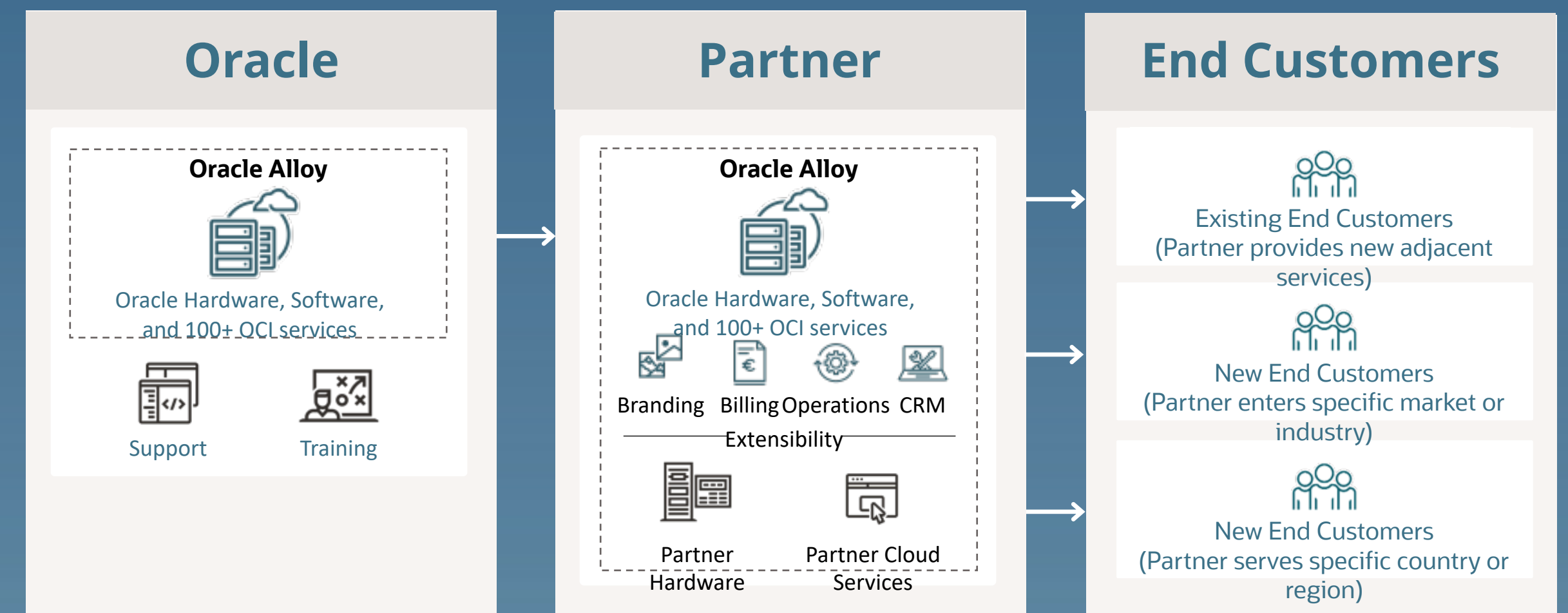


**RESOURCES**

- Press Release for Oracle Alloy
- Oracle Alloy page

- Blog:  Announcing Oracle Alloy - The power of the cloud in your hands

# OCI's dedicated cloud services

- ## OCI Dedicated Region

- Oracle Cloud Infrastructure (OCI) Dedicated Region is a complete OCI cloud region in your data center that offers the agility, scalability, and economics of OCI public cloud.

  - In production with Oman (1 region) and NRI (2 regions)

  - Customer announcements this year from Vodafone, NEOM, and others

  - Earlier this year: Now with smaller footprint & lower commitment

  **RESOURCES**

- OCI Dedicated Region page
- OCI Dedicated Region solution brief



Oracle Cloud Region

OCI Dedicated Region
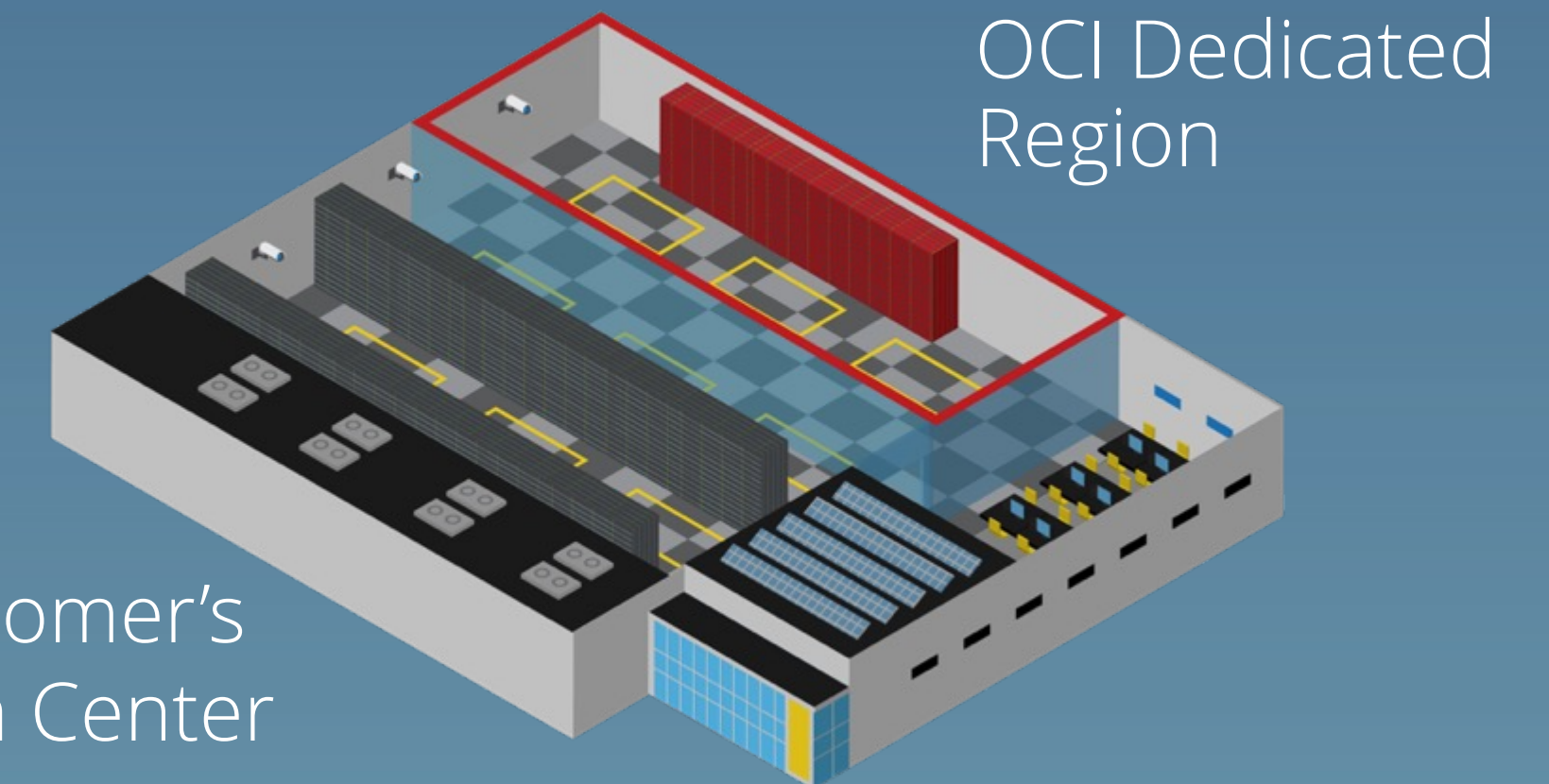
Customer's Data Center

# Oracle Database 23ᶜ, Simple and Complete



BETA available now
on-premises and in
Oracle Cloud

https://tinyurl.com/OracleBeta

# Customers trust Oracle across the globe

# ORACLE

# Thank you !