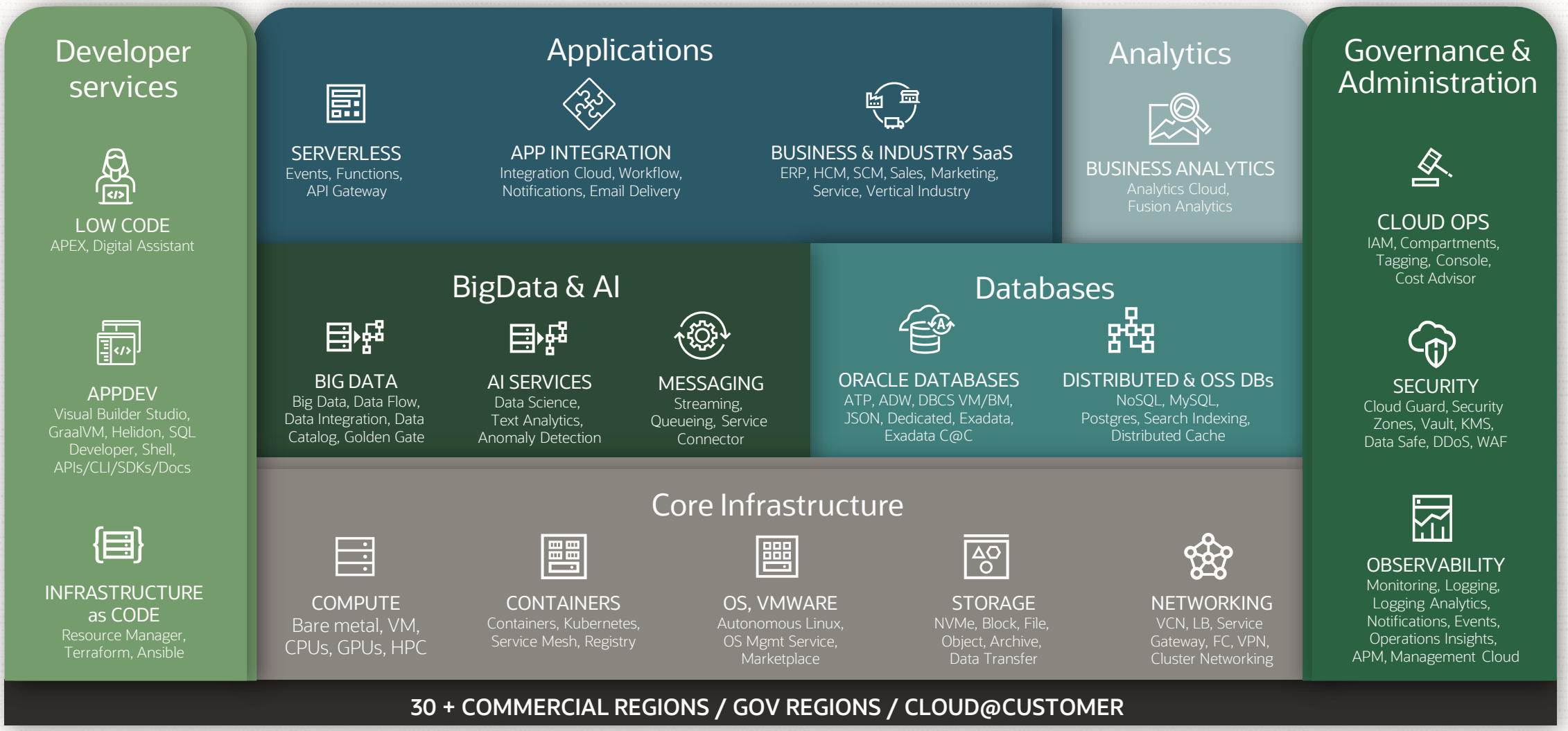
ORACLE

Oracle Cloud Infrastructure

A secure, high-performance platform for all your workloads

Title

Complete cloud capabilities



Everything you need to build modern Cloud native applications

Broad set of OCI services

Interfaces and automation
Console, CLI, API/SDKs, cloud shell, resource manager (Terraform)

API management
API design / API gateway

Databases
Oracle Autonomous Database, MySQL services

Containers
Container registry, Container Engine for Kubernetes

Machine learning
Full lifecycle ML service (data prep, training, inference)

Serverless
Functions for serverless code execution

Streaming
Kafka-compatible service

Ops
Continuous deployment, observability, management, monitoring

Deep tools ecosystem

Terraform, ANSIBLE, GitHub, GitLab, paloalto NETWORKS, TREND MICRO, FORTINET, PagerDuty, cybereason, TANIUM, JFrog, servicenow, DATADOG, RANCHER, Grafana

More details

Copyright © 2021, Oracle and/or its affiliates.

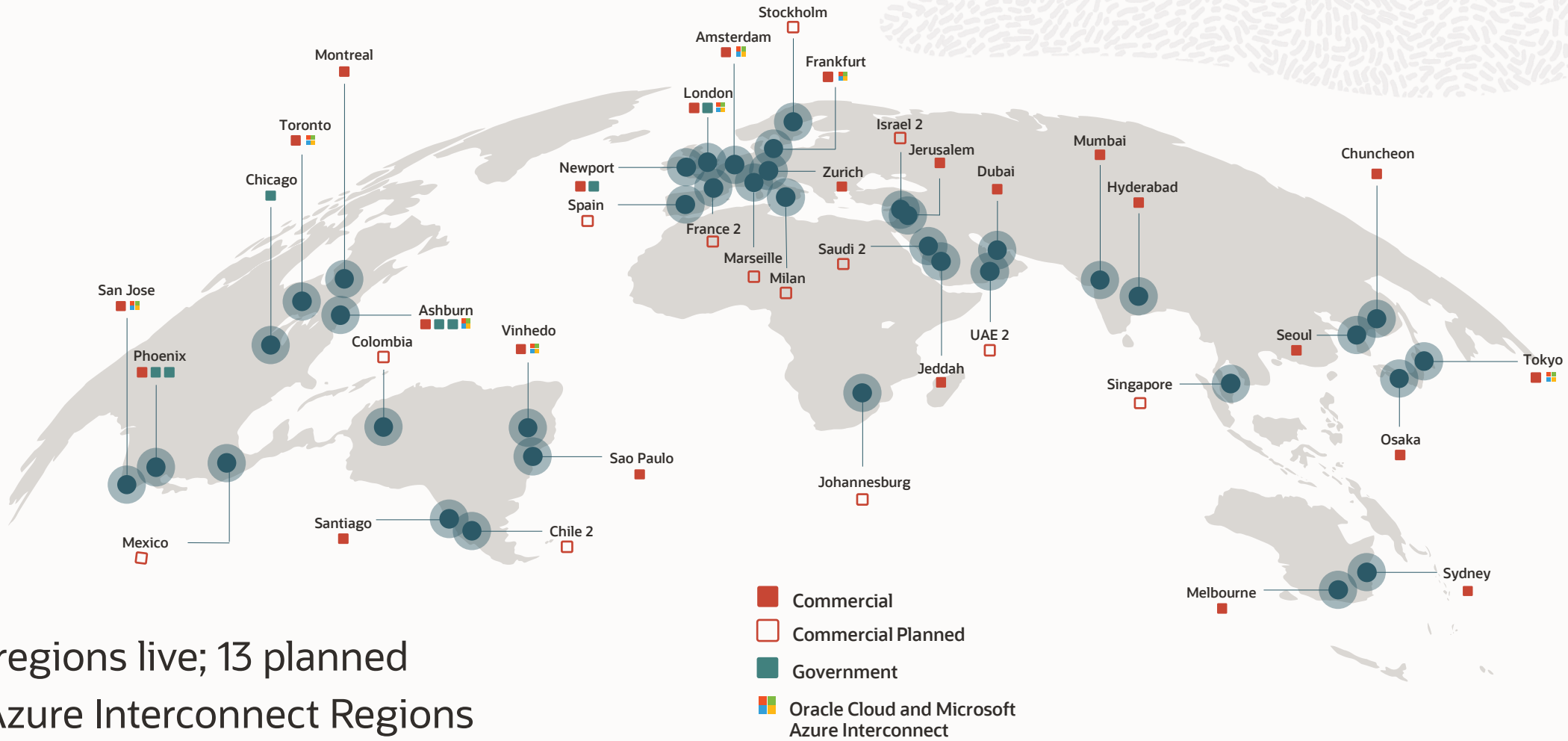
Autonomous services automatically secure, tune, and scale your apps

- ✔ Automatic provisioning
- ✔ Automatic configuration
- ✔ Automatic encryption
- ✔ Automatic online patching and updating
- ✔ Automatic elastic scaling
- ✔ Automatic tuning

- Eliminates human labor
- Eliminates human error
- Eliminates scaling complexity
- Eliminates performance tuning
- Eliminates downtime

Copyright © 2021, Oracle and/or its affiliates.

OCI offers cloud regions and multicloud around the world

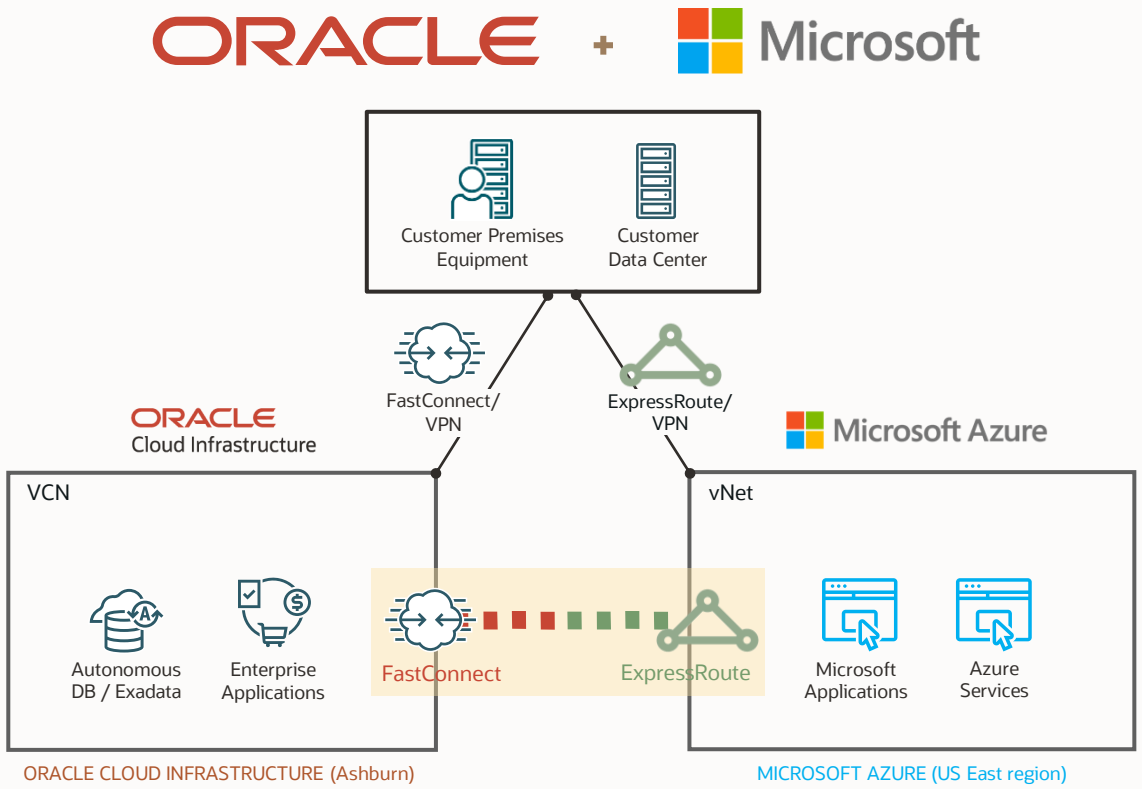


31 regions live; 13 planned

8 Azure Interconnect Regions

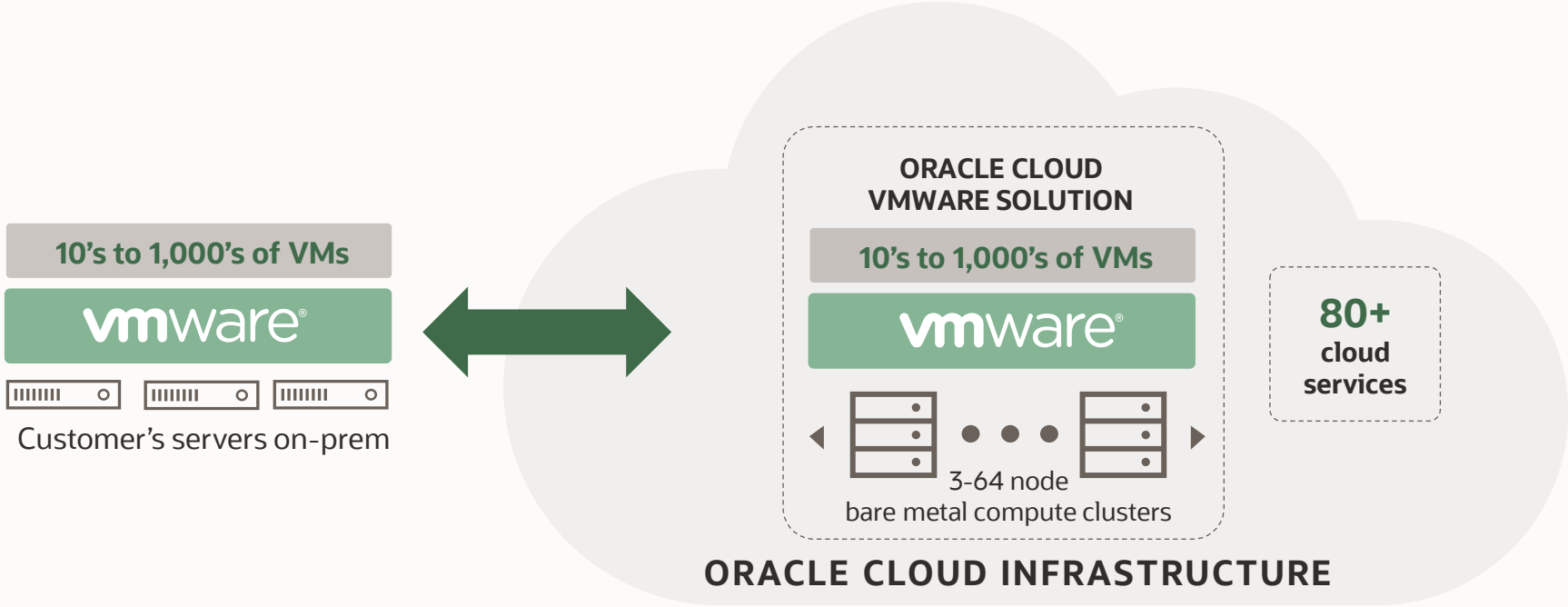
Oracle Cloud + Microsoft Azure Interconnect

Multicloud solution



- ✓ Microsoft Azure and Oracle Cloud are **interconnected today**, so you can migrate and run mission-critical enterprise workloads across clouds
- ✓ **FastConnect and ExpressRoute** direct connection with 2 millisecond latency and no intermediate service provider required
- ✓ **Unified identity and access** management via single sign-on with automated user provisioning to easily manage resources across clouds
- ✓ **Collaborative support** of workloads across clouds, for example, custom and Oracle Applications on Azure with Oracle Database cloud services – connect best-in-class services across clouds
- ✓ **Available Now:** Ashburn, San Jose, Vinhedo, Toronto, London, Frankfurt, Amsterdam, Tokyo
- ✓ **Coming Soon:** Government, Asia, Europe regions

Oracle Cloud VMware Solution



Key use cases:

- Data Center Migration
- Hybrid Cloud Expansion
- Disaster Recovery Site

Protect VMW Investment

Most like on-premises VMW
Control versions, policies
Full access, all features

Modernize Infrastructure

Elastic capacity
OCI + NSX + hybrid flexibility
Security-first architecture

Modernize Applications

Increase performance & scale
Integrate 80+ OCI services
Integrate Oracle SaaS

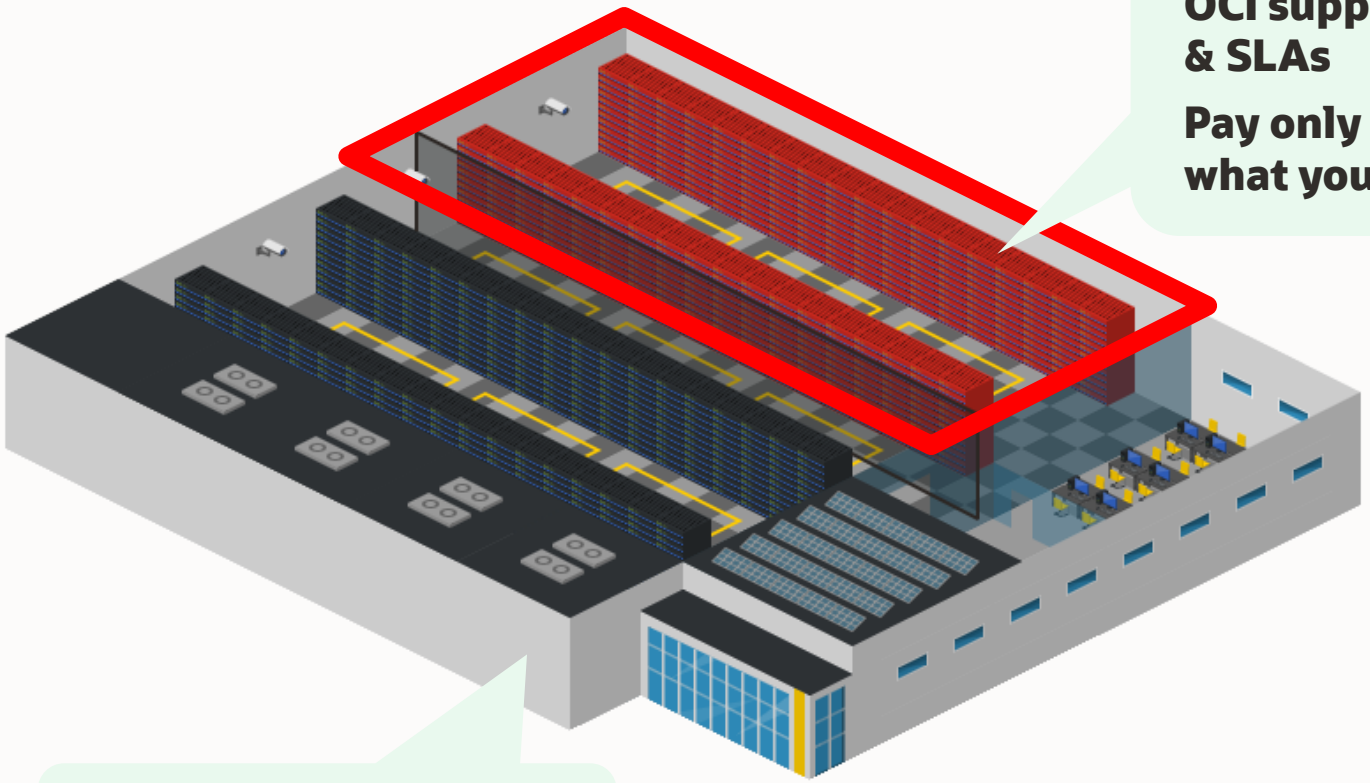
Global Availability

23 commercial regions
5 US Gov regions
OCI Dedicated Region

(June 2021)

Oracle Dedicated Region Cloud@Customer

All the capabilities of an Oracle public cloud region, delivered on-premises



OCI support & SLAs

Pay only for what you use

Installed and operated at customer site by OCI

80+ OCI CLOUD SERVICES

Latest compute, storage, networking, security services

Modernize Data Platform: Autonomous Database, Exadata, MySQL + Heatwave, Object Storage Data Lake, Big Data services like Spark, Data Science

Optimize Apps: Observability and Management

Modernize Applications: Developer Services like Container Engine, Kubernetes, DevOps

SaaS in your own data center: Oracle Cloud Applications like ERP, HCM, ACX

Customer success with hybrid and multicloud strategies

Moved its mission-critical SaaS applications to a Dedicated Region, which are used by about 70% of the capital markets firms in Japan

Increased both cost and operational efficiency compared to its on-premises

Moved its business applications and VMware workloads to Oracle Cloud Infrastructure

Cut infrastructure costs by 50% compared to on-premises

Reduced administration and monitoring efforts by 90%

TIM Brasil will migrate 7,000 servers, 35,000 cores, 1,200 databases, and 15 petabytes of storage

Core billing, CRM, custom DB applications, VMware will move to OCI

Oracle-Azure Interconnect will provide 40 Gbps, federated identity, and 99.95% SLA

IaaS – What‘s New

Compute

Compute services for any enterprise use case

Bare Metal	VMs	Containers	Functions
• Instance isolation • Highest IOPS • High throughput • Low latency	• Flexible sizing • Security-hardened hypervisor • Burstable instances • Preemptible instances • Dense IO and dedicated host	• Managed Kubernetes • Bare metal option • Self-healing clusters	• Pay only for usage • Serverless • Container-native • Open source

AMD EPYC	Intel Xeon	Ampere (Arm)	NVIDIA GPUs

Local Attached Storage	Remote Attached Storage
NVMe SSDs Up to 51.2 TB Millions of IOPS	NVMe Block Volumes up to 1 PB 32 TB / volume 225 IOPS / GB

OCI VM Compute Shapes - Overview

STANDARD 2 (X7)	STANDARD 3 (X9)	OPTIMIZED3 FLEX (X9)	E3	E4	A1
Intel Xeon Platinum 8167M	Intel Xeon Platinum 8358	Intel Xeon Gold 6354	AMD EPYC 7742	AMD EPYC 7J13	ARM Ampere Altra
2 / 2.4 Ghz	2.6 – 3.4Ghz	3.0- 3.6Ghz	2.25 - 3.4 Ghz	2.55 - 3.5Ghz	2.8 - 3.0 Ghz
15 GB Ram / Core	**Flexible** 1–64 GB per OCPU Max: 256GB	**Flexible** 1–64 GB per OCPU Max: 256GB	**Flexible** 1 -64 GB per OCPU Max: 1024GB	**Flexible** 1–64 GB per OCPU Max: 1024GB	**Flexible** 1 – 64 GB per OCPU Max: 512GB
Max VM: 24 Cores	Max VM: 32 Cores	Max VM: 18 Cores	Max VM: 64 Cores	Max VM: 64 Cores	Max VM: 80 Cores
BM: 52 Cores / 768 GB Ram	BM: 64 Cores / 1024 GB Ram	BM: 36 Cores / 512 GB Ram	BM: 128 Cores / 2048 GB Ram	BM: 128 Cores / 2048 GB Ram	BM: 160 Cores / 1024 GB Ram
1 Gbps per Core	1 Gbps per Core	4 Gbps per OCPU	1 Gbps per Core	1 Gbps per Core	1 Gbps per Core
CPU + Mem $0.0638	OCPU $0.040 GB RAM $0.0015	OCPU $0.054 GB RAM $0.0015	OCPU $0.025 GB RAM $0.0015	OCPU $0.025 GB RAM $0.0015	OCPU: $0.010 GB RAM: $0.0015

Benchmark

Name	Single-core Score	Multi-core Score	Price / Month , 4 Cores/60GB RAM
OCI-VM-Standard2 (X7) Intel Xeon Platinum 8167M 1995 MHz (4 cores / 60GB)	691	3095	$186.30
OCI-VM-Standard3 Flex (X9) Intel Xeon Platinum 8358 2593 MHz (4 cores / 60GB RAM)	1193	5092	$182.50*
OCI-VM-Optimized3 Flex (X9) Intel Xeon Gold 6354 2993 MHz (4 cores / 60GB RAM)	1304	5529	$223.38*
OCI-VM-E3 AMD EPYC 7742 2245 MHz (4 cores / 60GB RAM)	966	4410	$138.70*
OCI-VM-E4 AMD EPYC 7J13 2545 MHz (4 cores / 60GB RAM)	1034	4604	$138.70*
OCI-VM-A1 ARM Ampere v8 (4 cores / 60GB RAM)	875	3364	$94.90*

* Flex shape, can better match actual cpu vs memory ratio needs, possibly better lowering cost
Benchmarked using Geekbench5.4.1 on Ubuntu 20 x64 and ARM

Burstable Virtual Machines

Burstable can also been seen as an ‘auto scale’ function up to 2x or 8x the size.

(Nonguaranteed) Bursting without any downtime

E3	1 OCPU @ 100%	2 OCPU @ 50%	8 OCPU @ 12.5%
Max CPU	1 core	2 cores	8 cores
Min CPU	1 core	1 cores	1 core
Cost	**$18,25 / Month**	**$18,25/Month**	**$18,25/Month**

Valid for Linux AND Windows Instances!

Is your workload single process / single thread
or multi process / multi threaded?

Fast and scalable compute: Flex VMs, bare metal, and GPUs

https://www.oracle.com/cloud/costestimator.html

WEB & APPLICATION SERVERS, STREAMING	ENTERPRISE APP SERVERS, DATABASES, BIG DATA	CLOUD NATIVE APPLICATIONS	HPC, AI/ML, 3D RENDERING	DNA SEQUENCING, CFD, CRASH SIMULATIONS

Virtual Machine

- **Flexible Ampere A1 Virtual Machines** 1-80 OCPUs, 1-512 GB RAM, $0.01 core/hr, $0.0015 GB RAM/hr
- **Flexible E4 Virtual Machines** 1-64 OCPUs, 1-1024 GB RAM, $0.025 core/hr, $0.0015 GB RAM/hr
- **Flexible X9 Virtual Machines** 1-18 OCPUs, 1-256 GB RAM, $0.054 core/hr, $0.0015 GB RAM/hr

E4,1OCPU=2vCPUs,8GB RAM=€23,49/mo

E4,Burstable, 50% CPU, 8GB RAM = €15,55

E4,Preemptive, 1 OCPU,8GB RAM= €11,74

Bare Metal Compute

- **Ampere A1 Bare Metal Standard** 160 OCPUs, 1024 GB RAM, $3.136/hr
- **E4 Bare Metal Standard*** 128 OCPUs, 2048 GB RAM, $6.272/hr
- **X7 Bare Metal Standard*** 52 OCPUs, 768 GB RAM, $3.3176 hr. **X7 BM Dense** adds 51.2 TB NVMe local storage, $6.6352/hr
- **X9 Bare Metal Dense** 36 OCPUs (3.6 Ghz Turbo), 512 GB RAM, 3.84 TB NVMe, 100 Gbps RDMA, $2.712/hr

€1.713/mo.

- **VM GPU 3.x** 1-4 V100 GPUs, 6-24 OCPUs, 16-64 GB RAM, $1.275 - $2.95 GPU/hr

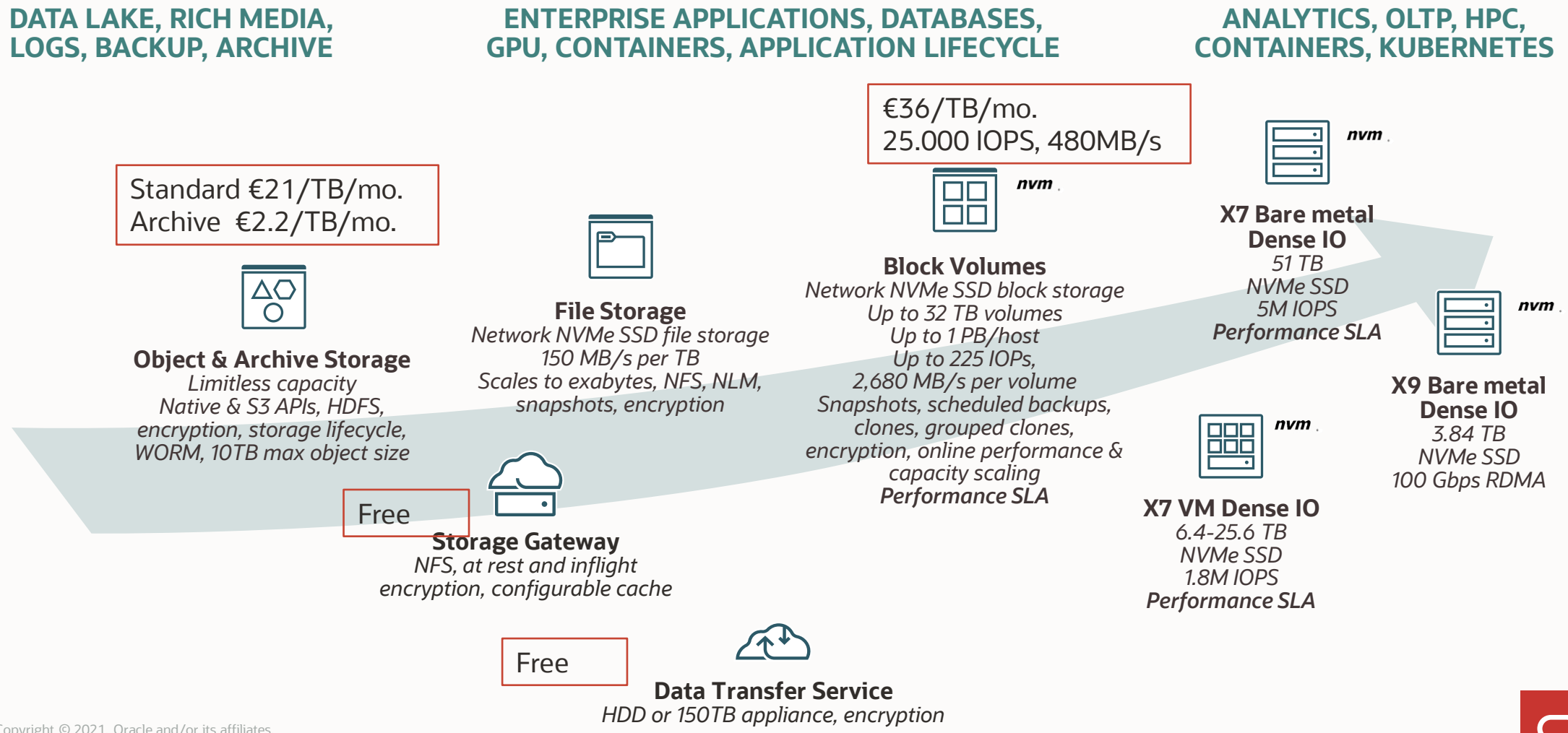
€1.872/mo.

- **Bare Metal GPU 3.8** 8 V100 GPUs, NVLINK, 52 OCPUs, 768 GB RAM, $23.60/hr
- **Bare Metal GPU 4.8** 8 A100 GPUs, NVLINK, 64 OCPUs, 2 TB RAM, 8 x 200Gbps RDMA, $24.40/hr

- All instances can attach up to 1PB of block storage
- X7 standard VM instances are also available in “t-shirt” sizes from 1-24 OCPUs, 15-320 GB RAM
- X7 dense VM instances are available in “t-shirt” sizes from 8-24 OCPUs, 120-320 GB RAM, 6.4-25.6TB local NVMe storage
- *Also available as Dedicated VM Hosts

Windows Subscription €58/OCPU/mo.

Complete storage portfolio, with consistently fast performance



Networking

High fidelity virtual networks and connectivity

Free

VCN

Fully configurable subnets, routing, firewalls
Default IPSec VPN
25Gb network infrastructure
Public IP

€134/1Gb/Mo. + MPLS

FastConnect

Dedicated, SLA backed connectivity
No data transfer charges
42 carriers worldwide

€7/Instance/Mo. + €7/100Mb/Mo.

Load Balancing

Choice of TCP, HTTP, HTTP/2
Flexible, autoscaling
End-to-end SSL
TLS encryption

Network Load Balancer Free

Service Gateways, VPNs

Private access without traversing internet
Full range of IaaS/PaaS services covered

Free

DNS

<30ms response time
Global load balancing
Traffic management
Network health checks

1.000.0000 req. €0.73

WAF

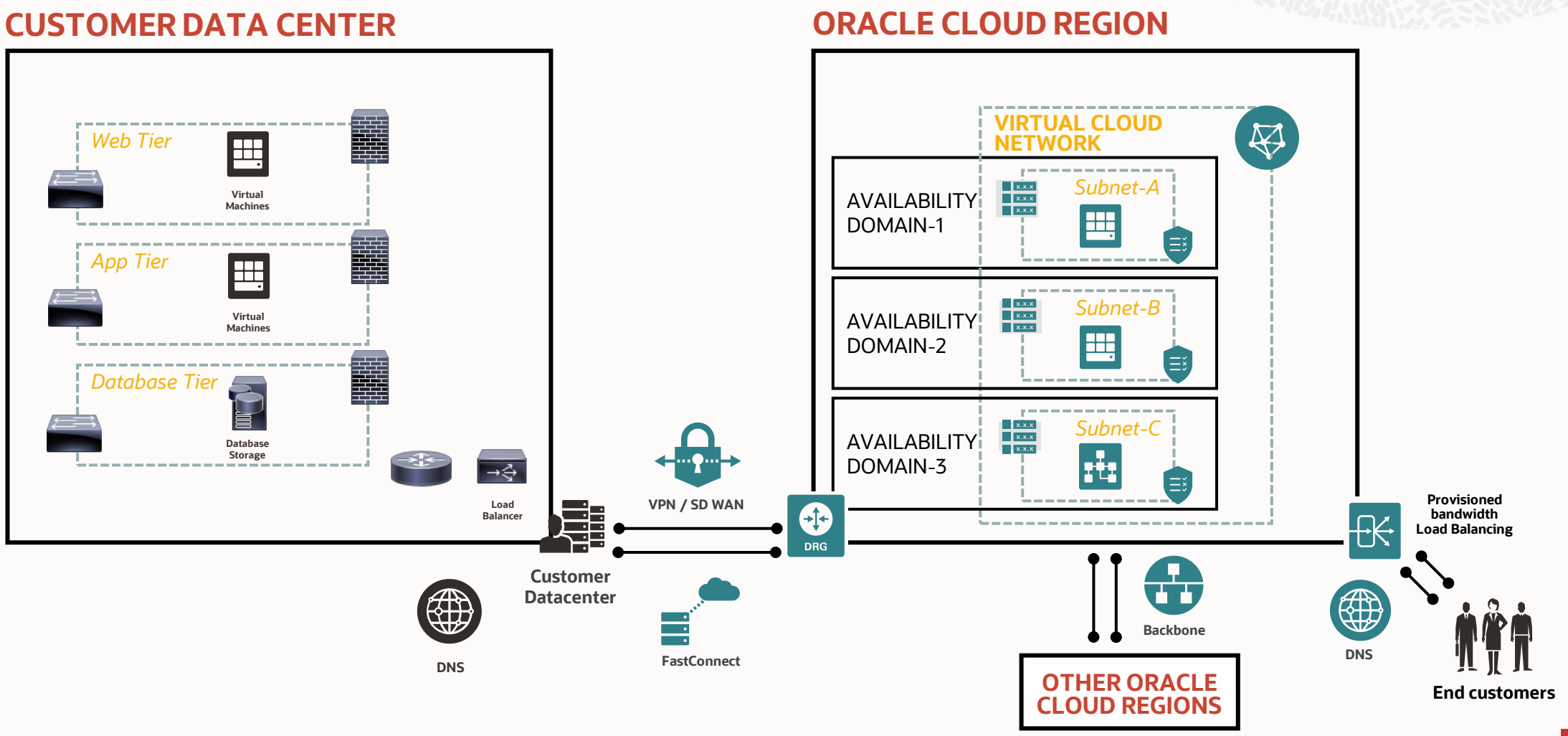
Access Control
Policies
OWASP, XSS,
Rate Limiting

€4/Instance/Mo. + €0.5/1Mil./Mo.

Inbound Traffic is Free

Outbound Traffic is free < 10TB/mo.
€7/TB for >10TB

Networking flexibility and control



HPC on Oracle Cloud Infrastructure

On-premises performance in the cloud

Low cost

Lowest cost cloud HPC

Best price-performance

Move CAPEX to OPEX

Flexible

CPU, **GPU**, bare metal

Universal Credits

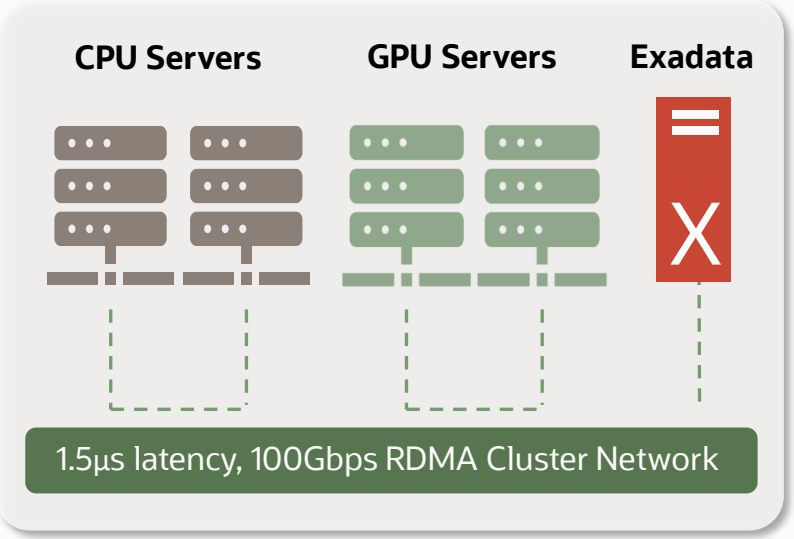
Always the right capacity

High performance

Largest bare metal HPC

Most on-node storage

Cluster networks

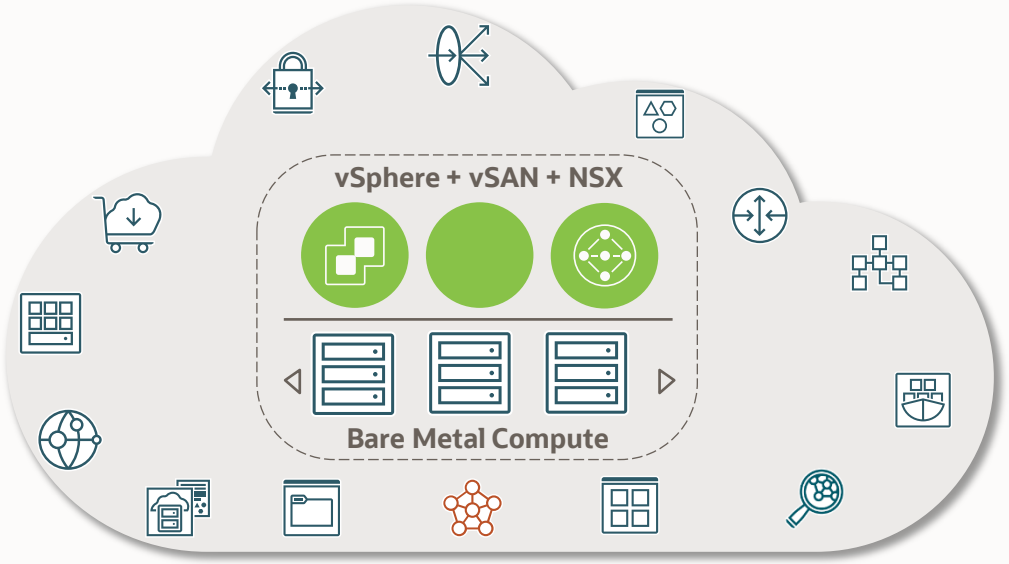


https://www.oracle.com/cloud/hpc/
https://www.oracle.com/cloud/economics/

Oracle Cloud VMware Solution

An integrated solution based on

VMware Software + Oracle Cloud Infrastructure



VMWARE SOFTWARE

Certified VMware Cloud Foundation environment with vSphere, vSAN, and NSX Enterprise Edition

- vSphere
  - ESXi 7.0, 6.7 or 6.5 and vCenter 7.0, 6.7 or 6.5
- NSX-T 3.0.2 or 2.5
- vSAN 7.0, 6.7 or 6.6

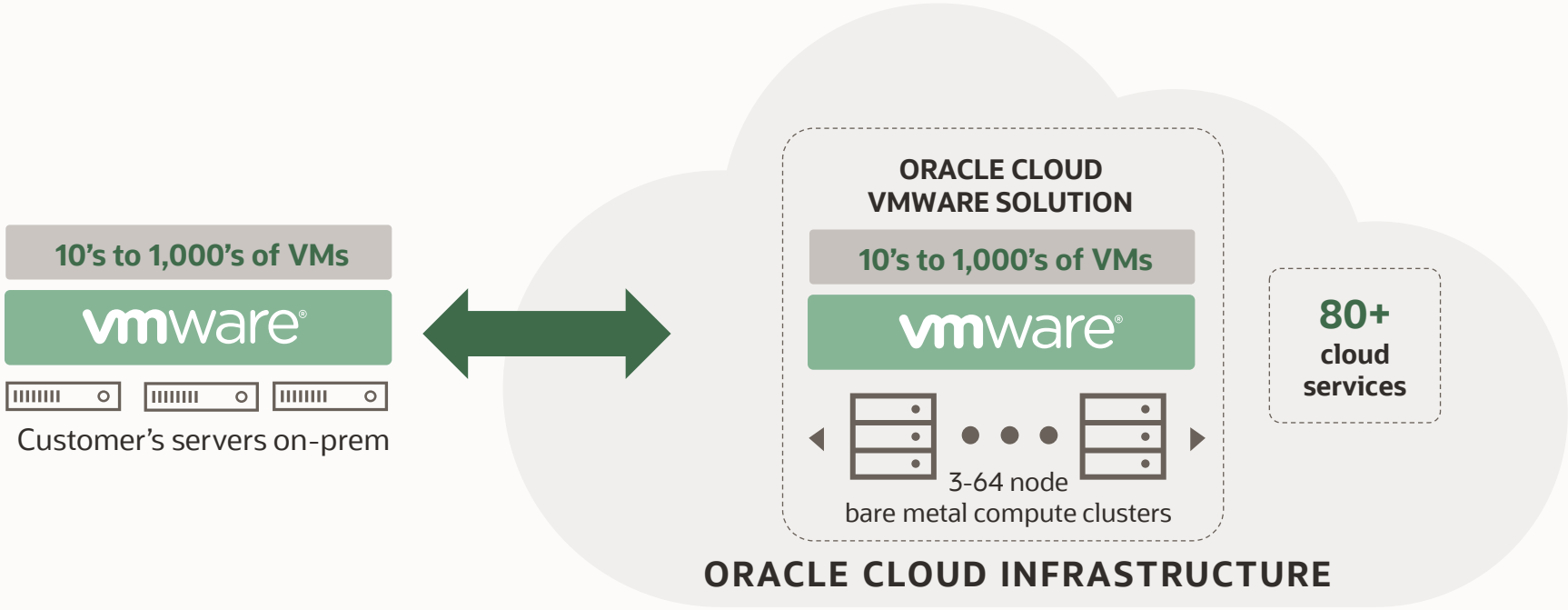
ORACLE CLOUD INFRASTRUCTURE

Bare Metal Compute configuration which you can expand at will

Minimum 3 node DenseIO2.52 cluster:

- 156 OCPUs
- 2.3 TB RAM Memory
- 153 TB NVME SSD Local Storage
- 2 NIC x 25 Gbps Network Bandwidth
- Option for add'l Cluster nodes up to 64 per cluster

A native VMware Experience in the cloud



Control

Security

Predictability

Container Engine for Kubernetes and Registry

Cloud Native

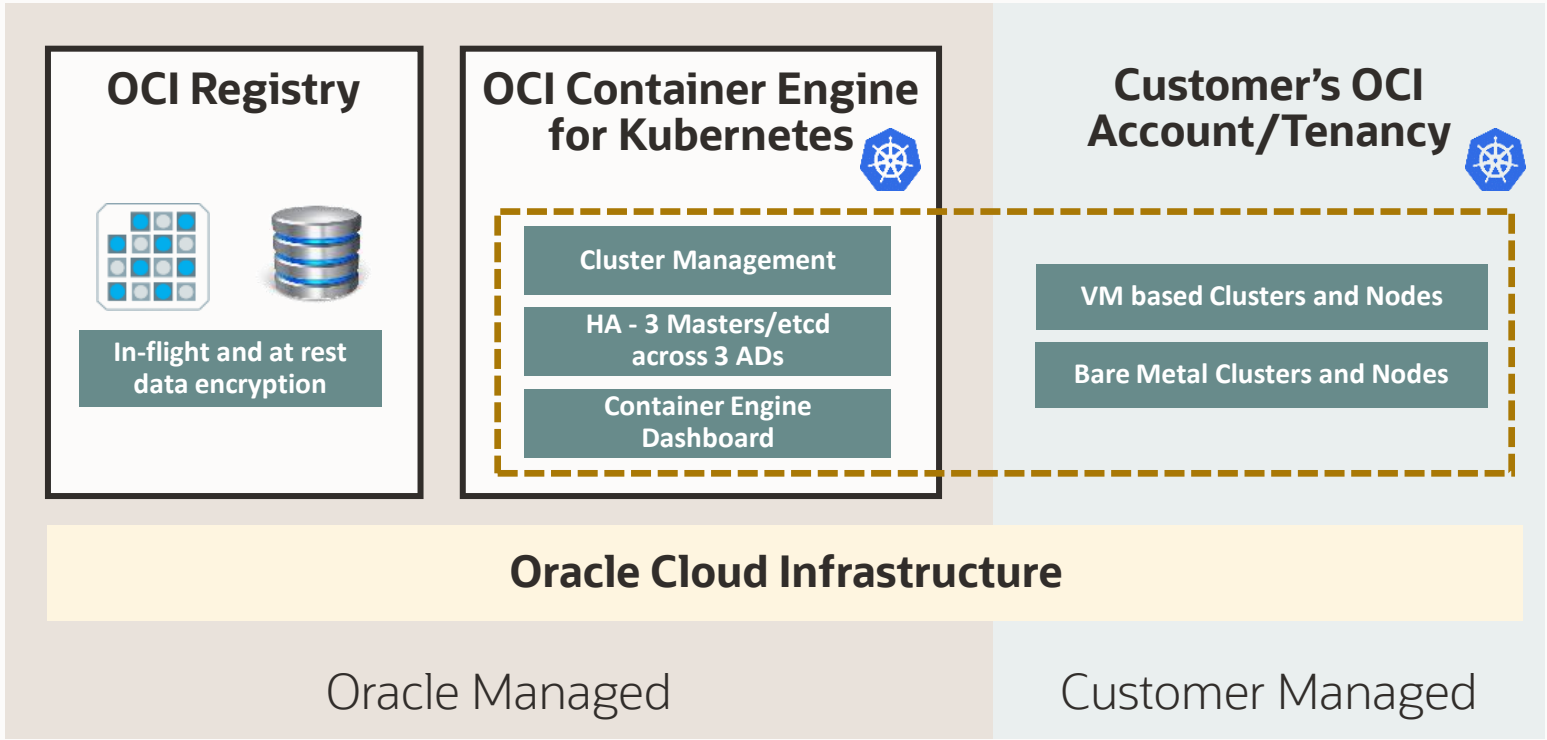
- Standard Docker and Kubernetes
- Registry Integration
- Integrated with virtual cloud networking and storage

Developer Friendly

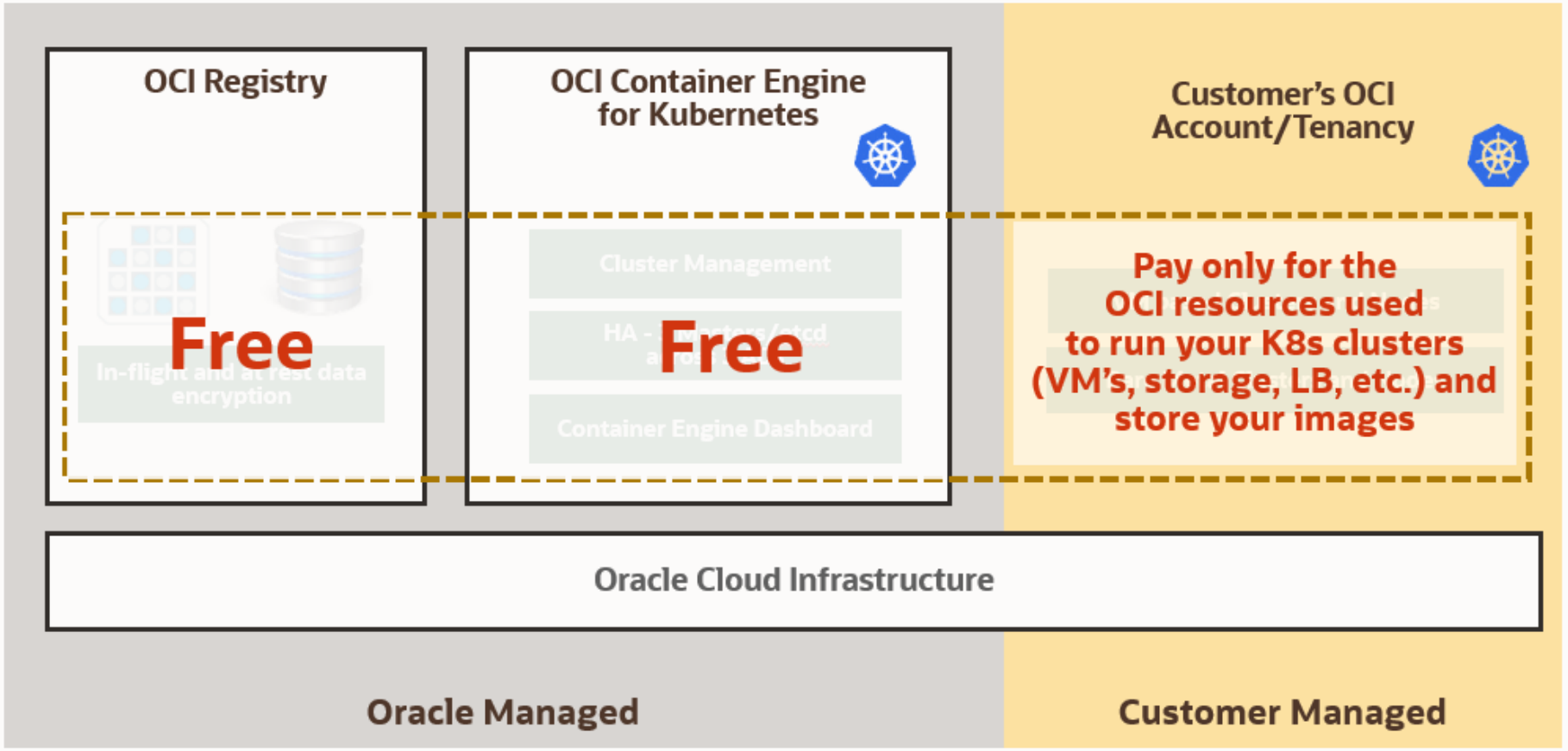
- Streamlined workflow
- Full REST API
- Built in cluster add-ons
- Open standards

Enterprise Ready

- Simplified Cluster Operations
- Full Bare Metal Performance and Highly Available IaaS
- Team Based Access Controls
- Autonomous Clusters



OKE/OCIR Pricing and Packaging



PaaS - Databases

€122/OCPU/Mo. BYOL
€138/OCPU/Mo. Std. Edition
€273/OCPU/Mo. EE. Edition -> **€3.276/year (Diag, Tun, TDE)**
€563/OCPU/Mo. EE High Edition (Part, DB Vault)
€853/OCPU/Mo. EE Extreme Edition (RAC,ADG,IMDB)

€102/1TB Storage/Mo.
€204/OCPU/Mo. JSON,BYOL
€853/OCPU/Mo. ATP/ADWH

CUSTOMER MANAGED

MANAGED

AUTONOMOUS

Database

The most comprehensive, resilient, high performing database services

Oracle Database on Compute
VM/Bare Metal
Data Guard
Auto TDE

1 OCPU,8GB RAM,
50GB =€23,49/mo

HeatWave
16 Cores, 512GB RAM
€225/mo. x 2 (3)

Oracle Database Cloud Service
VM/Bare Metal
RAC
Data Guard
Auto TDE
Automated backup, patching

MySQL Service
100% built and managed by MySQL team
Optimized for OCI
HeatWave: unique integrated high perf analytics engine
1/3 the cost of Amazon RDS

Oracle Exadata
Extreme performance
Base – Full rack
RAC
ADG
IORM
Cloud Service/
Cloud@Customer

ORACLE NoSQL Database

NoSQL Service
JSON documents, columnar, or key-value data model
Instant scaling
Transaction consistency
Lower cost than AWS DynamoDB

Autonomous Database
Auto-scaling, Auto-tuning, Auto-patching

ADW
Serverless or dedicated
Spatial, graph, ML
SQL Developer

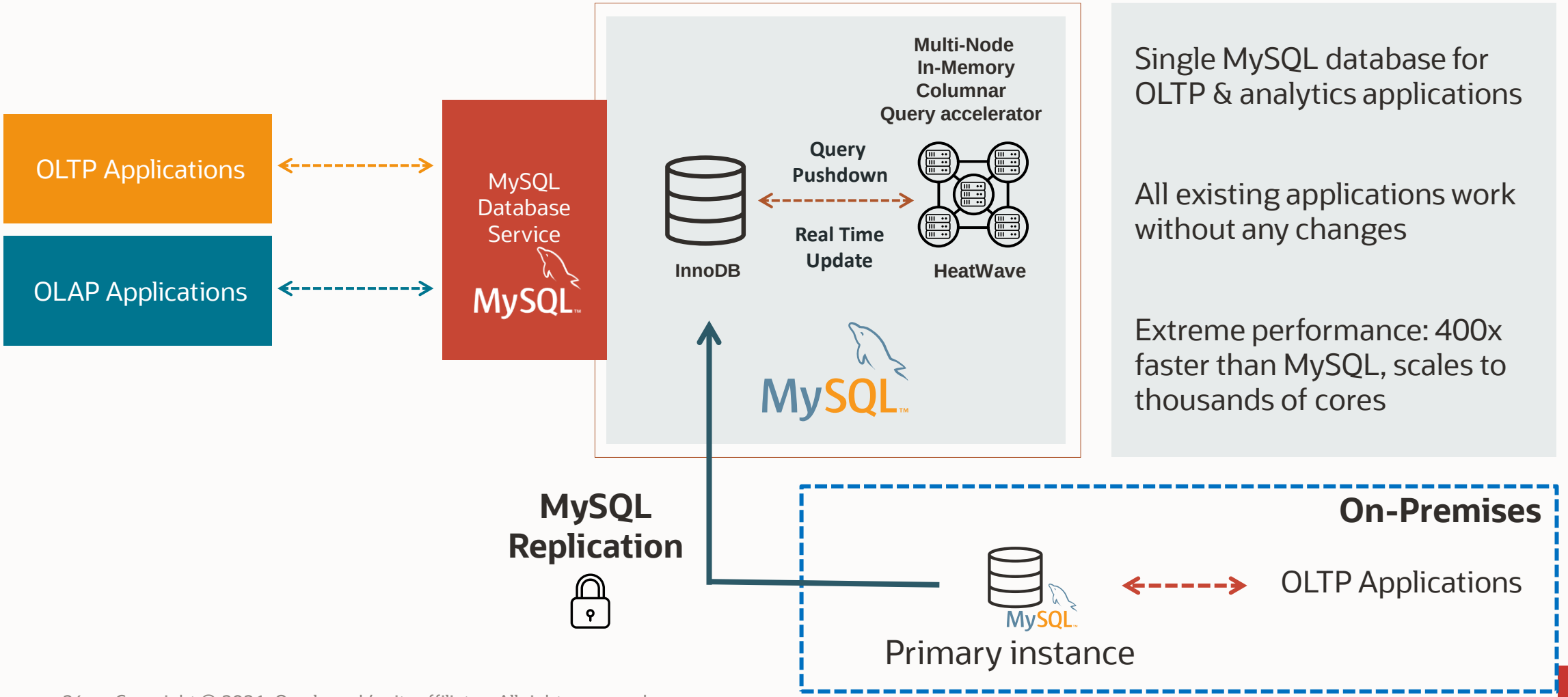
ATP
Serverless or dedicated
APEX

JSON
Serverless
Simple document APIs
ACID transactions

CONTROL → AUTOMATION

MySQL HeatWave

The *only* MySQL service with a native massively-scalable query accelerator



Single MySQL database for OLTP & analytics applications

All existing applications work without any changes

Extreme performance: 400x faster than MySQL, scales to thousands of cores

Oracle Database Cloud Service

Full-featured Oracle Database cloud instances

- Multiple Oracle Database versions, 12.1, 12.2, 18c, 19c, 21c
- 4 tiers of Oracle Database License Included options or Bring Your Own License
  - Standard Edition - Includes TDE, Multitenant (3PDBs)
  - Enterprise Edition … + EE features, DataGuard, Diagnostic & Tuning Pack, Data Masking
  - Enterprise Edition High Performance … + Partitioning, DB Vault, Adv. Compression, Adv. Security
  - Enterprise Edition Extreme Performance …+RAC, ADG, In-Memory

Efficiently run and manage database workloads

- Virtual machine Shapes
- Cloud automation under customer control - provisioning, patching, backup, disaster recovery, DB cloning, Storage management (ASM or LVM)
- OCPU scaling with bare metal and virtual machines
- Storage scaling on virtual machines

Autonomous Database | Key Features – Lifecycle Automation

Database lifecycle

- Provision, Start, Stop, Scale, Backup, Restore, Clone, Terminate
- Shared and Dedicated Infrastructure choices
- SLA tier selection High Availability
- Online Patching and Upgrades
- Online self-tuning over time (auto-indexes, auto-sql-plan-mgmt, auto stats)
- Online auto-scaling Compute and scaling Storage (auto-scaling storage coming soon)
- Database Cloning for easy development (meta data, full, full with refresh)
- Integrated and automated Backup and Point in time Restore

Autonomous cloud operations:
The foundation of Autonomous Database DevOps

Latest metrics showing Benefits of automated cloud operations:

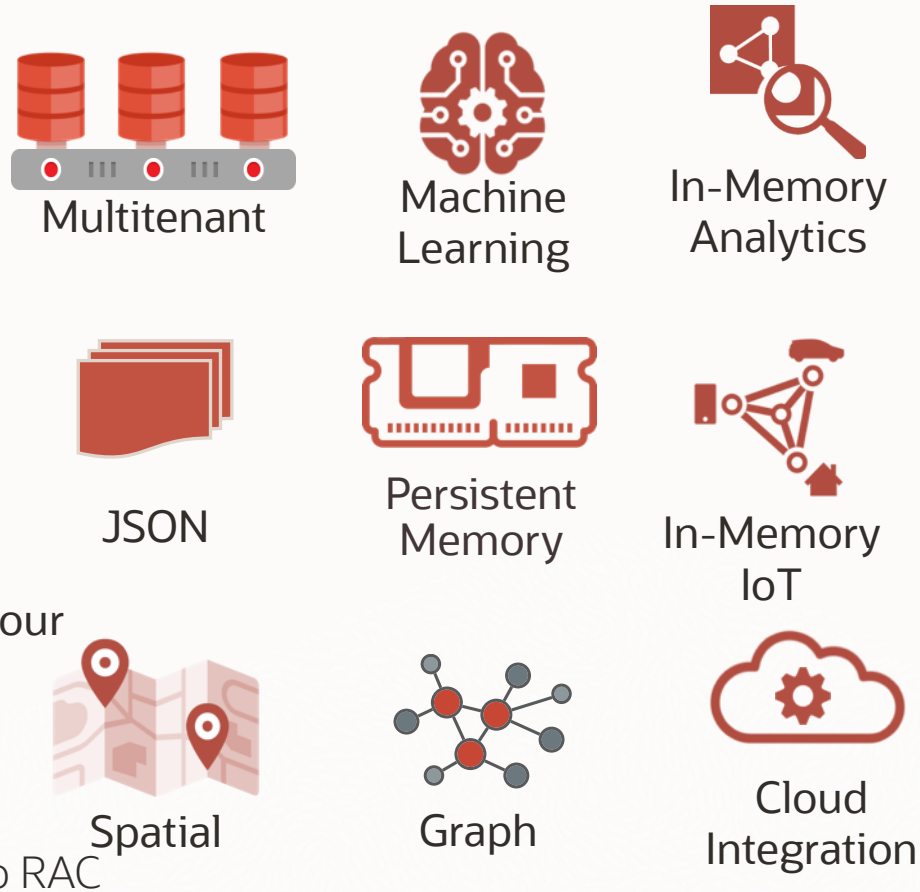
- **Detects 88% of issues** automatically without customer service request
- **Resolves service requests 4x+ faster** than on-prem

The key is **Automation**

- Automated monitoring and issue detection
- Automated bug-filing and diagnostics
- Automated patching and continuous integration
- Automated upgrades

Oracle Autonomous Database Service
Under the hood – A converged database

- Multitenant for Efficient, Agile Database Clouds
- AutoML for simple integrated Machine Learning
- In-Memory for Database Acceleration
- Native JSON for Document Data
- In-Memory Ingest for Fastest IoT
- Cloud SQL for integrating Object Store Data Lake
- Persistent Memory Store for Lowest Latency
- Spatial and Graph for Mapping and Social Networks
- Licence
  - Subscription (Licence Included) – Elastic, €1,14679 €/OCPU/hour
  - BYOL, €0,27524/OCPU/hour -> €204/OCPU/mo.
    - DB EE + Multitenant -> 2 OCPUs (<16 OCPUs; RAC otherwise)
    - Active DataGuard BYOL for Autonomous Dataguard
    - DB SE2 -> 4 OCPUs (max 8 OCPUs), no ADG, no Multitenant, no RAC

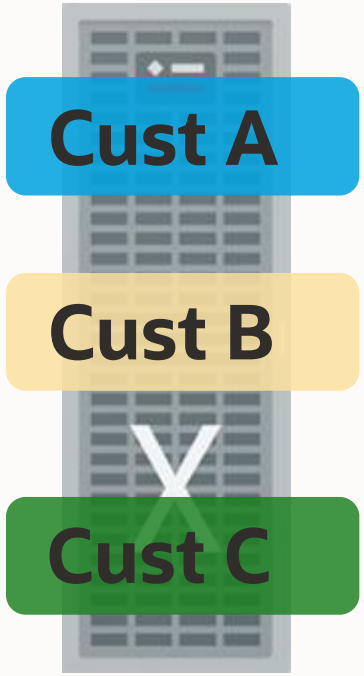


Database Deployment Options on OCI

Option	On-premise, Database on OCI Compute IaaS	DBCS VM	Exadata Cloud Service	Autonomous Database (Exadata)
CPUs	Intel, AMD	Intel	Intel	Intel
CPU Range	1 - 24	1,2,4,8,16	1 - 100's	1 - 128
IOPS	15K/CPU	15K,30K,60K,90K,120K	>500K	>500K
OS / SYSDBA Access	Yes	Yes	Yes	No
RAC	No	Yes (in VM only*)	Yes	Yes
Analytics Smartscan	No	No	Yes	Yes
Encryption	Block Storage	TDE	TDE	TDE
Versions	11g, 12.1, 12.2, 18c, 19c	11g, 12.1, 12.2, 18c, 19c	11g, 12.1, 12.2, 18c, 19c	19c,21c
Management	Customer	Customer,Oracle	Customer,Oracle	Oracle
Backups	Manual	Automatic	Automatic	Automatic
DataGuard	Manual	Automatic	Automatic	Automatic
Patching	Manual	Automatic, customer initiated	Automatic, customer initiated	Automatic
Performance Tuning	Manual	Manual	Manual	Automatic
Licence	BYOL	BYOL,Subscription	BYOL,Subscription	BYOL,Subscription
Licence Flexibility	Fixed	Subscription, Offline	Subscription, Online	Elastic, Subscription, Online

Exadata Cloud@Customer (on-premise installation)

Multi Customer Use Cases



Multi-Customer Model Available To

- **Government Owned Clouds**
- **Hosting Service Providers (HSP)**

License Types Permitted Under Multi-Customer Model

- **BYOL**
- **License Included**

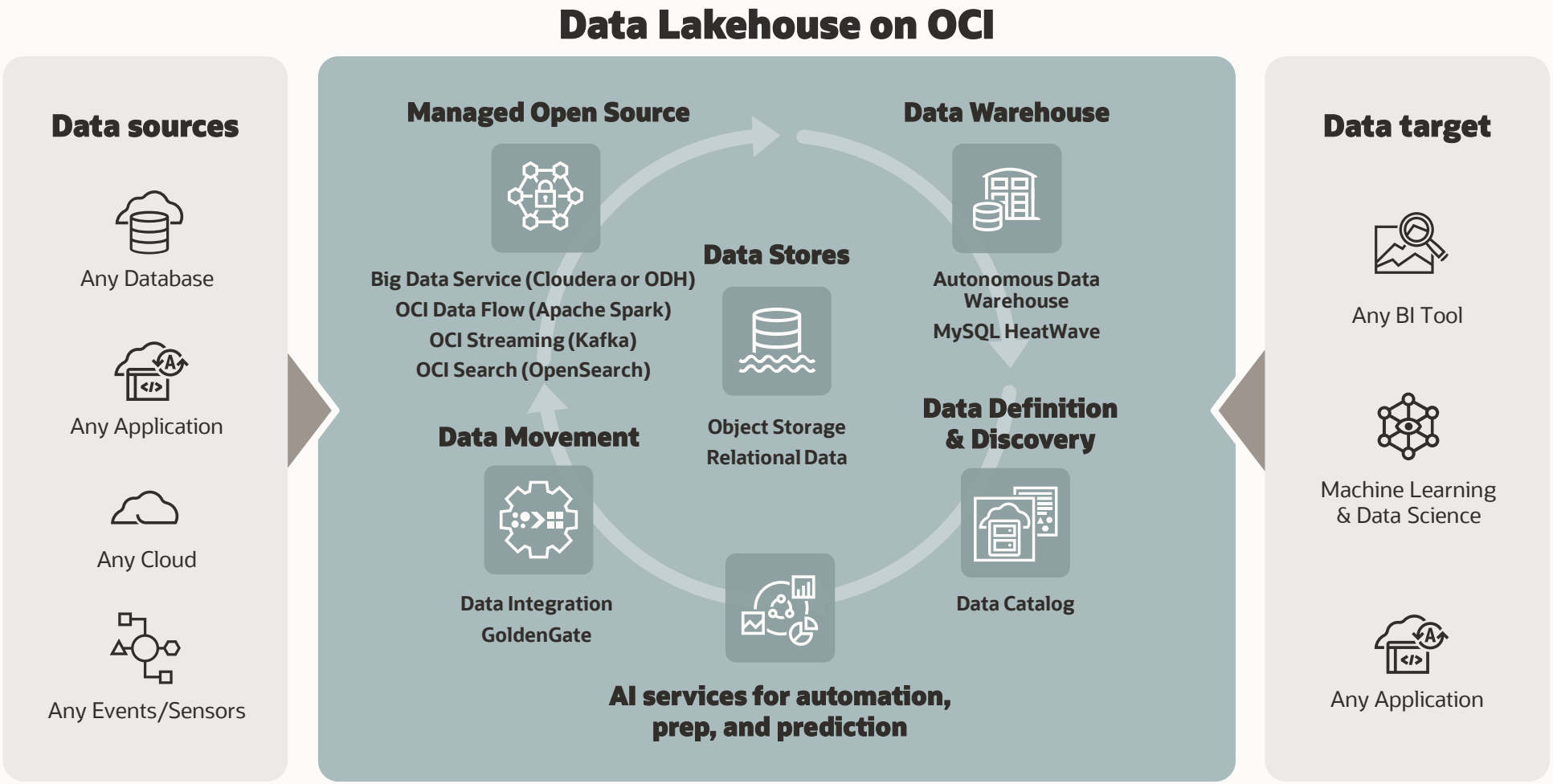
Service Available:

- Exadata Database Service
- Autonomous Database service

PaaS – BigData & AI

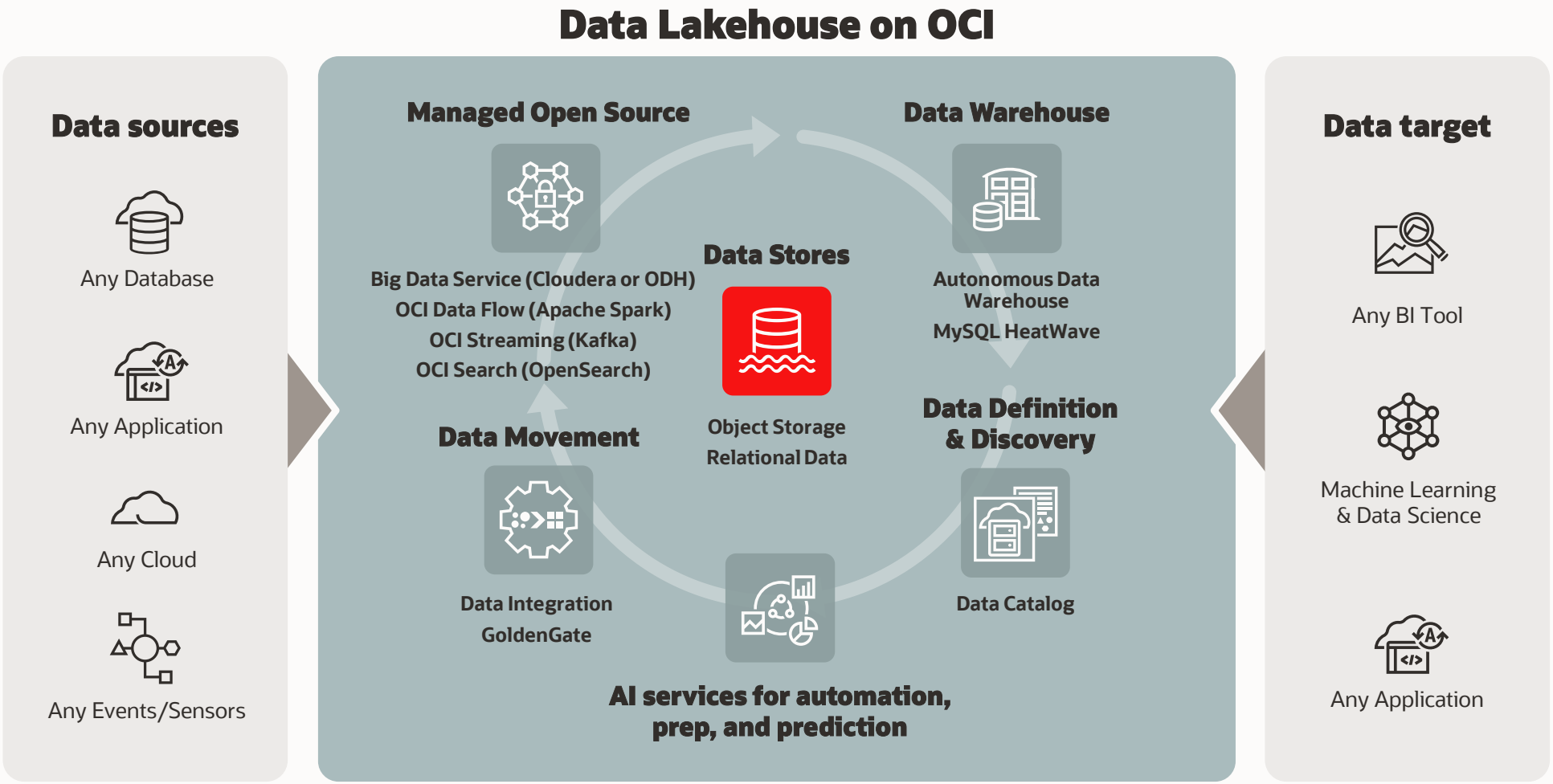
Data Lakehouses on OCI

Open & flexible: analyze any database, any application, from anywhere

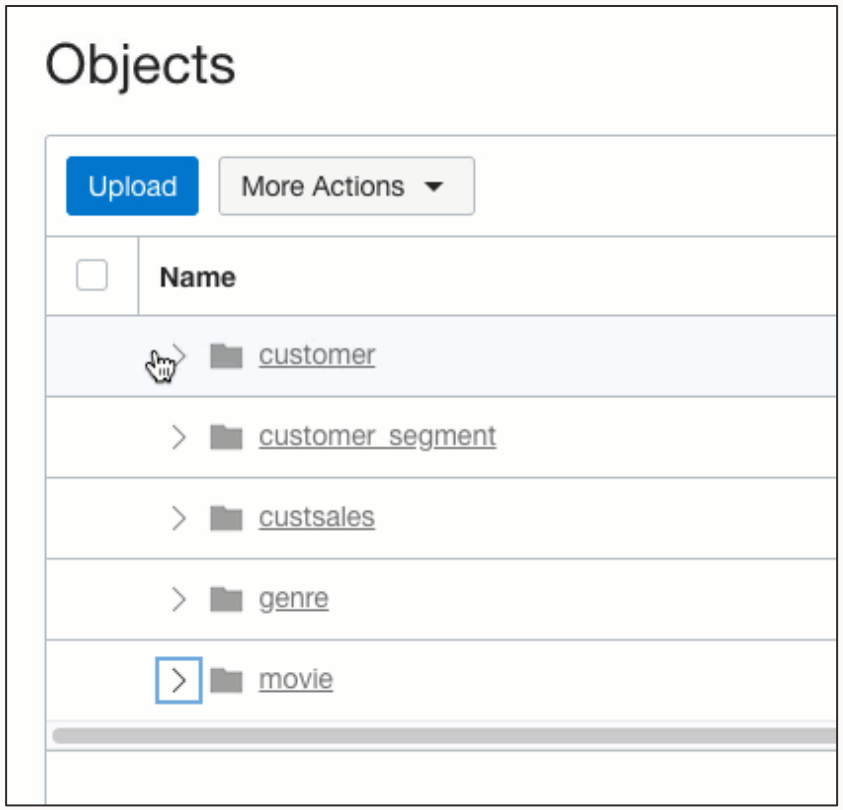


Data Lakehouses on OCI

Open & flexible: analyze any database, any application, from anywhere



Object Storage
Schema on Read



- **Amazon S3**
- **Bucket and Object concept**
- **Mirrored and HA**
- **HTTP(S) access**
- **Variety of file types**
  - CSV,
  - JSON
  - Structured File Types
    - PARQUET (columnar, compressed) , AVRO, and ORC most popular
- **Organized by schema**
  - Folders are used to organize files with shared schemas

- Object Storage REPLACES HDFS

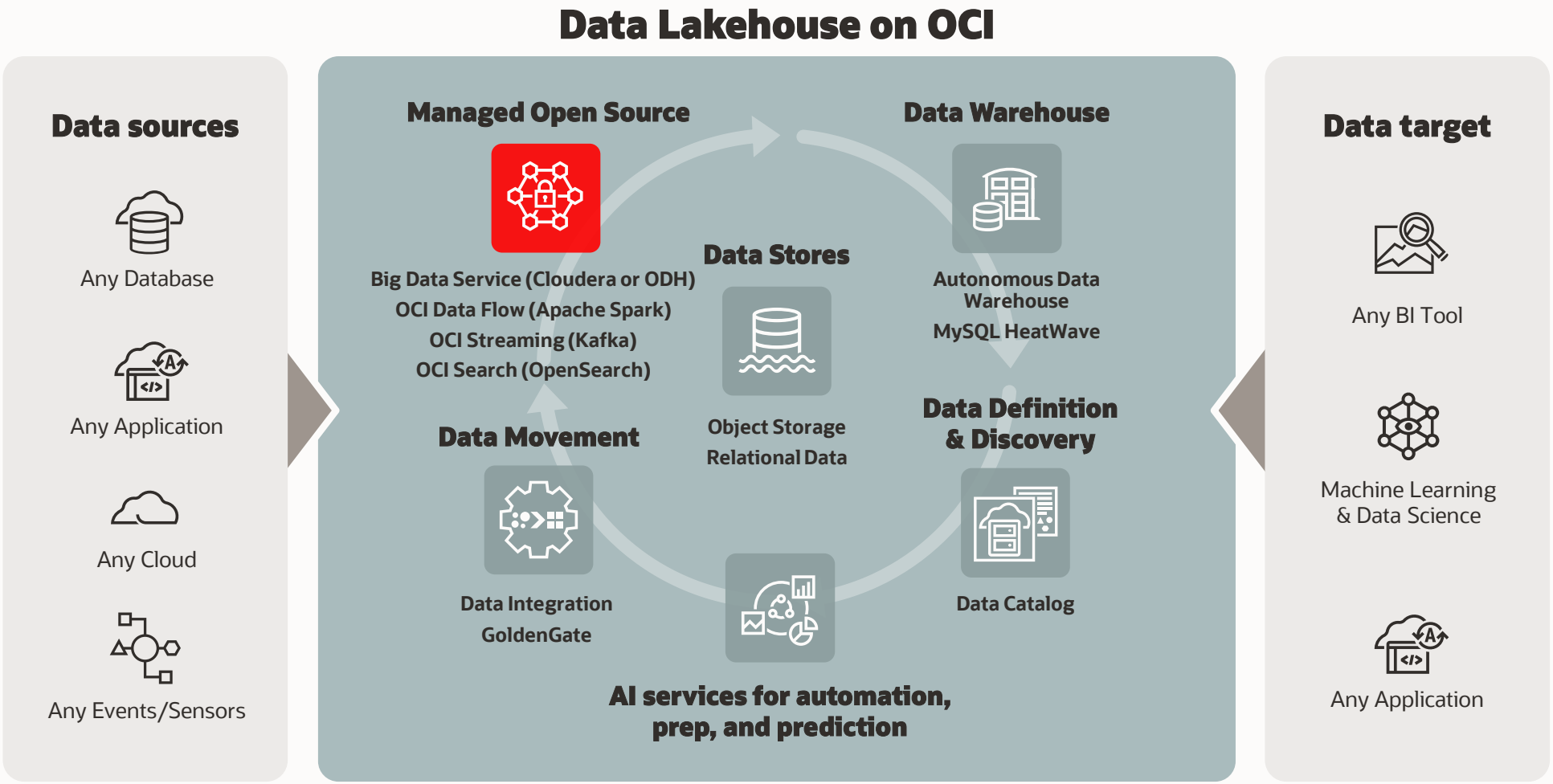
Data Platform Comparison

Strengths and Weaknesses of Data Platforms

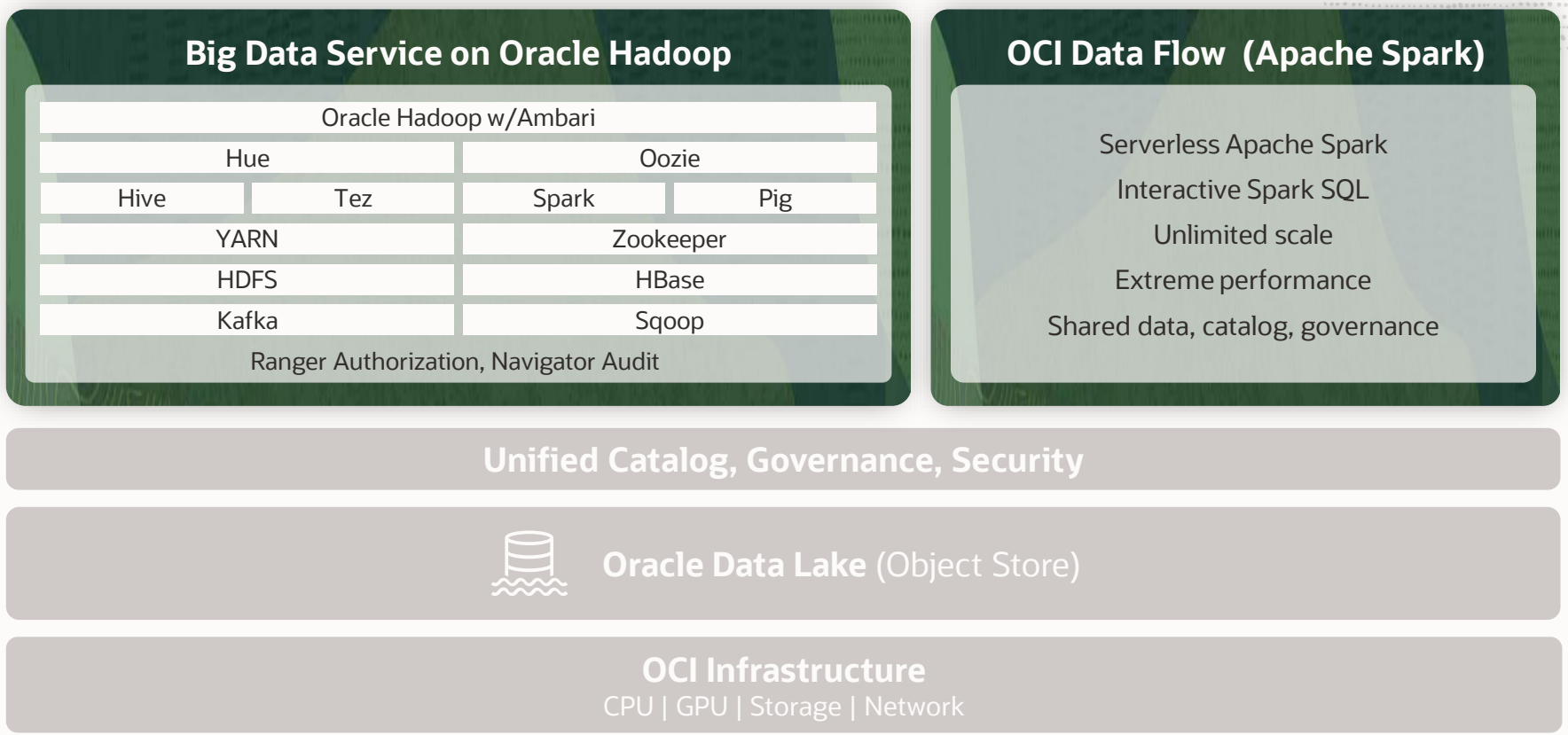
	Hadoop	Cloud Storage	RDBMS
Commercial Vendors	 Cloudera etc	 S3 / ADLS / GCS / Oracle Object Storage	 Oracle/AWS Redshift/ Teradata/Snowflake/etc
Data Format	Un-structured/Semi-structured / Structured	Un-structured/Semi-structured / Structured	Semi-structured / Structured
Schema	Schema on Read	Schema on Read	Schema on Write
Cost	Mid	Low	Mid - High
Size	Terabyte – Petabyte/Exabyte	Terabyte – Petabyte/Exabyte	Gigabyte - Terabyte
Integrity	Low	Low	High (ACID)
Query Performance	Medium	Low	High

Data Lakehouses on OCI

Open & flexible: analyze any database, any application, from anywhere



OCI Big Data Service and OCI Data Flow managed open-source services on shared storage and catalog



Big Data Service Pricing

Best Value in Cloud

BDS Cloudera Distribution (CDH)

Same BDS (CDH) pricing today. Customers pay an integrated price for the managed service and compute

SKU	Unit price	Metric
Oracle Big Data Service – Compute - Standard	$0.1344	OCPU per hour
Oracle Big Data Service – Compute - Dense I/O	$0.214	OCPU Per Hour
Oracle Big Data Service – Compute - HPC	$0.1536	OCPU Per Hour
Data Lake Accelerator (Cloud SQL)	$0.1075	OCPU Per Hour

BDS Oracle Distribution (ODH)

OCI standard rates on provisioned capacity for the cluster + $0.015 per core hour for BDS managed service

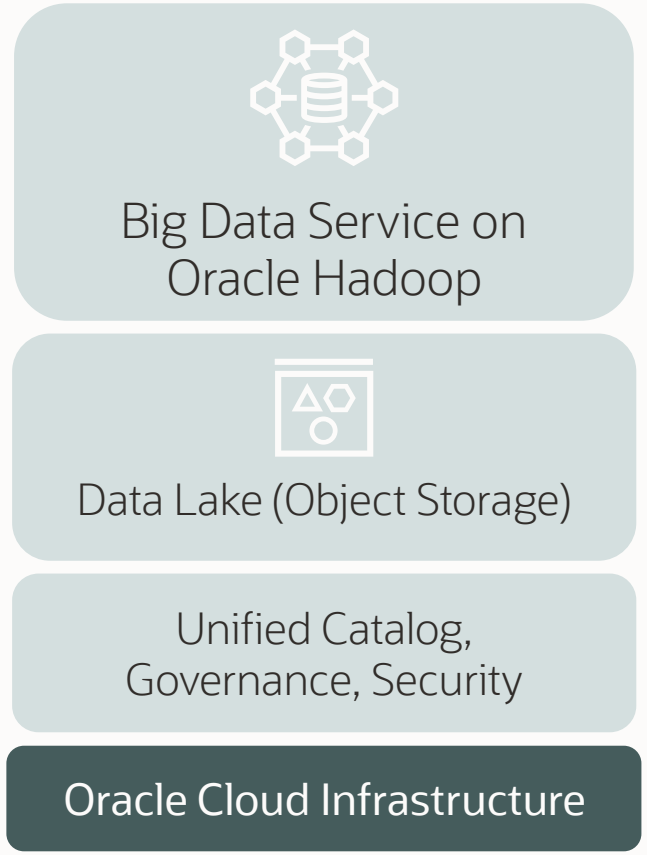
SKU	Unit price	Metric
OCI- Compute - Standard	$0.0638	OCPU per hour
OCI- Compute - Dense I/O	$0.1275	OCPU Per Hour
OCI- Compute - HPC	$0.075	OCPU Per Hour
Data Lake Accelerator (Cloud SQL)	$0.1075	OCPU Per Hour
Oracle Big Data Service – Service Fee	$0.015	OCPU Per Hour

Oracle Big Data Service: CDH and *introducing* ODH

CDH

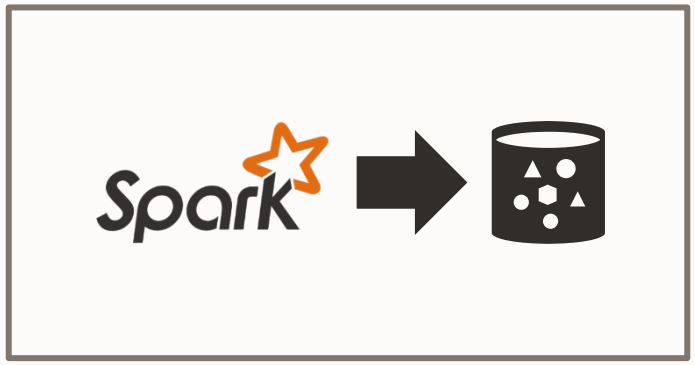
- Symmetrical capability and versioning for CDP customers
- Ease of migration to CDP Public or Private Cloud

Oracle Distro of Hadoop (ODH)



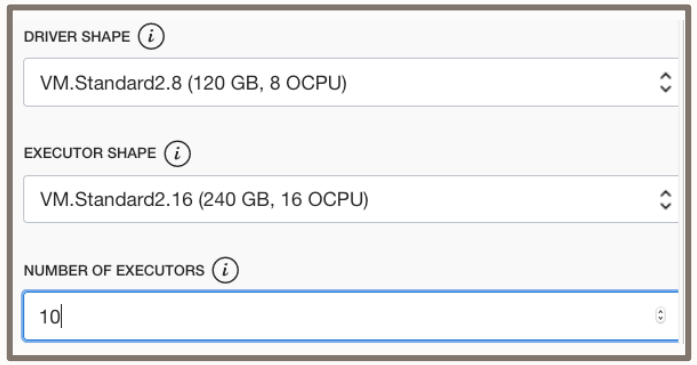
Apache Spark

Run Spark with OCI Data Flow in 3 Easy Steps



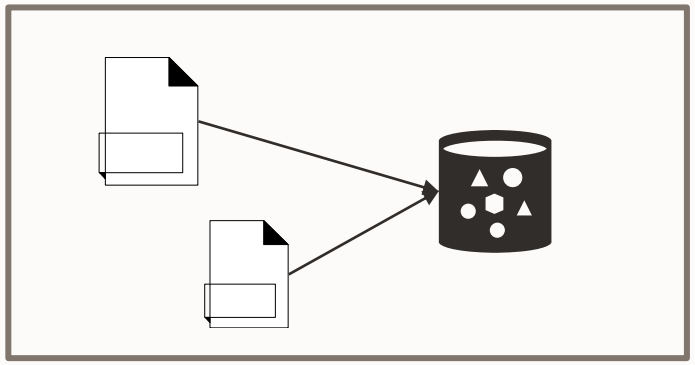
Step 1

Upload Spark applications and data to OCI Object Storage.



Step 2

Size your Cluster and Run. All hardware is allocated on the fly and shut down when finished.

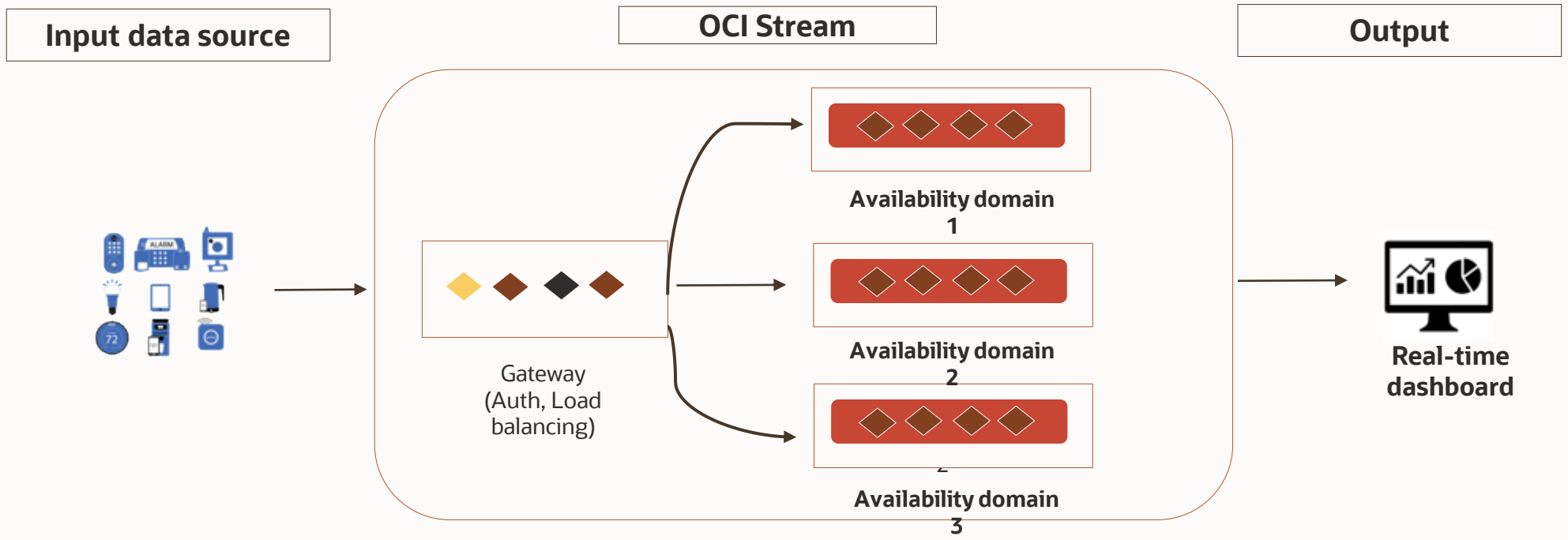


Step 3

All output and logs are securely captured in your object store.

OCI Streaming – Kafka like service

Streaming service is Highly Available



- Streaming is deployed across **geographically distributed Availability Domains**
- All the incoming data gets **replicated across 3 AD**
- Support for Kafka Connect – move data around with rich Connect eco-system

Introducing OCI Search Service with OpenSearch

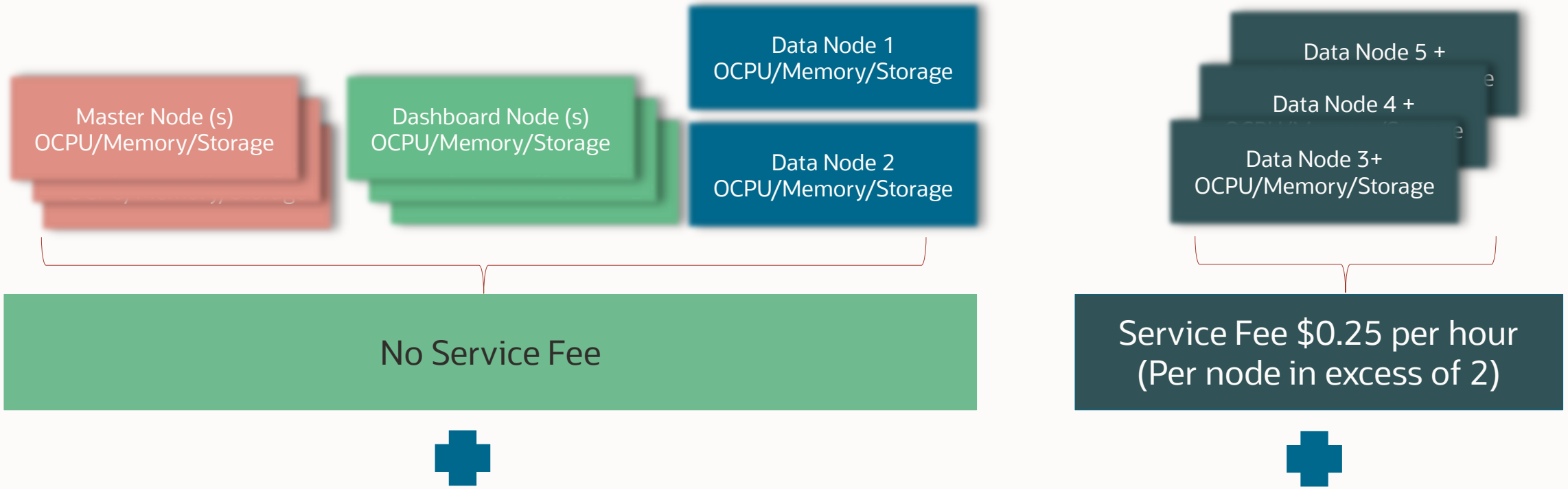
OpenSearch is a community-driven, open-source search and analytics suite derived from Apache 2.0 licensed Elasticsearch 7.10.2 and Kibana 7.10.2.

Oracle has partnered with AWS as a contributing Member of OpenSearch.org

Oracle Search Service with OpenSearch is a fully managed native service.

We offer automated patching, security updates, upgrades, resizing, scheduled backups, HA entirely FIPS compliant service.

OCI Search Service with OpenSearch Pricing Model



Infrastructure costs passed through to customers with no markup

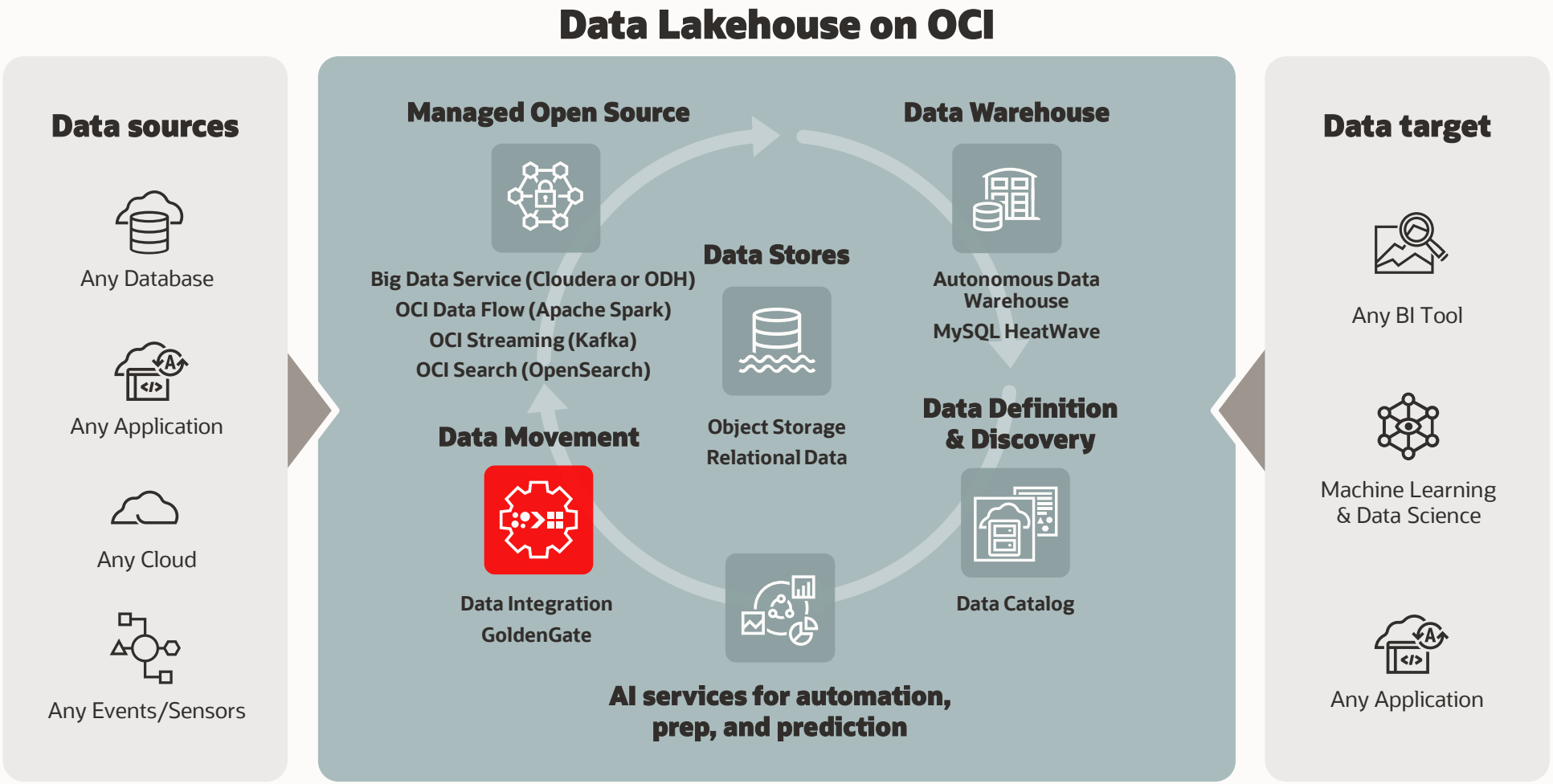
✓ Simple

✓ Predictable

✓ No Hidden License Fees

Data Lakehouses on OCI

Open & flexible: analyze any database, any application, from anywhere



Oracle Cloud Infrastructure GoldenGate

Market-leading real-time data solution is also available as a fully managed service

Get started for
€1.14/OCPU/h => €848/OCPU/mo.

Industry Leader for Real-Time Data Events

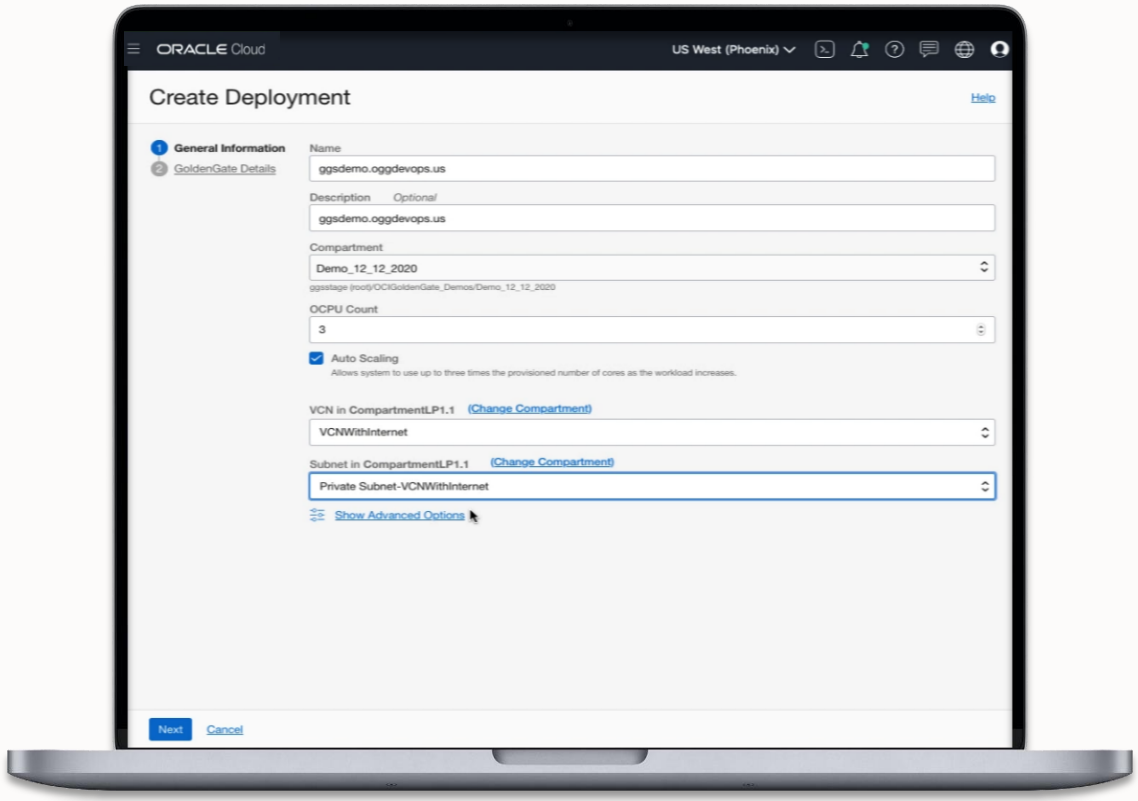
- Changed data capture (CDC), data replication, data integration, streaming integration, time-series, etc.
- Latest GoldenGate 21c microservices architecture

Cloud Native

- Fully managed by Oracle: upgrades, patching, etc.
- Auto-scale: true cloud elasticity, low operations cost
- Connects to on-premises, any Oracle 11.2.0.4+

Differentiated Use Cases

- Active-active, real-time data warehouse and more…
- Capture or deliver data with Autonomous DBs
- Databases may be multi-cloud or on-premises

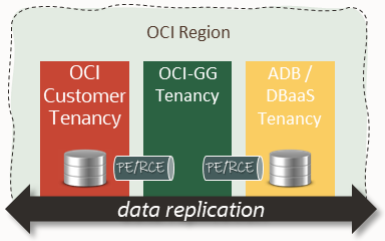


Fully managed, reduced operational overhead

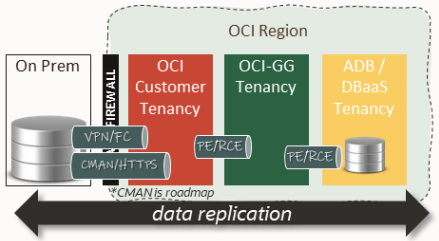
	GoldenGate	GG OCI Marketplace	OCI GoldenGate
Solution Management			
Create and Manage GoldenGate Deployments	<-------- customer responsibility -------->		
Platform Services			
Oracle Cloud Automations	*Not Available*	*Not Available*	Oracle Managed
Automatic Scaling (up to 3x)			
OCI Monitoring / Service Telemetry			
Metering and Billing per second			
Full REST API for Control Plane and Data Plane	Customer Managed	Customer Managed	
Disaster Recovery, Backup and Restore			
Upgrades and Patching			
Private Endpoints and Secure Vault			
Wallet Integration w/Autonomous DB			
Operating System Administration			
Infrastructure Management			
Virtualization & Terraform Stack Automation	Customer Provided	Oracle Provided	Oracle Provided
Install / Rapid Provisioning			
Server Administration			
Storage and Durability Guarantees			
Core Networking			

OCI GoldenGate Patterns

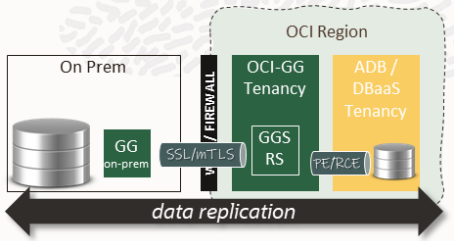
01: OCI DB to OCI DB



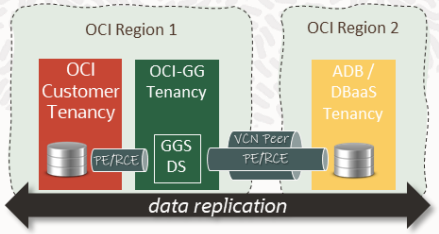
02a: On-prem to OCI (SQL*net)



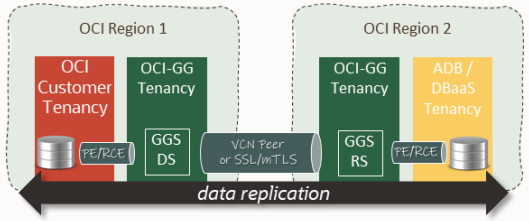
02b: On-prem to OCI (Dist→Rec)



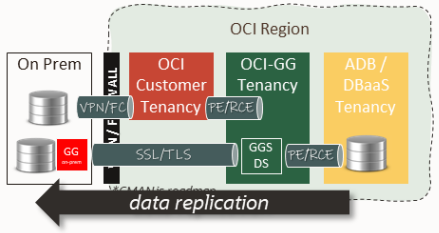
03a: Cross-Region (SQL*Net)



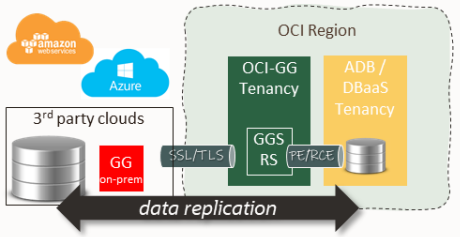
03b: Cross-Region (Dist→Rec)



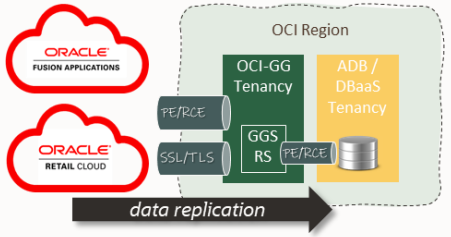
04: Autonomous to On-Prem



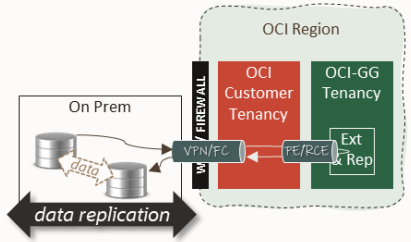
05: Non-Oracle Cloud to OCI



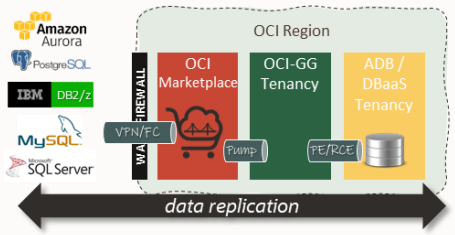
06: SaaS to OCI



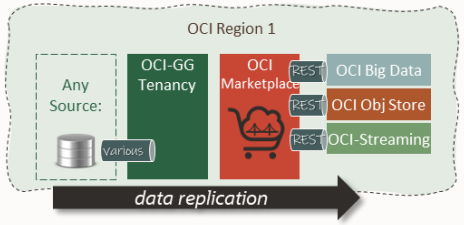
07: On-prem to On-prem



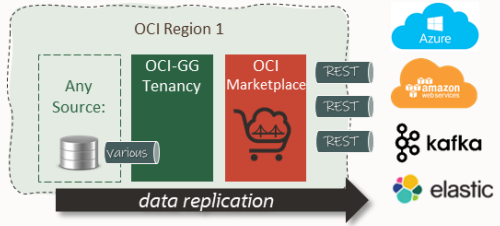
08: Non-Oracle DBs to OCI



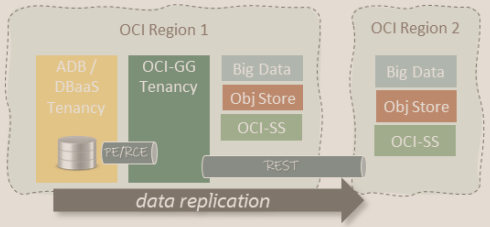
09: Any to OCI Non-Relational



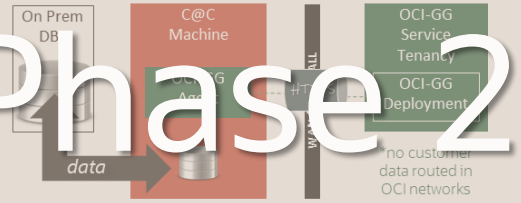
10: Stream Analytics as a Data Service



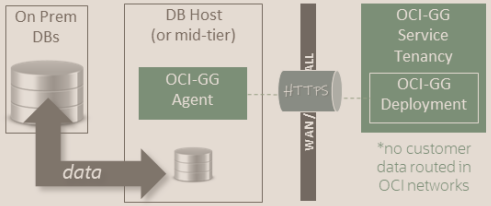
11: Native Non-Relational Targets



12: Cloud@Customer (Agent)



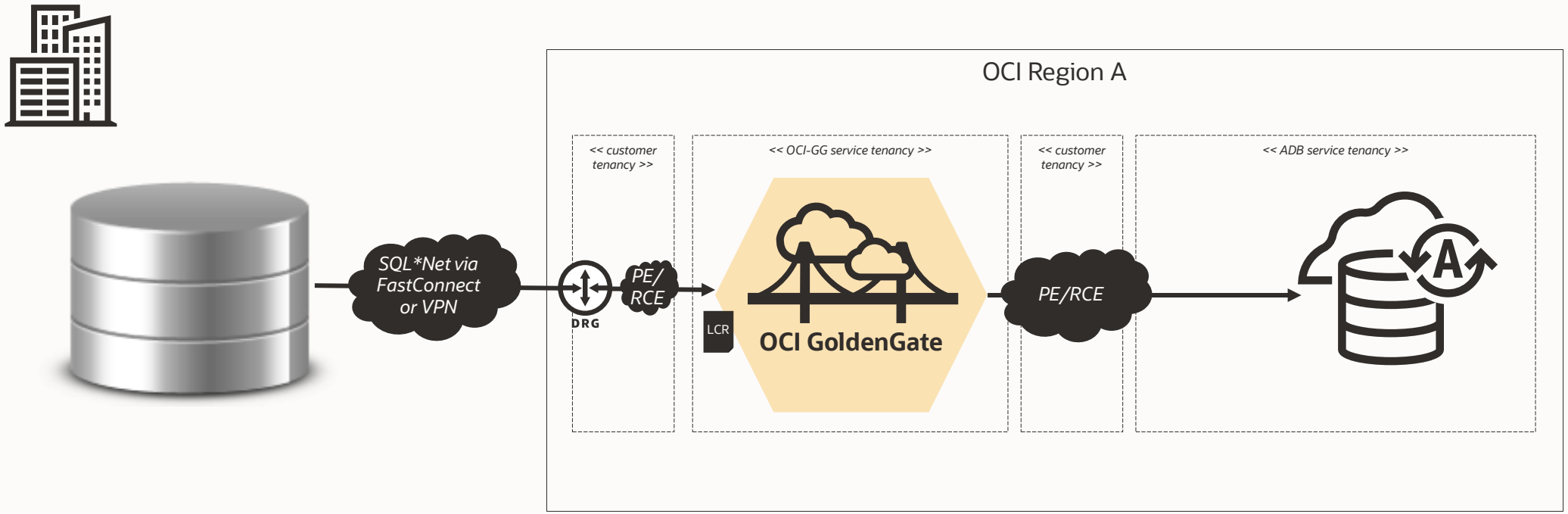
13: On-prem to On-prem (Agent)



Phase 2

Pattern 2a: On Premise to OCI (SQL*Net)

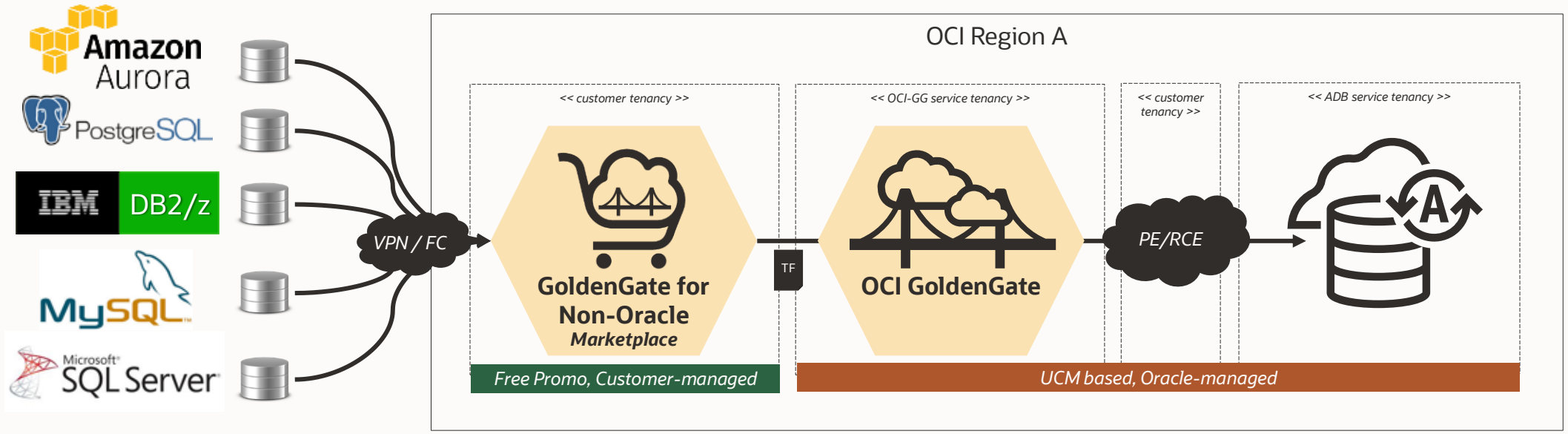
Quickest way to get started for most existing OCI customers



** Simplified diagram does not include every network / security component*

Pattern 8: Non-Oracle DBs to OCI

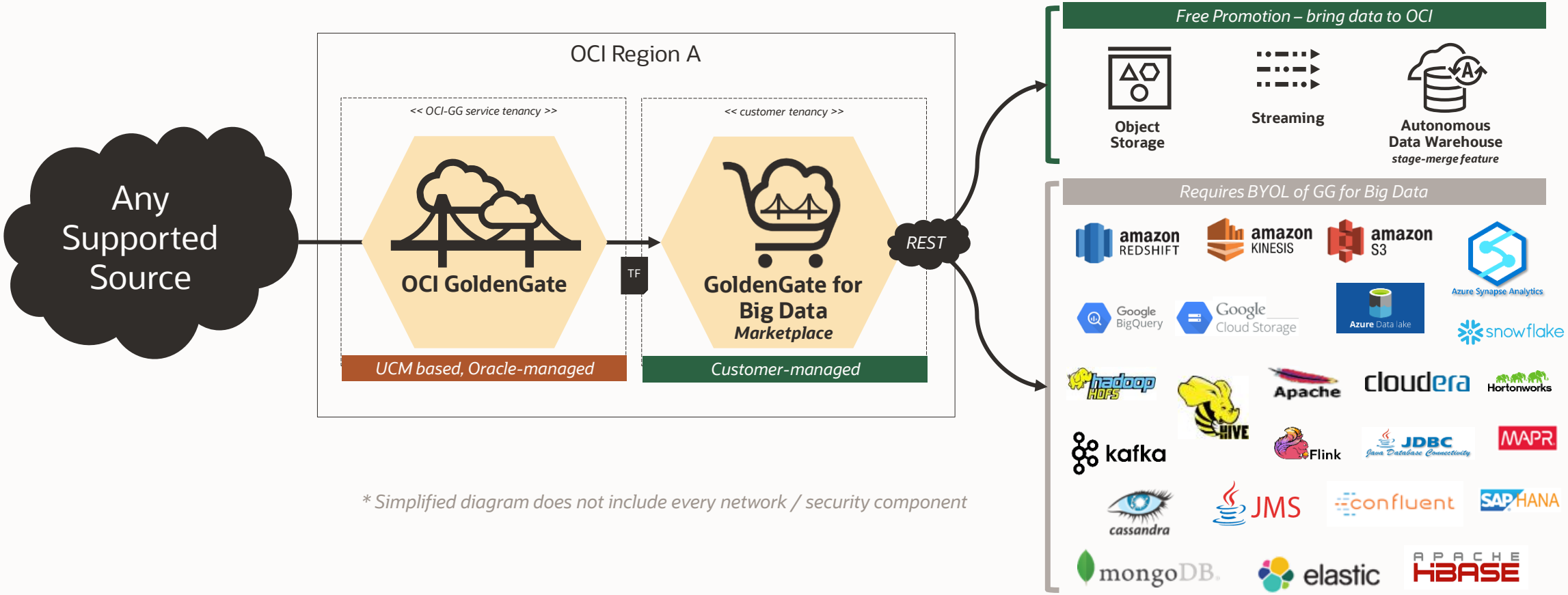
Real-time change data capture into OCI…



** Simplified diagram does not include every network / security component*

Pattern 9: Any to OCI Non-Relational

Send change events to non-relational targets…



** Simplified diagram does not include every network / security component*

Auto scaling – true pay per use

Same experience as Autonomous Database

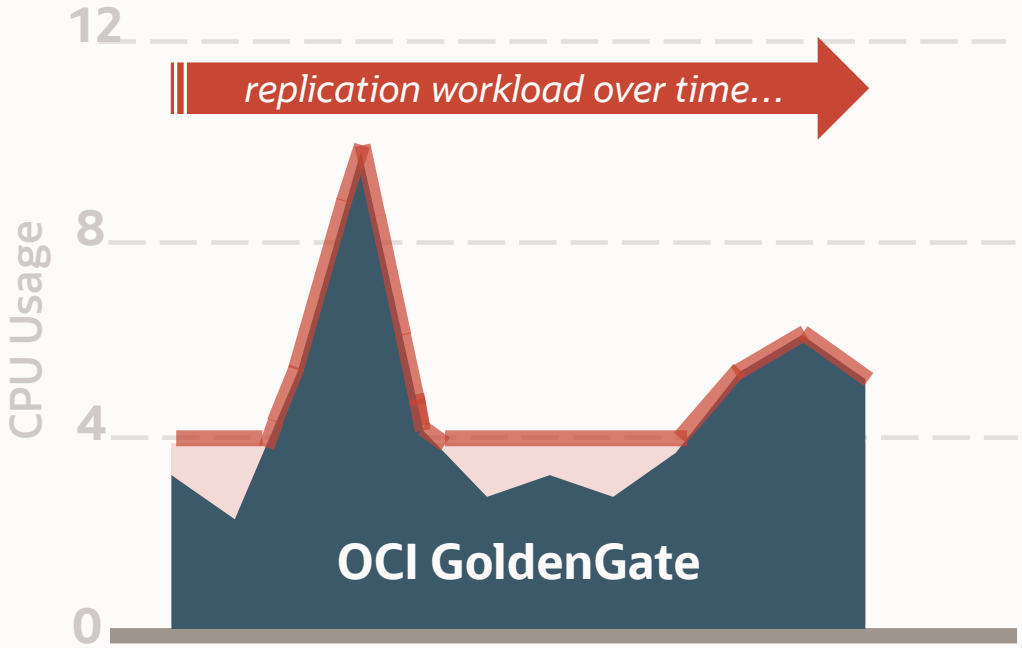
- Choose a base size
- Turn on auto scale feature
- Automatic 3x scaling factor

Pay only for what you use

- Scaling happens online / no downtime
- Per-second billing

ONLY Oracle
offers elastic billing on
CDC/replication capabilities

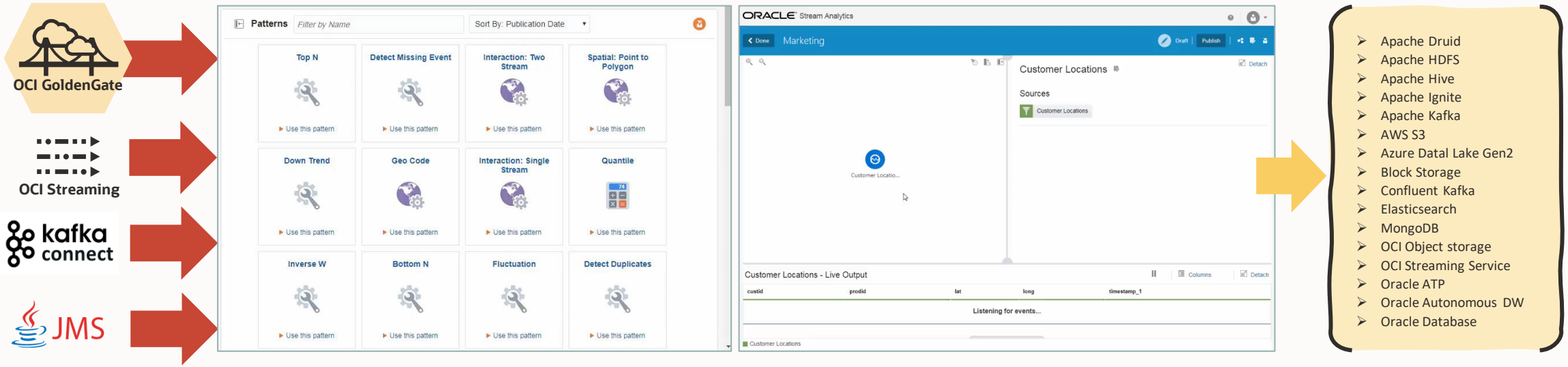
Get started for
€1.14/OCPU/h => €848/OCPU/mo.



Dynamic Auto-Scale
Automatically scale up to 3X
Scaling with zero downtime

GoldenGate Stream Analytics for OCI

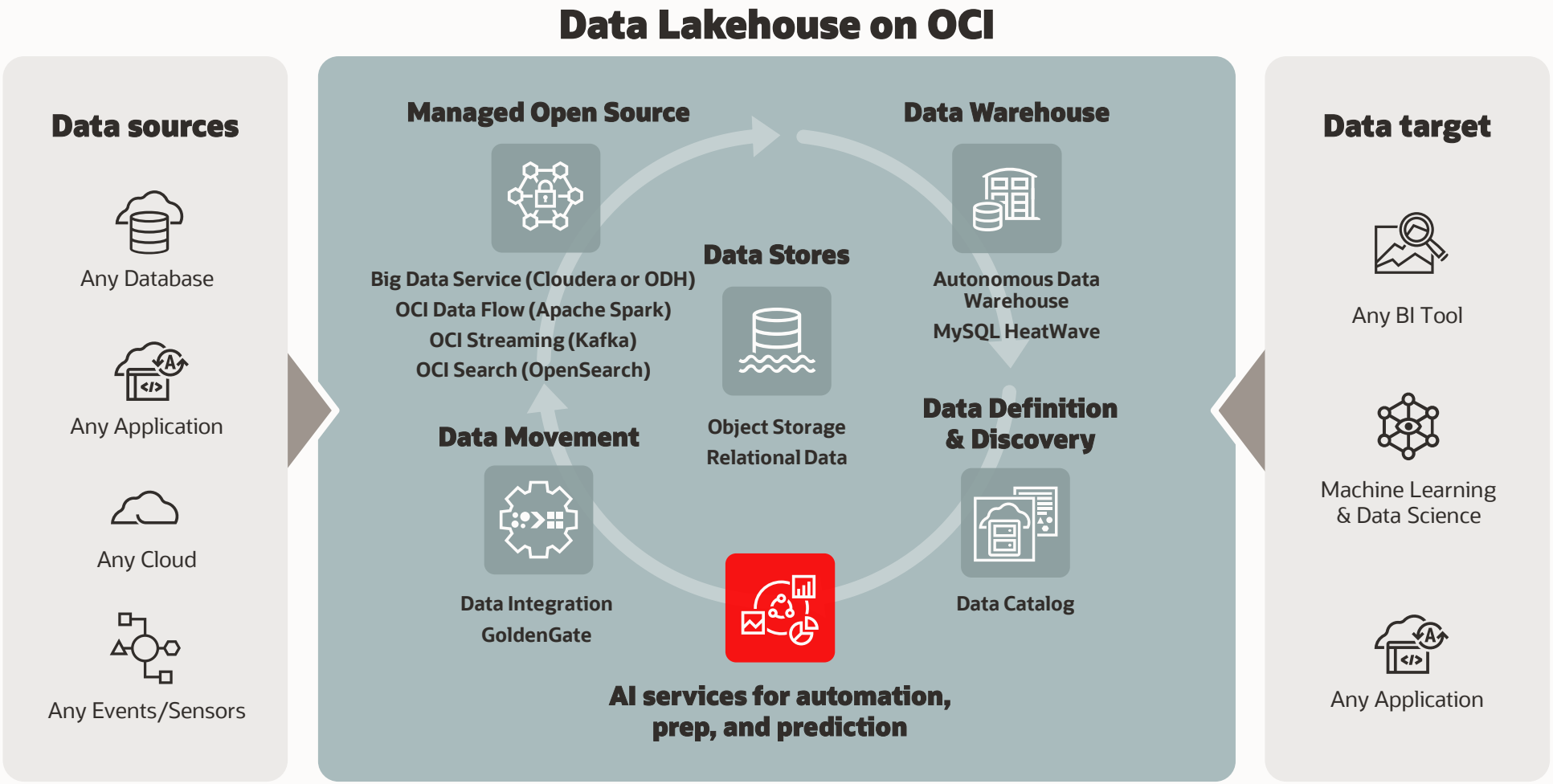
UCM based service in OCI Marketplace, €0,81/OCPU hour…



Ingest Events	Select Processing Patterns	Build Event Pipelines	Serve Data Downstream
100+ supported sources from OCI-GoldenGate, OCI-Streaming, Oracle Integration Cloud and Oracle IoT Cloud	*Rich set of pre-built patterns will dramatically improve developer efficiency and time-to-value*	*Easily leverage geo-fencing, machine-learning, and other reference data within the stream*	*Data can be delivered out to Kafka, databases, or easily staged for external ETL jobs*

Data Lakehouses on OCI

Open & flexible: analyze any database, any application, from anywhere



Oracle AI Services - Industrial Strength AI Models

Language

Oracle Cloud Infrastructure Language provides pre-built models for sophisticated text analysis at scale.

Developers don't need any machine learning expertise to use production-ready OCI Language for sentiment analysis, key-phrase extraction, text classification, named entity recognition, and language detection.

Speech

OCI Speech provides pre-built models trained on thousands of native and non-native speakers for real-time speech recognition.

Developers can easily convert streaming or file-based audio data containing human speech into highly accurate text transcriptions.

Anomaly Detection

OCI Anomaly Detection offers pre-built, business-specific anomaly detection models that flag critical incidents, resulting in faster time to detection and resolution.

Specialized APIs and automated model selection make it easy to build, train, and deploy anomaly detection to applications and operations.

Vision

OCI Vision provides state-of-the-art models and fully managed model infrastructure that is pretrained for image recognition tasks.

It provides visual and textual features to enable searchable PDFs, document language detection, and document classification—all without creating a deep learning pipeline.

Sample AI Services Use Cases

Brand/customer Sentiment Analysis

Industries: Retail, Financial Services & Insurance, Telco & Media

Provide pretrained AI models for fast, accurate text analysis to detect sentiment in large amounts of text data (including social media posts, reviews, and customer support tickets), at a lower price than competitors.

Visual Detection

Industries: Manufacturing, Retail, Insurance, Media

Identify and match object in visual media such as photographs and video. Identify parts and products, recognize and search by logos, match items to catalogs, count objects in images like people or cars.

Predictive Maintenance

Industries: Utilities, Oil & Gas, Manufacturing, Transportation.

Track and analyze signal from a wide variety of sources to determine the right time for fixing equipment, keeping workers safe and reduce costs of failure and downtime.

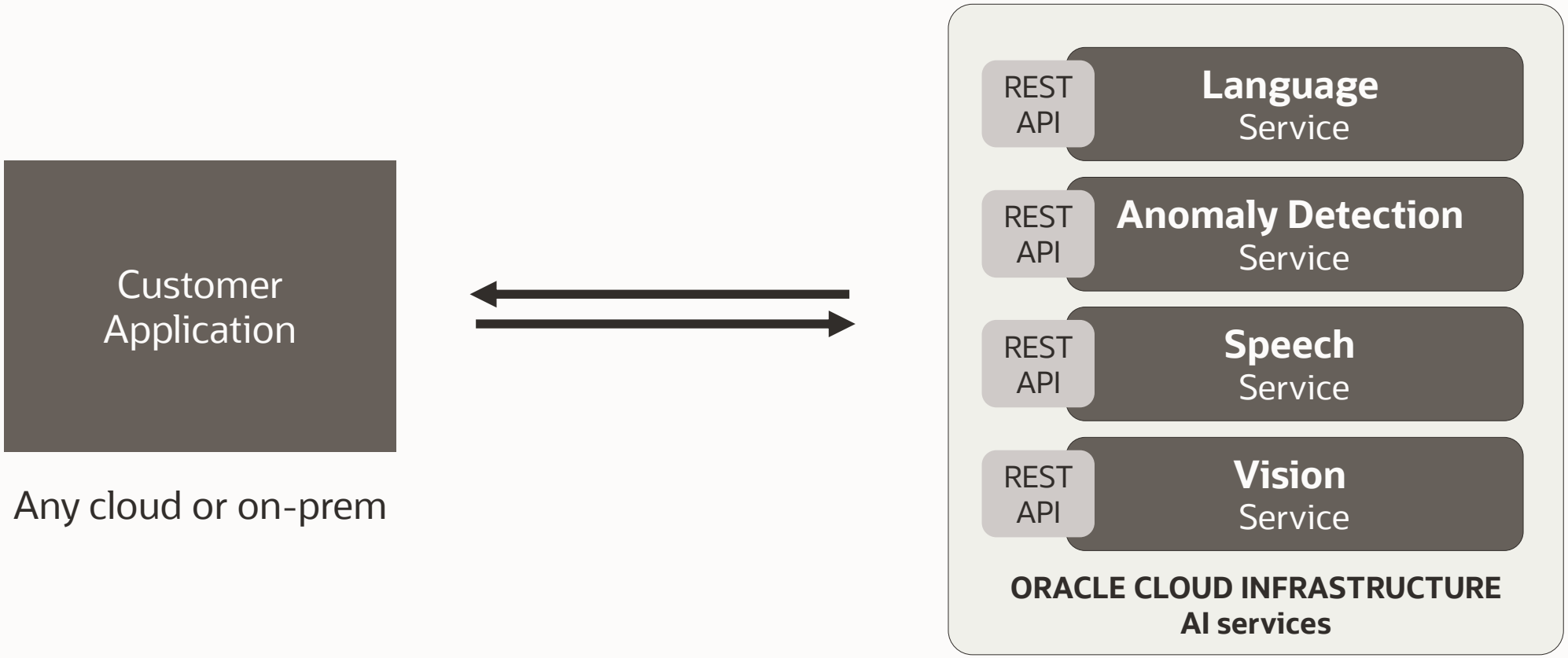
Digital Asset Management

Industries: All, but especially Retail, Media

Generate metadata for video, audio, and images for better searching. Transcribe audio and closed caption video. Translate audio tracks.

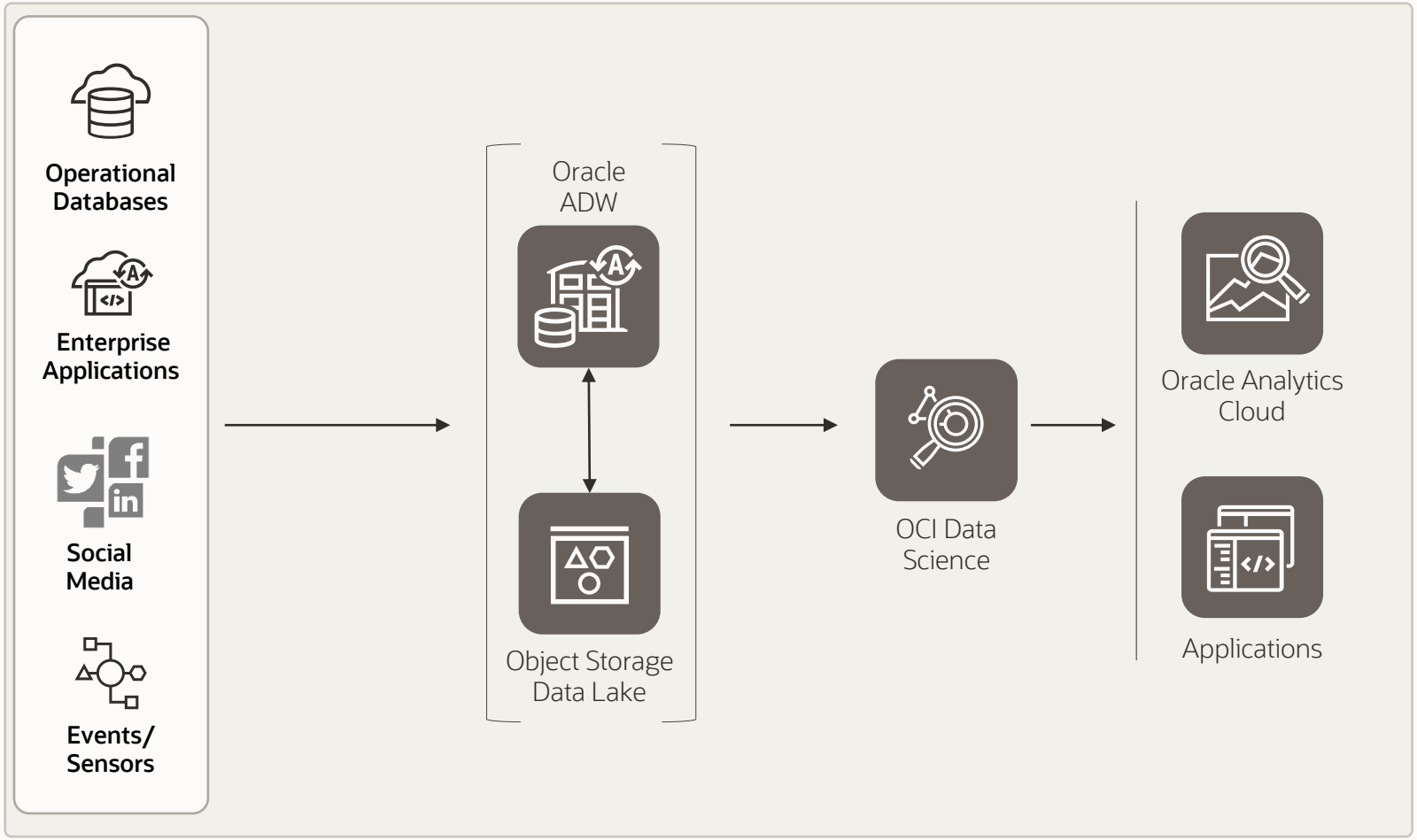
Easily add AI to your applications with Oracle AI Services

Prebuilt and customizable AI models tailored to your business context



MACHINE LEARNING

Build, deploy, and manage purpose-built ML models



Improve data science effectiveness with **team collaboration**, **model management** and more

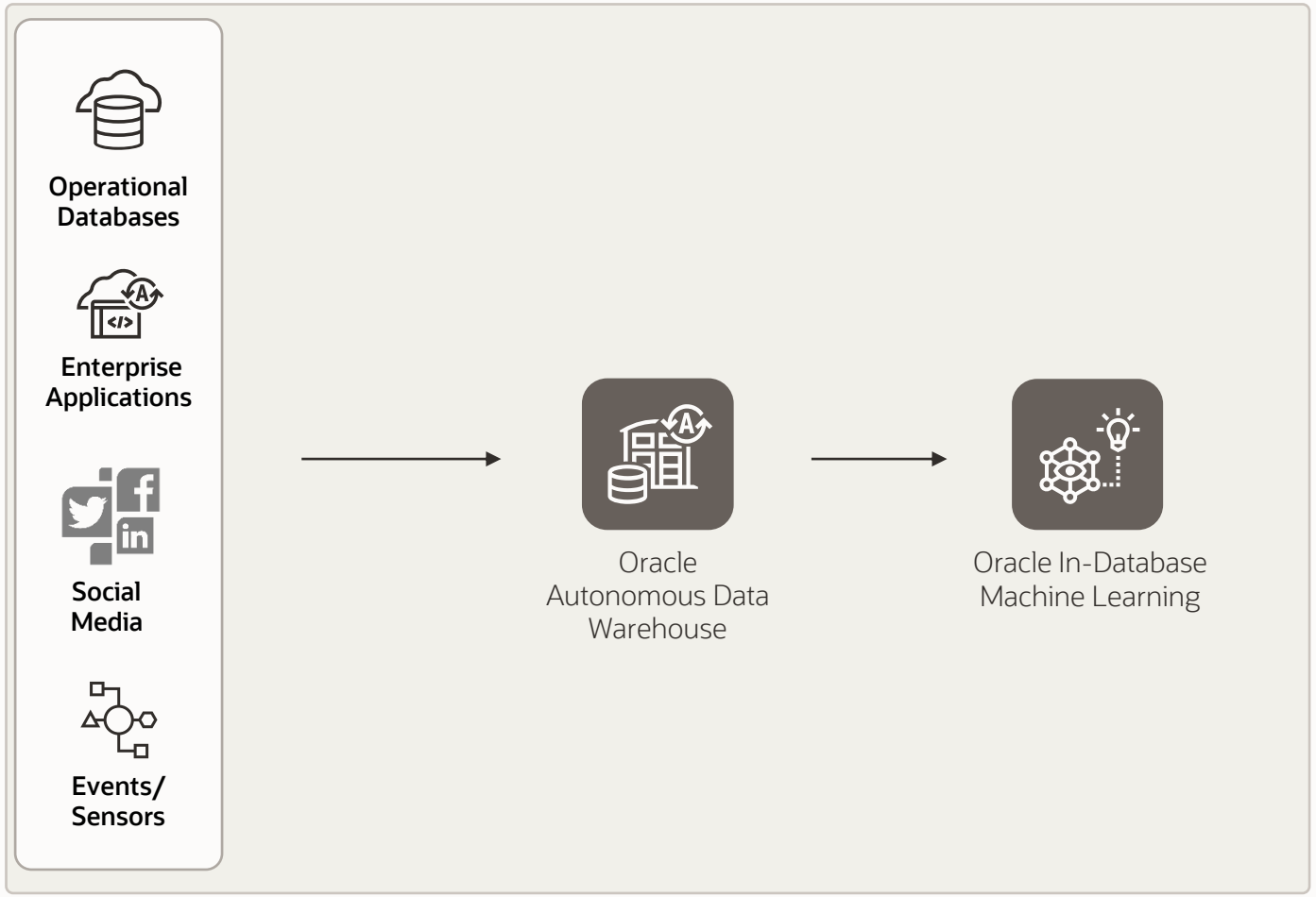
Create, validate, and manage high-quality AI models, faster, with **automated feature selection, algorithm selection, and model evaluation**

Collaborate across developers, data scientists, analysts, and business users. Each role can consume and produce ML using the right tools

Leaving data at rest or moving it with ETL, customers can build **AI-enabled data prep workflows** to make sense of text, forms, audio and images

MACHINE LEARNING

Build high performance machine learning models in Oracle Database



Oracle In-Database Machine Learning Services

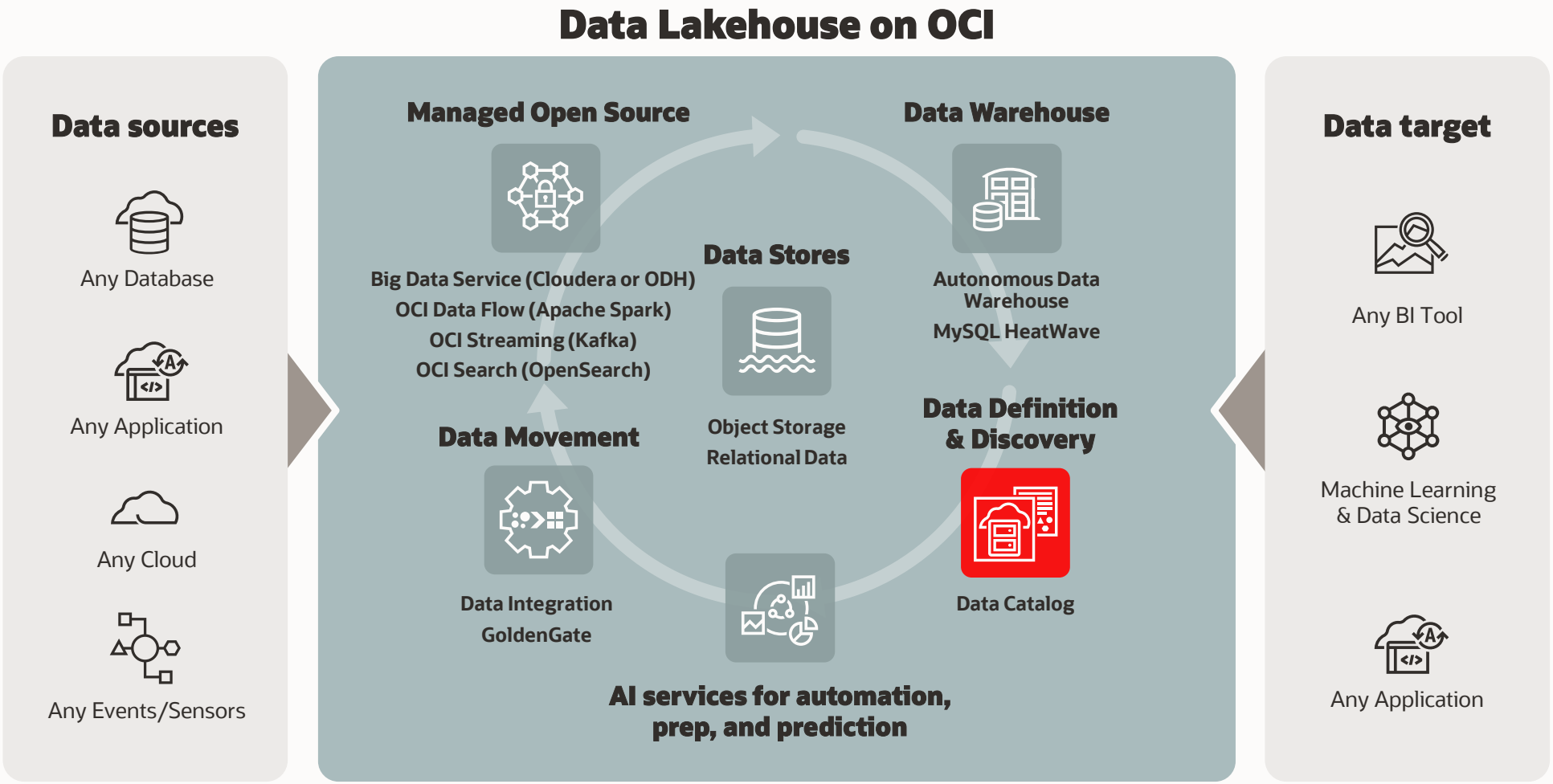
Reduce time to deploy and manage native in-database models. Application developers have easy-to-integrate REST endpoints. Data scientists gain integrated model deployment from the **Oracle In-Database Machine Learning AutoML User Interface.**

Available for **Oracle Autonomous Database**, **Oracle Database Cloud Services**, and **Exadata Cloud Service**.

Oracle In-Database Machine Learning Notebooks, for increased data scientist and developer productivity. Support for **SQL, PL/SQL, Python, and markdown** interpreters for ADB, so users can work with their language of choice.

Data Lakehouses on OCI

Open & flexible: analyze any database, any application, from anywhere

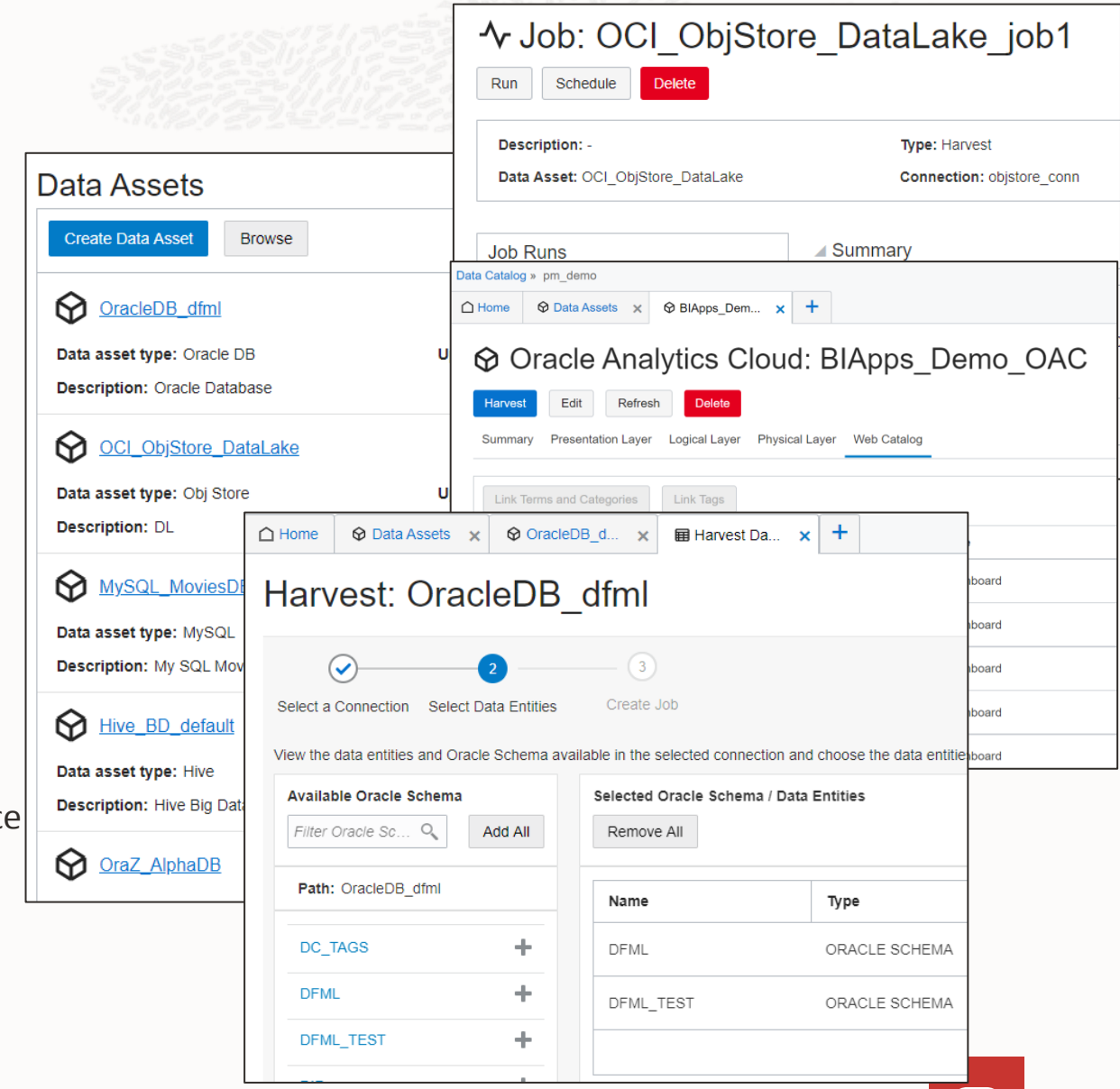


Data Catalog - Discover All Your Data in Oracle (Free service)

- Catalog data from multiple sources on Oracle Cloud and on-premises:
  - Object Storage files
  - Oracle Database, Autonomous Database MySQL, Apache Hive, Apache Kafka
  - **BETA** – Oracle Analytics Cloud and Oracle Analytics Server
  - MS SQL Server, Azure SQL DB, IBM Db2, PostgreSQL
- Single searchable metadata inventory
- Auto-discover data sources in OCI

- Metastore for databases, tables, and partitions defined on files in Object Storage
- Used by Spark SQL in OCI Data Flow apps
- Persistent across Spark applications and runs

- Manage **business glossaries** to improve collaboration and governance
- Define business concepts as **terms** and **categories**
- AI/ML Recommendations for linking Terms/Categories to create a holistic view of data



Governance & Management

Architected from the ground up for maximum isolation and protection

Access Control	Resource Governance	Cost Management
Integrated IAM for all services Simple role-based policies Identity federation Resource principals	Flexible compartment structure Built-in automation ensures tagging integrity	Cost analysis dashboard Budgets Resource quotas Detailed, extensible usage reports Cost tracking tags

Audit	Monitoring	Notifications
Rich history of all events Query API Bulk export Custom retention period	Fine-grained out-of-the-box metrics Robust, custom metrics Alarms	Fully managed pub-sub Built-in integrations for popular messaging protocols

Oracle Cloud Observability and Management Platform

Visibility and rapid performance insights across all layers of the stack, deployed anywhere

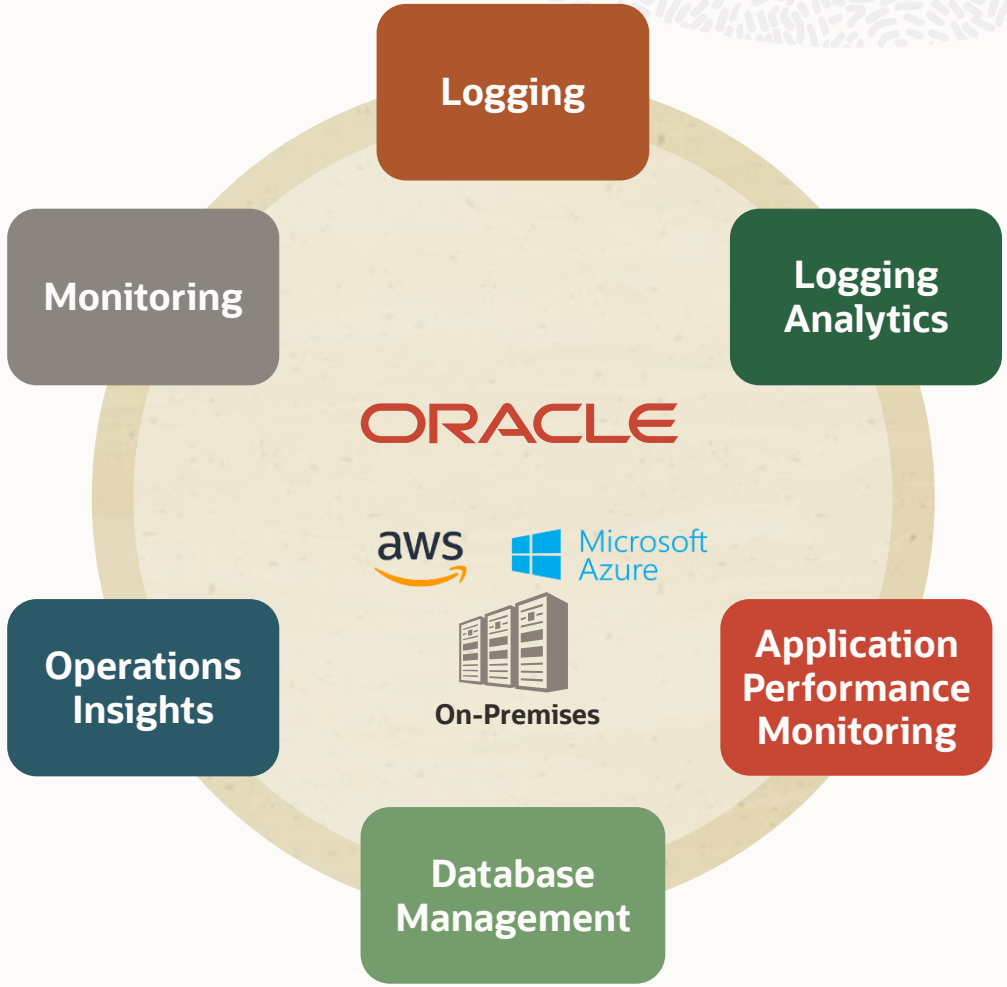
Integrated platform enables seamless analysis across all software components

Cross-tier view of applications, databases and infrastructure performance

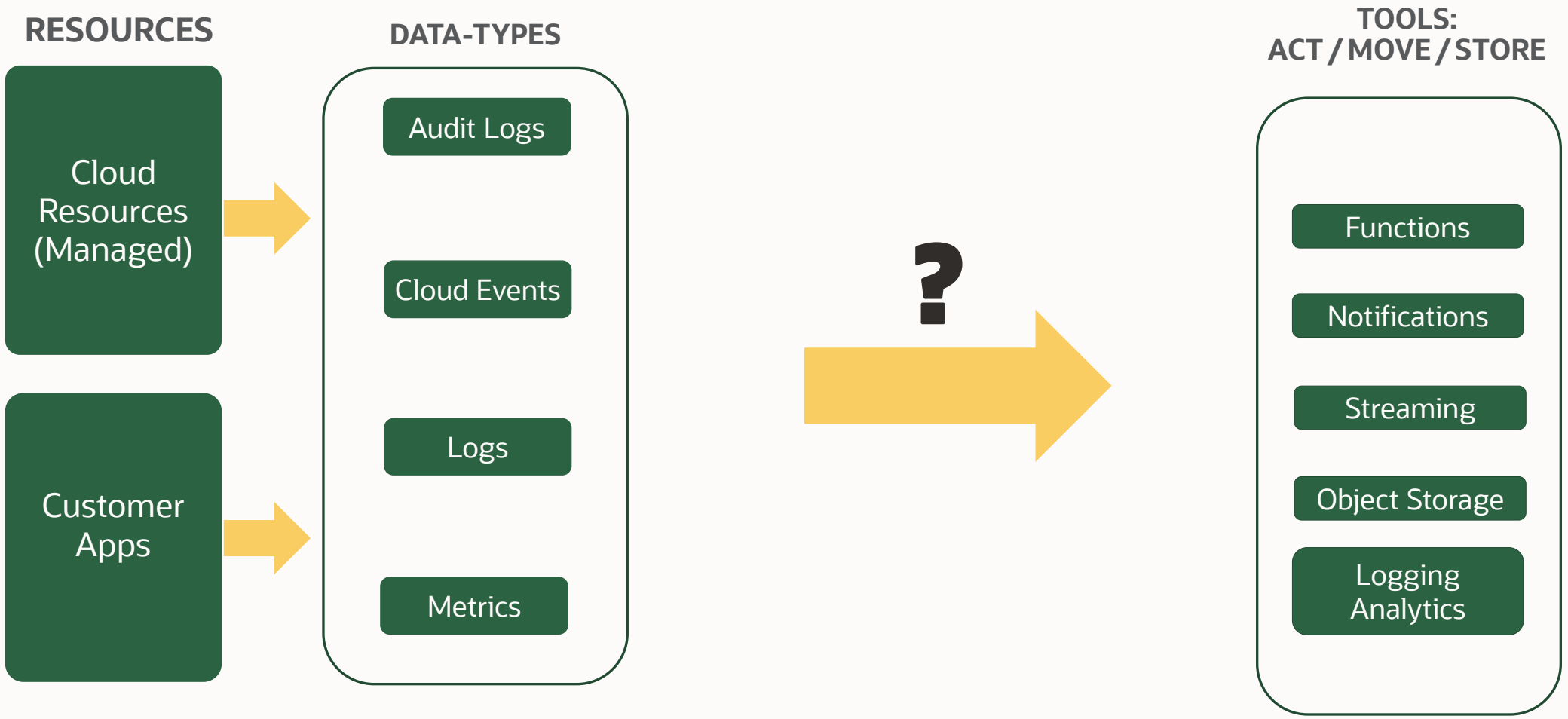
Cloud-native and traditional technologies supported at every layer of the app stack

Enterprise-wide visibility across Oracle Cloud, on-premises, and all other clouds

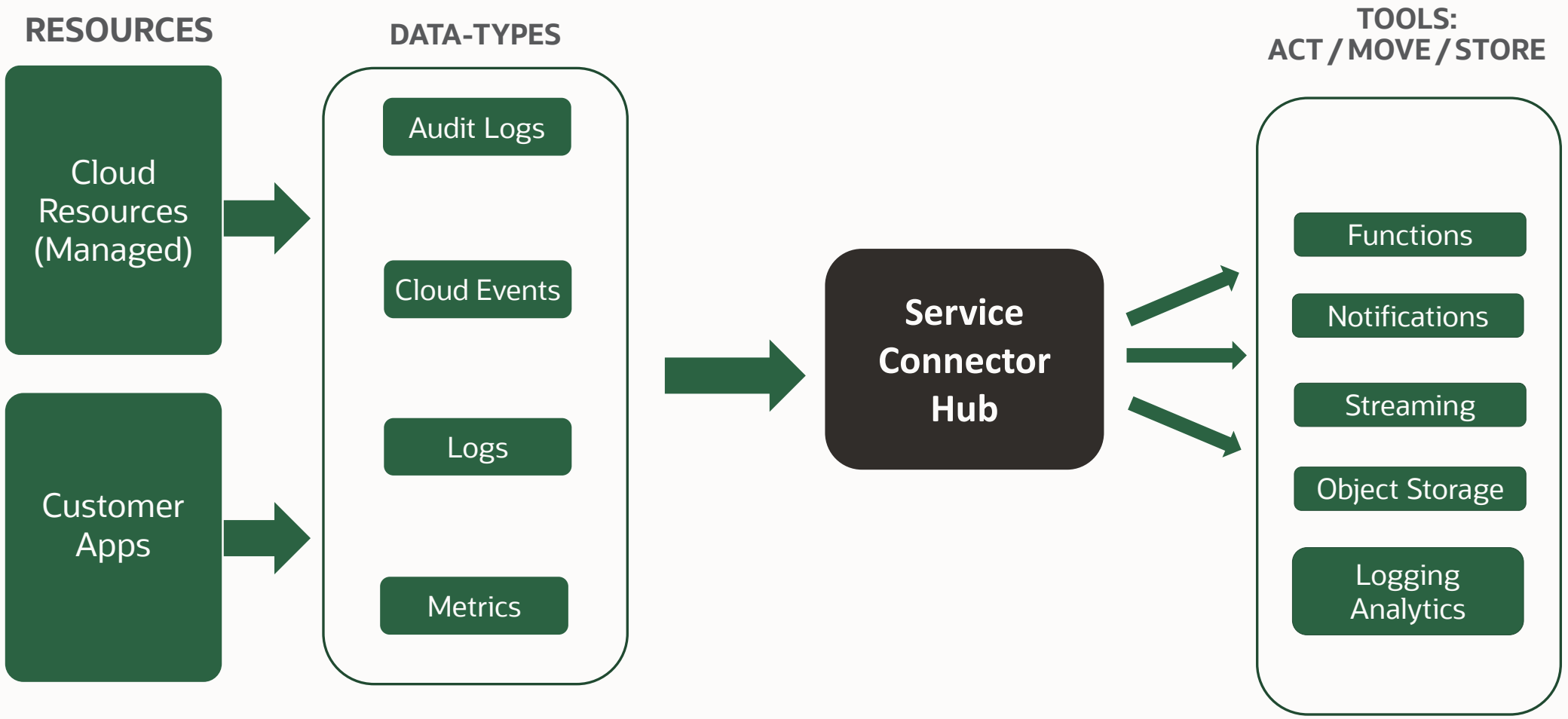
Ecosystem interoperability through standards-based data exchange and collection



Cloud has many data sources



SCH is the bridge



New Oracle Cloud Security Innovations

Simple, Prescriptive, and Integrated

Global, regional, and industry compliance

REGIONAL

- GDPR [EU]
- PIPEDA [Canada]
- ENS [Spain]
- BSI C5 [Germany]
- ISMS [Korea]
- My Number [Japan]
- CITC [Saudi Arabia]
- Cyber Essentials Plus [UK]
- Cloud Security Principles [UK]

GOVERNMENT

- DoD DISA SRG IL5
- JAB P-ATO
- CJIS
- EU Model Clauses
- VPAT-Section 508
- G-Cloud 12
- Canada Protected B

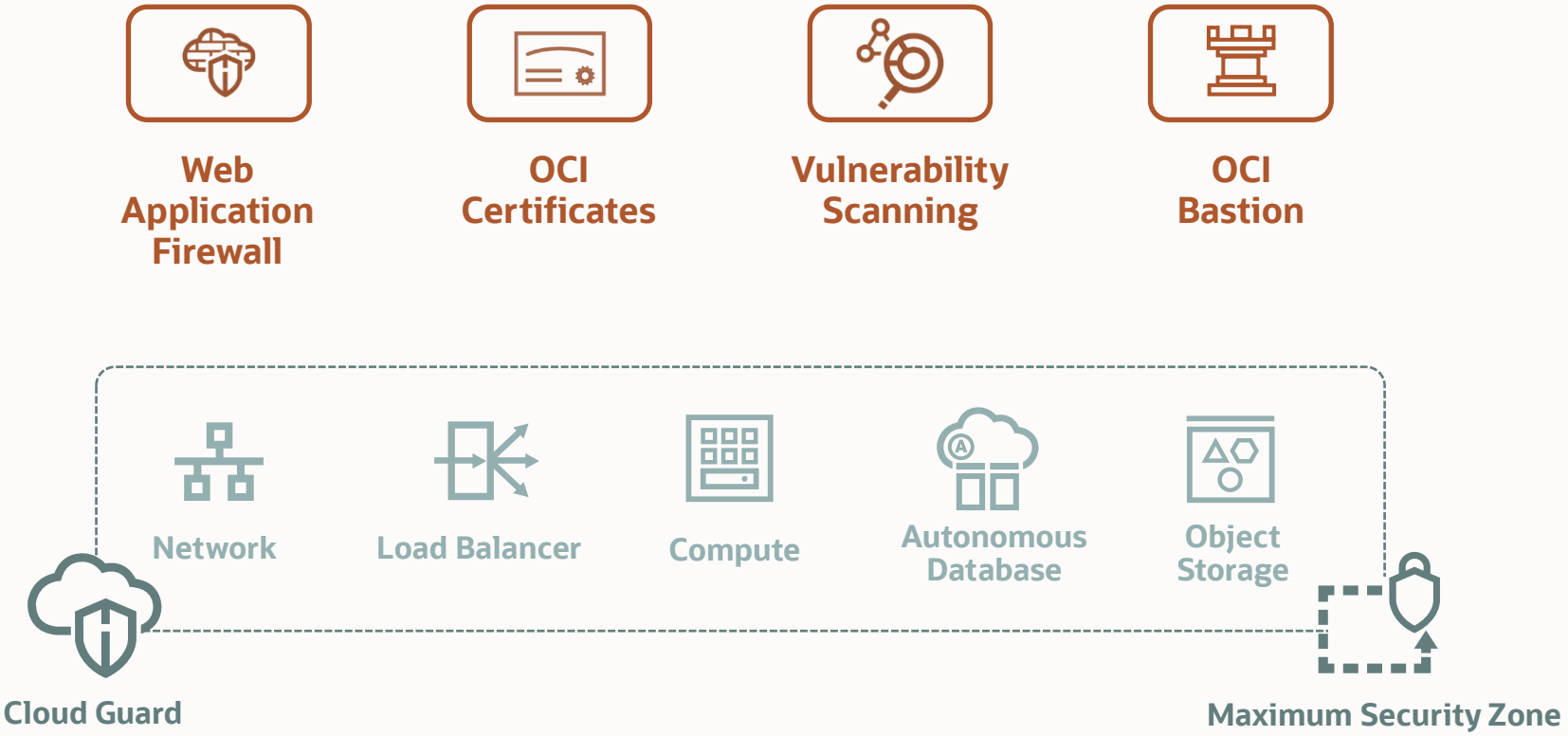
INDUSTRY

- HIPAA
- PCI DSS – Level 1
- GxP
- TISAX
- FINMA
- BACEN
- IG Toolkit
- HDS
- FISC
- APRA
- FFIEC

GLOBAL

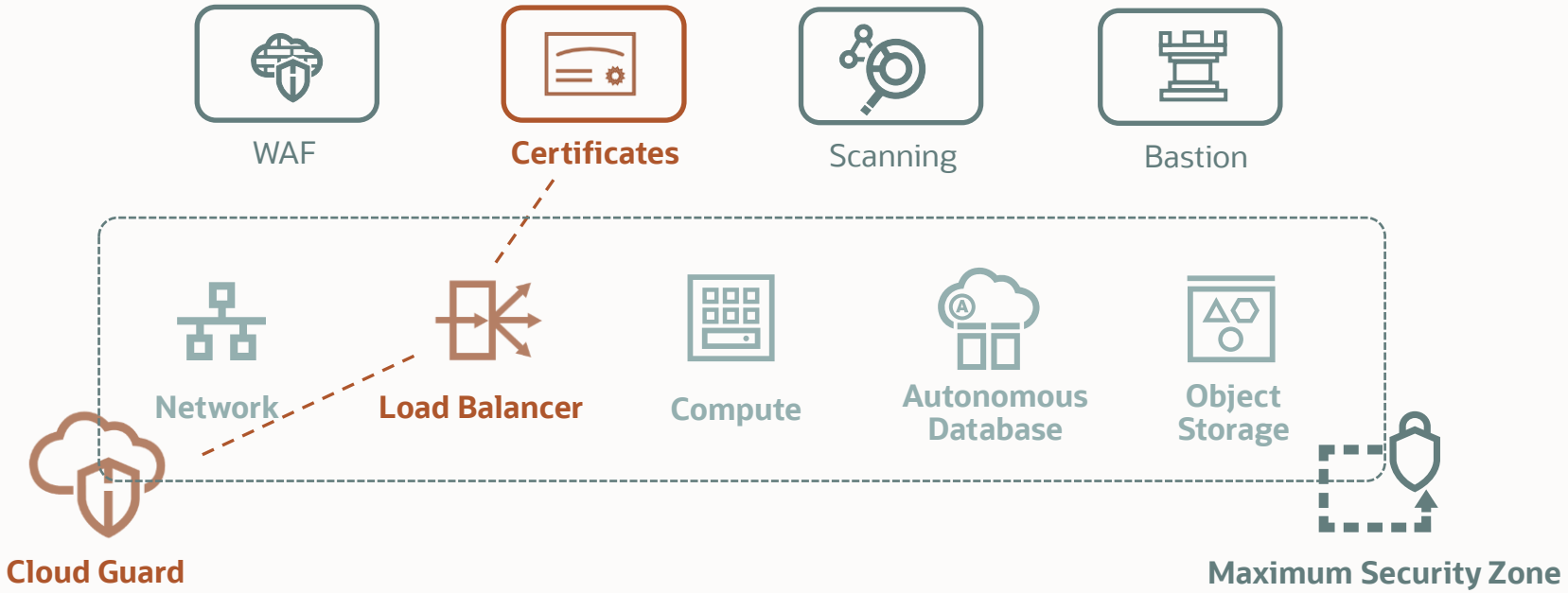
- SOC 1 : SOC 2 : SOC 3
- 9001 : 27001 : 27017 : 27018 : 20000-1
- Level 2

New cloud security services and enhancements



New: OCI Certificates

Automated, integrated certificate management and renewal

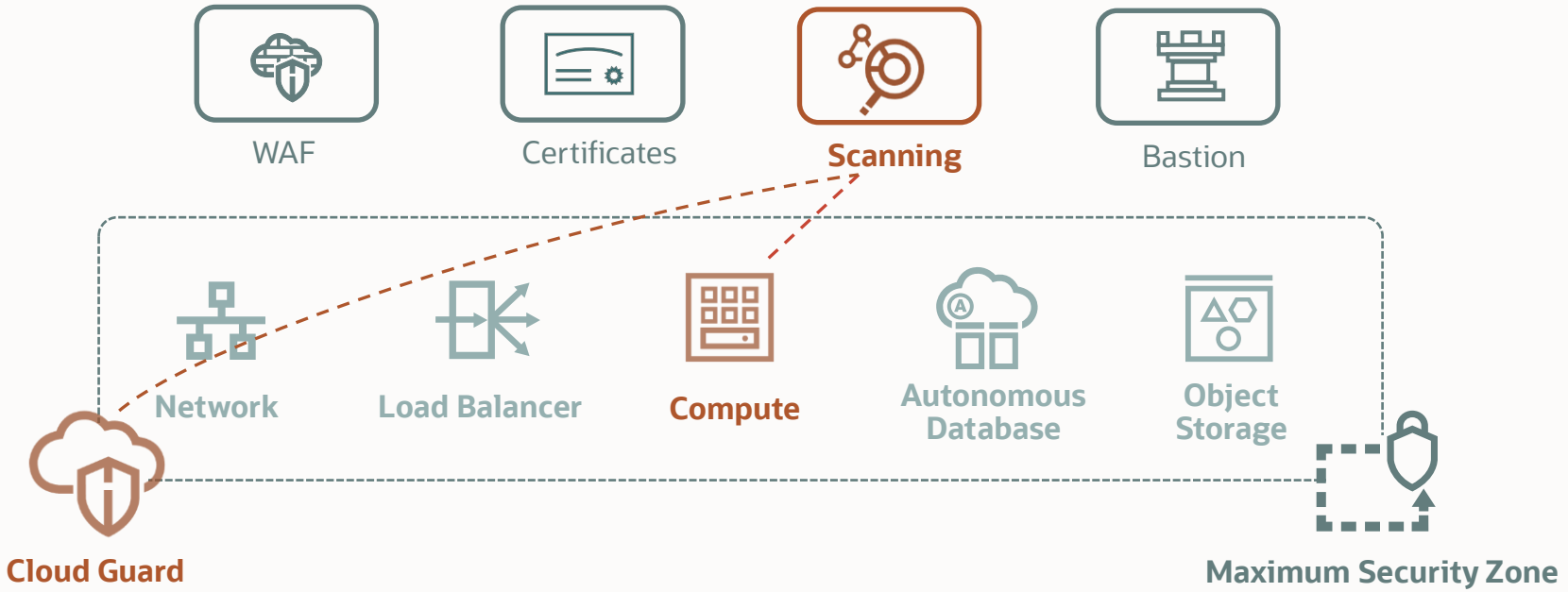


Benefits:

- Simplify the manual processes to create, deploy, and renew private certificates
- Support for FIPS 140-2 Level 3 Hardware Security Module (HSM) cert. storage
- Support cross-regional replication and Asymmetric Keys

New: OCI Vulnerability Scanning

OCI Scanning – Built-in, no cost, platform-level vulnerability scanning

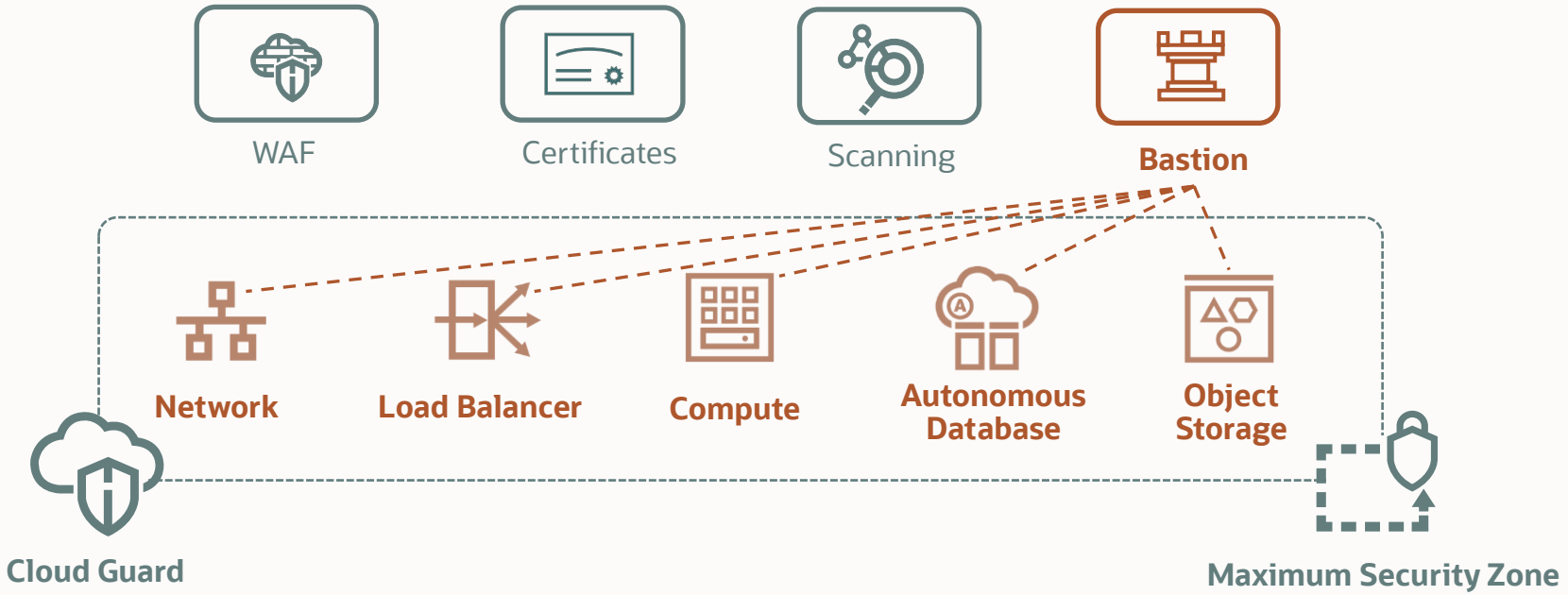


Benefits:

- Identify risks on virtual machines, bare metal hosts and container images
- Rely on industry standards including CIS Benchmarks, OVAL, and MITRE CVE

New: OCI Bastion

Improve security & eliminate cost, deployment, and management pain of jump hosts

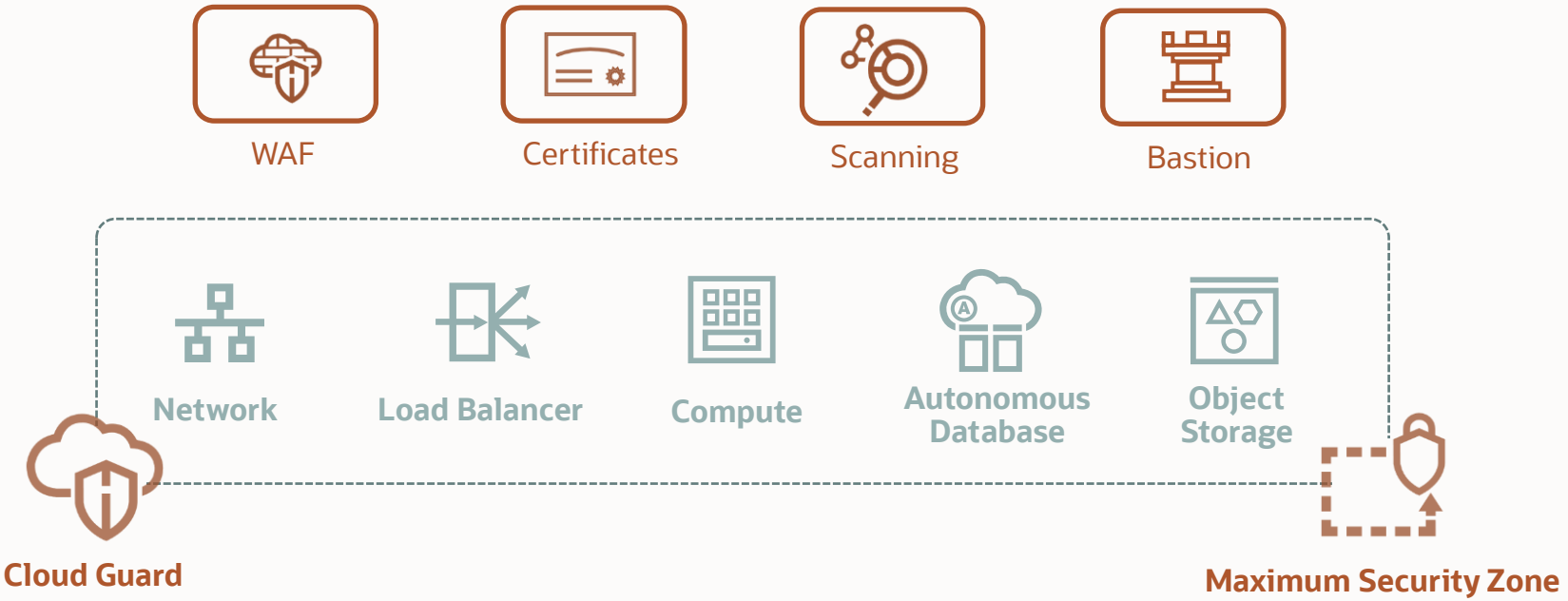


Benefits:

- Ephemeral and on-demand jump host servers
- Easy-to-use, secure access to cloud resources
- No need for permanent external IP address for Bastion

Cloud Guard, Security Zone

Single Pane of Glass for Security Posture Management



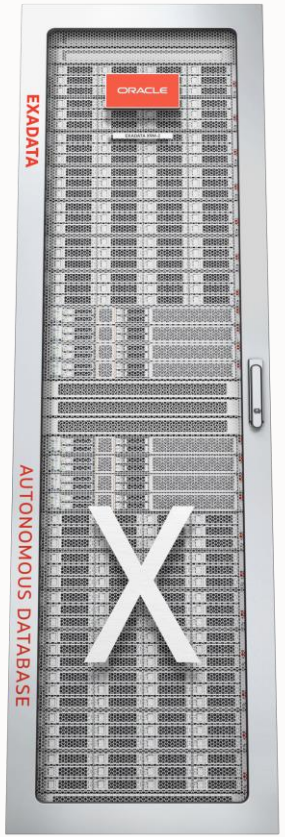
Benefits:

- Cloud Guard continuously monitors the security posture of resources
- Security Zones enforce security policy and prevent human error with guardrails
- Built-in Security: Constantly expanding detections through with Oracle Cloud services

Exadata Cloud@customer

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

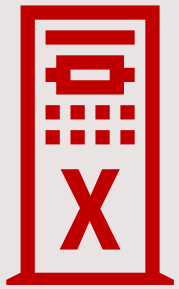
Cloud@Customer

Oracle Cloud

100% Compatible Exadata On-Premises, Hybrid Cloud and Public Cloud

On-Premises

Exadata Database Machine



Customer Data Center

Purchased

Customer Managed

Hybrid Cloud

Exadata Cloud@Customer

Customer Data Center

Cloud Subscription

Oracle Managed

Public Cloud

Exadata in OCI

Oracle Cloud Infrastructure

Cloud Subscription

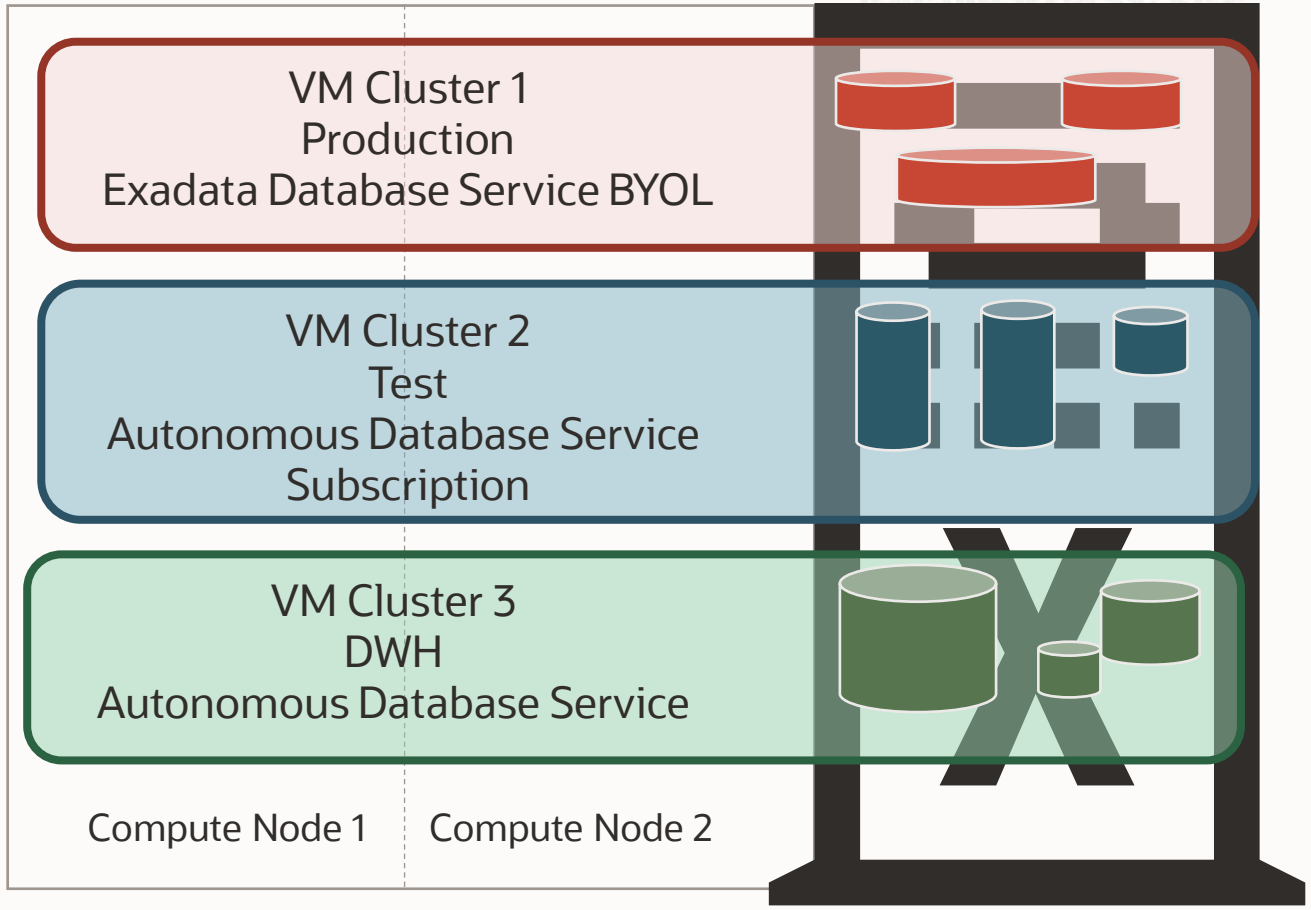
Oracle Managed

45% of Fortune Global 100 have adopted Exadata Cloud

ExaCC - VM Clusters on same ExaCC

1. 8 VM clusters can be created on Exadata Cloud@Customer Infrastructure
2. Each VM cluster can be configured to match workload needs (e.g. more storage for analytics or more compute for OLTP)
3. Each VM cluster can be used for either Autonomous or Exadata Database Service
4. Exadata Database Service can be:
   - BYOL (Oracle Database Licence under support)
   - Subscription (Licence included)

5. Autonomous Database Service can be:
   - BYOL (Oracle Database Licence under support)
   - Subscription (Licence included)



Available on Exadata Cloud@Customer Infrastructure X7 through X9M

Exadata Database Service BYOL – What's Required and What's Included

Oracle Database

- Only Database Enterprise Edition is required for Bring Your Own License to ExaC@C
  - Strongly recommended to bring RAC licenses
- Customers may bring additional Database Options to ExaC@C

Customer continues to pay on-premises support for the Database and the Database Options the customer brings.

What's Included: When a customer brings a license entitlement (BYOL) to Oracle ExaC@C, customers
are also granted the rights to use:

- Oracle Transparent Data Encryption (TDE)
- Diagnostic Pack
- Tuning Pack
- Data Masking and Subsetting Pack
- Real Application Testing
- Exadata Storage Software

Exadata PaaS Subscription (License Included) – What's Included

All features of Oracle Database Enterprise Edition

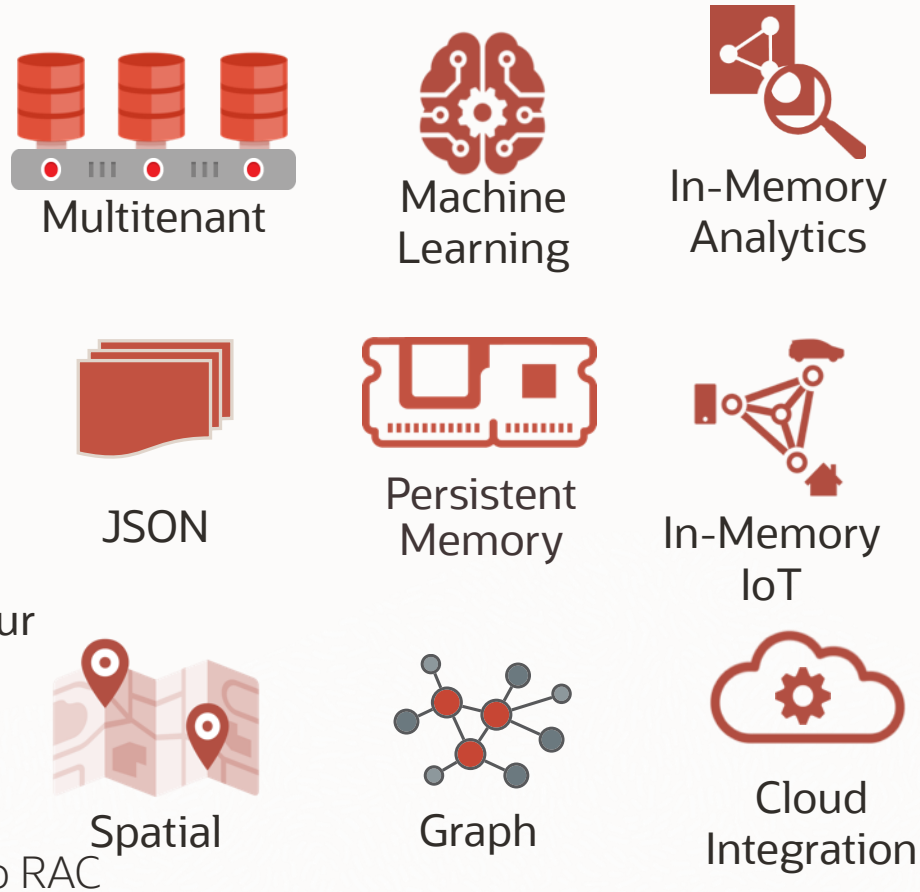
- Multitenant
- Real Application Clusters (RAC)
- Active Data Guard (ADG)
- Partitioning
- Real Application Testing (RAT)
- Advanced Compression
- Advanced Security
- Label Security
- Database Vault
- OLAP
- Times Ten Application-Tier DB Cache
- Database In-Memory

Plus all Oracle Database Enterprise Manager Management Packs

- Diagnostics Pack
- Tuning Pack
- Database Lifecycle Management Pack
- Data Masking and Subsetting Pack
- Cloud Management Pack for Oracle Database

Oracle Autonomous Database Service
Under the hood – A converged database

- Multitenant for Efficient, Agile Database Clouds
- AutoML for simple integrated Machine Learning
- In-Memory for Database Acceleration
- Native JSON for Document Data
- In-Memory Ingest for Fastest IoT
- Cloud SQL for integrating Object Store Data Lake
- Persistent Memory Store for Lowest Latency
- Spatial and Graph for Mapping and Social Networks
- Licence
  - Subscription (Licence Included) – Elastic, €1,14679 €/OCPU/hour
  - BYOL, €0,27524/OCPU/hour
    - DB EE + Multitenant -> 2 OCPUs (<16 OCPUs; RAC otherwise)
    - Active DataGuard BYOL for Autonomous Dataguard
    - DB SE2 -> 4 OCPUs (max 8 OCPUs), no ADG, no Multitenant, no RAC



Multi-Customer ExaC@C Infrastructure Subscription Model

List Prices

Infrastructure Pricing
Fixed $/month

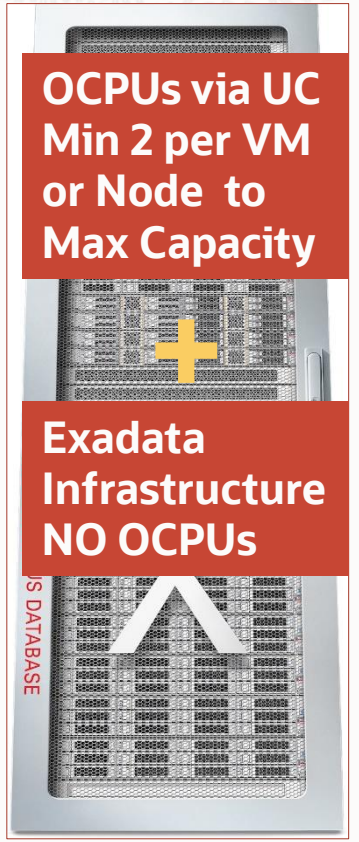
Size	$/month
Base System	8,000
Quarter Rack	10,800
Half Rack	21,600
Full Rack	43,200

Subscription: Monthly
Term: 48 Months

+

OCPUs billed at actual usage

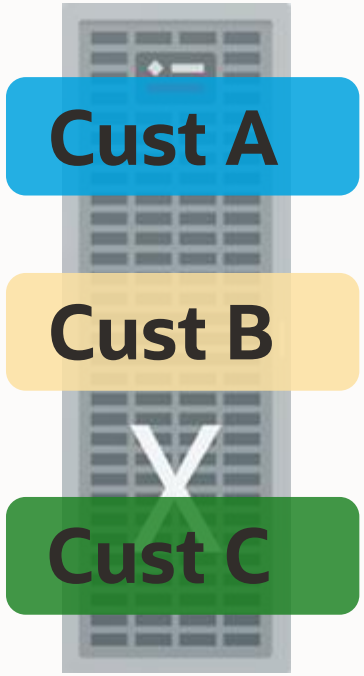
- Subscription: Universal Credits
- Commitment: Annual flex min. $ 2,000
- Discount based on annual spend
- 1-Year Schedule
- OCPU Billing – partial hour (1 minute minimum)
- OCPU Types
  - Oracle DB on ExaC@C OCPUs
    - BYOL - $0.3226/hr
    - PaaS - $1.3441/hr



- OCPUs must be added in increments of 1 OCPU per VM (min 1 VM per node, min 2 OCPUs per VM)
- DB Server per shape: 2 for Base System, 2 for Quarter Rack, 4 for Half Rack, 8 for Full Rack

Exadata Cloud@Customer (on-premise installation)

Multi Customer Use Cases



Multi-Customer Model Available To

- **Government Owned Clouds**
- **Hosting Service Providers (HSP)**

License Types Permitted Under Multi-Customer Model

- **BYOL**
- **License Included**

Service Available:

- Exadata Database Service
- Autonomous Database service

Rely on consistent superior performance

OCI delivers on enterprise-grade computing requirements and aligns to the cloud's promise of competitive costs, rapid provisioning, and global scale support

Faster performance than other clouds, matches or exceeds on-premises

- Bare metal and VM CPU and GPU
- Bare metal HPC
- NVMe SSD local storage and block storage
- Bare metal, RAC, Exadata

More available network bandwidth between products

- No over-subscription, no noisy neighbors, very low latency
- High speed interconnects: 2 x 25Gbps bandwidth
- Predictable, low latency - < 100µs expected one-way latency between hosts in an AD, <500µs between ADs
- The only cloud network performance SLA

First cloud-based cluster networking with 1.5 µs latency

- The most stringent on-premises workloads can now run efficiently in the cloud
- Oracle connects the servers directly to the RDMA switch
- Cluster Networking – Up to 20,000 cores in a single RDMA cluster
- No hypervisor, no virtualization, no jitter bare metal HPC

Why customers are choosing OCI

1. Far easier to migrate critical enterprise applications
2. All the services developers need to build cloud-native applications
3. Autonomous services make it far easier to manage security, performance, and scalability
4. The most complete support for hybrid cloud strategies
5. Security that's built in, on by default, at no extra charge
6. Superior price-performance

Two free trial options

New

Always free

Services you can use
for an unlimited time

+

Free trial

Free credits for 30 days

Learn, explore, and build for free

oracle.com/cloud/free/


ORACLE