RED STACK

A Data Intensity Company

Cloud for Managers

One more Introduction to Cloud

Francisco Munoz Alvarez

- ✓ Oracle ACE Director
- ✓ 8/9/10g/11g/12c OCP, RAC OCE, AS OCA, E-Business OCP,
- ✓ SQL/PLSQL OCA, Oracle 7 OCM
- ✓ Oracle 7, 11GR2, 12cR1 and OVM 3.1 and 3.2 and 3.3 Beta Tester
- ✓ IOUC LA & APAC Spokesperson, President of APACOUC, AIOUG,CLOUG and NZOUG
- ✓ ITIL Certified
- ✓ Oracle Excellence Award Winner
- ✓ 2010 Oracle ACE Director of the year by Oracle Magazine

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RED STACK
A Data Intensity Company

Director of Innovation

www.redstk.com

ORACLE Certified Associate

ORACLE Certified Professional Oracle 11g Administrator

ORACLE E-Business Suite 11i Certified Professional

ORACLE 10g Certified Professional

ORACLE Certified Professional

ORACLE Certified Expert 10g RAC Administrator

Francisco Munoz Alvarez

ORACLE ACE DIRECTOR OF THE YEAR

Oracle ACE director hones skills while helping others.

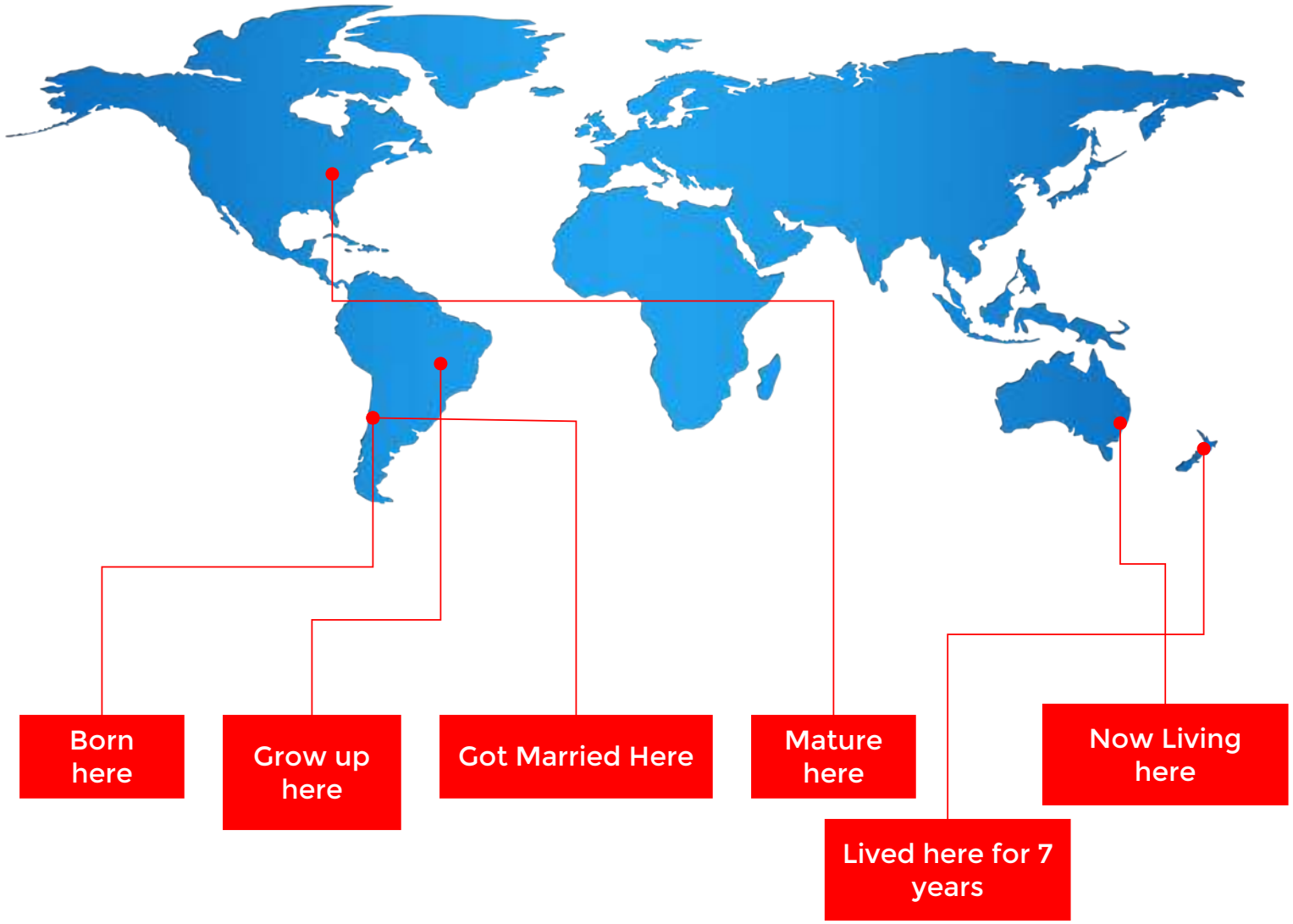
When it comes to learning something new, Francisco Munoz Alvarez doesn't look for a teacher; he looks for someone who has a problem.

"One of the best ways to learn is by helping others," says Alvarez. "When someone has a problem on an OTN [Oracle Technology Network] forum, I enjoy trying to assist them with it. I've learned a lot by trying to help other Oracle users to solve their problems."

Over the years, he has learned enough to become an Oracle ACE, an Oracle ACE director, and now *Oracle Magazine*'s Oracle ACE Director of the Year. Alvarez is also the founder and CEO of Database Integrated Solutions.

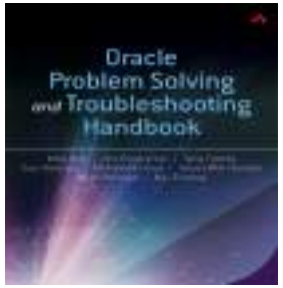
For Alvarez, learning—and helping others—takes legwork. This year, as an Oracle ACE director, he has appeared at 22 conferences in 18 countries, where he not only gives talks but takes the time to answer questions and assist users with complex Oracle challenges. In addition, he frequently helps his blog visitors (about 25,000 per month) solve difficult Oracle-related problems.

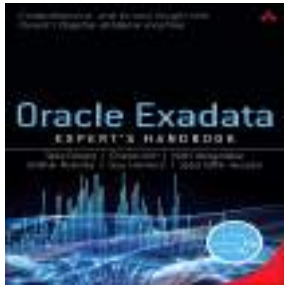
Given that he's also president of the New Zealand and Chilean Oracle user groups and the Latin American Oracle User Group, Alvarez' energy seems to have no limits when it comes to the Oracle community. He himself puts it best: "I never get tired of helping people learn how to share their knowledge and experience."


Born here
Grow up here
Got Married Here
Mature here
Lived here for 7 years
Now Living here

ORACLE ACE Director

BrainSurface
Expert+ Data Services = Simplified





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ORACLE Certified Professional

ORACLE Certified Expert 10g RAC Administrator

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- Co-Author: Expert Oracle RAC 12c, Oracle Exadata Expert's Handbook, Building DB Clouds in 12c, Oracle Problem-Solving & Troubleshooting Handbook – Currently authoring multiple Oracle books
- Oracle Certified Expert – Real Application Clusters. Oracle Certified Professional – DBA – 8i, 9i, 10g, 11g & 10g Apps DBA, Internet Application Developer 2, 6i, 9i, E-Business Suite 11i
- Founder of BrainSurface – a Collaborative Social Networking, IT Knowledge ConnectSpace for the Oracle domain; catering FREE services to thousands of signed-up users
- Conference Committee Member, BootCamp & Track Manager – IOUG COLLABORATE12/13 – Virtualization and Cloud Computing Tracks
- President & Conference Chair – VirtaThon | The largest virtual conference for the Oracle, Java & MySQL domains. Founding President - IOUG Cloud Computing Special Interest Group

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AGENDA

The Evolution to Cloud

Cloud Adoption – The Big Questions

Advantages and Disadvantages

Comparing Available Models

Who are the main Players

Oracle Cloud, What is available

Oracle Database Cloud Backup Service: A Quick Primer

Q&A

EVOLUTION TO CLOUD

TIMELINE

When Computers were a skirt

From computers to leaders

Human Computers 40s to 70s

Main Frames 70s to 80s

The big Iron

Changed the industry with never before seen capabilities

Distributed Technology

Separating it in two worlds.

Client Server 80s

Private Cloud 2010s

The Virtual Era

Grid Computing - VMware, Hyper V, Oracle VM, XEN, KVM on premises (***)

.

Cloud Connected

The slow migration to the future started. Cloud Tryout and Cloud First

Hybrid Cloud 2015s

Public Cloud 2020?

Cloud Embraced

The future will be: Fully utility based

*** Boosted by the boom of Internet in the 2000s

What questions should I ask and what Considerations should I take into account when moving to a Cloud Environment?

Cloud Adoption within your enterprise:

The Big Questions

- Do you know that Cloud Computing is now in a significantly mature stage of it's evolution?
- Has your enterprise already adopted Cloud Computing as a paradigm: If NOT, Why NOT? If NOT, does this mean that you are behind the curve in terms of new and emerging technologies and paradigms?
- If you're already on the cloud bandwagon, what are the major challenges that you faced/are currently facing?
- Have you factored the general strategy and recent series of announcements by Oracle around the general areas covered by Cloud Computing within your enterprise approach? Are you ready?

Considerations when moving databases to a public cloud?

- A couple clicks and you can deploy, right?
- Not so fast, remember that…
  - Your data is valuable.
  - Misuse of your data may have legal ramifications.
  - Misuse of your data may have major brand impact.

The wrong way

- Uber left a DB key inside a file on a public GitHub
  - Sensitive driving data from 50K drivers exposed
  - Uber took GitHub to court to reveal all the IP addresses that accessed the repo.

What are your goals?

- Reduce costs?
- DevOps?
- Micro releases & high velocity platform maturation?
- Global distribution?
- Platform Migration?

- Specific features?
  - Elastic capabilities?
  - Automation
  - Something else?
- Do I want to leverage PaaS?

What are your Performance needs?

- Are they *achievable* in the Cloud?
- Have they been properly measured and compared to provider capabilities?
- How will that impact the costs?
- Watch out for ‘scaling’ as the solution for every performance issue.

Migration

- Re-Architecting? Lift ‘n Shift?
- Should I move to a PaaS\managed offering?
- Should I shift platforms?
- Can I BYOL?
- Am I trying to do Hybrid and why?
- Does my staff know how to migrate my database?
- Which public cloud is right for me?

Life in the Cloud

- Will I need to update my HA/DR plan?
- Does my staff need training?
- How will I monitor?
- How do we manage lifecycle?
- How do we manage the rate of innovation?

What else I should know before taking the Cloud Leap?

Advantages

- Improved Disaster and Recover (*)
- Collaboration and Flexibility
- Cost Savings
- OPEX not CAPEX (fully tax-deductible)
- Reliability and Manageability (Most providers offer a Service Level Agreement which guarantees 24/7/365 and 99.99% availability)
- Scalability (Pay as you need for how much you really need)
- Strategic Edge
- Environmentally Friendly (Cloud computing decreases a business' carbon footprint by reducing energy consumption and carbon emissions by more than 30 percent.)

Disadvantages

- Internet Connectivity
- Storage is billed by capacity and format.
- Ongoing Costs
- Security (Can you trust it? Is your data save?)
- Possible Downtime (Maintenance, Connectivity, Incidents)
- Vendor Lock-in
- Confusing about Limited or full control (kind of)

Comparing Available Models

On-Premise	IaaS	PaaS	SaaS
			Customizations
Applications	Applications	Applications	Applications
Data	Data	Data	Data
Runtime	Runtime	Runtime	Runtime
Middleware	Middleware	Middleware	Middleware
Operating System	Operating System	Operating System	Operating System
Virtualization	Virtualization	Virtualization	Virtualization
Servers	Servers	Servers	Servers
Storage	Storage	Storage	Storage
Networking	Networking	Networking	Networking

Customer Managed	Vendor Managed

Who are the main Players

	IaaS	PaaS	SaaS
amazon web services™	Amazon EC2 EC2 Container Lightsail Elastic Beanstalk Lambda Batch	MySQL MariaDB PostgreSQL Oracle MSSQL Aurora DynamoDB ElastiCache Redshift	Amazon SaaS Program
Microsoft Azure	Virtual Machines VM Scale Sets App Service Functions Batch Service Fabric Cloud Services	MSSQL MySQL PostgreSQL SQL Data Warehouse SQL Stretch Database Cosmos DB Table Storage Redis Cache Data Factory	Azure SaaS Program
Google Cloud Platform	Compute Engine App Engine Container Engine Cloud Functions	Cloud Storage Cloud MySQL Cloud PostgreSQL Cloud Bigtable Cloud Spanner Cloud Datastore BigData Services Cloud Machine Learning	G Suite Google Launcher
ORACLE CLOUD	Compute Storage Networking Governance Database Load Balancing Ravello	Database Database Backup MySQL Big Data NoSQL Database Big Data – Compute Edition Event Hub Management Business Analytics Integration	Human Capital Management Enterprise Performance Management Data as a Service Enterprise Resource Planning Internet of Things Customer Services Supply Chain Management Industry Solutions

Oracle Cloud
What is available?

SaaS (Software as a Service)

Delivers modern cloud applications that connect business processes across the enterprise. Covering everything from customer experience to enterprise resource planning, human capital management, and more

PaaS (Platform as a Service)

Delivering the industry's #1 database (Oracle Database) and #1 application server (Oracle WebLogic Server)

IaaS (Infrastructure as a Service)

Offering a comprehensive set of infrastructure services -including elastic compute and storage

Want a Private Cloud?

Oracle Private Cloud Appliance (PCA)

Oracle Private Cloud Appliance, is an integrated infrastructure system engineered to enable rapid deployment of converged compute, network, and storage technologies for hosting applications or workloads on a guest OS. It is a data center-class system that provides incremental and scalable performance optimized for consolidation of mixed workloads.

The Private Cloud Appliance supports Trusted Partitions. Trusted Partitions allow Oracle software to be licensed at the virtual machine level instead of the physical processor core level. Trusted Partitions allow customers to right-size their Oracle software licensing with any Private Cloud Appliance configuration.

Note: Trusted partitions require that each virtual machine using a trusted partition to be managed by Oracle Enterprise Manager.

PaaS (Platform as a Service)
What is available?

Data Management

DBaaS (Database as a Service) and Database Backup as a Service

Integration

GoldenGate & much more

PaaS (Platform as a Service)
What is available?

Integration

GoldenGate

Non-metered Services

Product	Price	Metric	Details
GoldenGate Cloud Service	$500.00	OCPU/Month	OCPU is counted based on the target database (Database Cloud Service OCPUs)

Metered Services

Product	Price	Metric	Details
GoldenGate Cloud Service	$1,000.00	OCPU/Month	OCPU is counted based on the target database (Database Cloud Service OCPUs)
GoldenGate Cloud Service	$1.68	OCPU/Hour	OCPU is counted based on the target database (Database Cloud Service OCPUs)

Oracle's PaaS offerings are quickly becoming among the most comprehensive cloud-based services for Oracle Database. They include:

Oracle Database Schema Service

This is the entry-level unmetered offering, available starting at US$175 a month for a 5GB database schema limit (Available at 5,20 and 50 GB Options). Tenants share databases but are isolated in their own schemas. This means you have no control over database parameters, only the schema objects created. This service is currently available only with Oracle Database 11g Release 2 running on Exadata (i.e., it is not yet included in the latest release of Oracle Database 12c).

Oracle Exadata Cloud Service

This is a hosted service with monthly subscriptions starting at US$80,000 for a quarter rack with 28 OCPUs enabled and 42TB of usable storage provisioned. You have full root OS access and SYSDBA database access, so you have total flexibility in managing your environment. However, this means Oracle manages Server, storage, networking and infrastructure.

Oracle Database Virtual Image Service

This is a Linux VM with pre-installed Oracle Database software. The license is included in the rate. It's available metered (priced per OCPU per hour of runtime) and unmetered (priced per OCPU allocated per month). As you'll need to manage everything up from the VM level, including OS management and full DBA responsibilities, the metered service is a particularly good option for running production environments that require full control over the database deployment.

Oracle Database-as-a-Service (DBaaS)

This is an extension of Virtual Image Service and includes additional automation for database provisioning during service creation, backup, recovery, and patching. While you are still responsible for the complete management of the environment, the embedded automation and tooling can simplify some DBA tasks.

With the exception of Oracle Database Schema Service, these are not “true” PaaS offerings; they function more like IaaS-style services but with database software licenses included. But this is on the way, as Oracle recently announced plans for a fully managed DBaaS offering similar to the one available through AWS.

Prices starting at 600 US$/month for General Purpose and 700 US$/month for High-Memory Compute.

DBaaS

- **Enterprise Edition** includes no Database Options.
- **Enterprise Edition High Performance** includes all Database Options and Enterprise Manager Packs except RAC, RAC One Node, In Memory Database and Active Data Guard.
- **Enterprise Edition Extreme Performance** includes all Database Options with RAC, RAC One Node, In Memory Database and Active Data Guard. Some options are dependent on the Database version and also may only be available in future releases.

Oracle Database Exadata Express Cloud Service

Exadata Express provides your own Oracle Database Enterprise Edition running the latest database release on Exadata for a full Oracle experience. It's a fully managed service packed with features for modern application development and great for small to medium sized data.

- Uses Oracle Database 12cR2
- Available at different shapes from 20GB/1 OCPU up to 1TB/4 OCPU of storage
- Fully Managed
- 1 PDB (Pluggable Database) of Oracle Enterprise Edition

Low cost (from $175 per month, $0.23 per hour) with Encrypted SQL*Net access, connect using wallet and/or Oracle APEX

Oracle Database Cloud Service Use Cases

Dev / Test / QA / UAT

Database Cloud Service

Migrate existing PROD workloads to the cloud

Sandbox Environments

Database Cloud Service

Data Warehousing – PROD and downstream workloads

Back up PROD and setup DR in the cloud

Deploy PROD: Oracle applications or non-Oracle applications

Exadata Express in Oracle Cloud

An easy on-ramp to Oracle database cloud services

	Development & test	SMB, departmental apps	Enterprise applications	Highest availability, scalability, performance
Exadata **Express**	✓	✓		
Full-Instance **Enterprise**	✓	✓	✓	
Dedicated **Exadata**	✓	✓	✓	✓

Oracle Database Cloud Backup Service – A Quick Primer

Very Low-Cost, Off-Site Cloud Backup Solution

Two Options Available: Metered and Non-Metered (Fixed Cost)

Secure Backups: HTTPS for Transfer, Encryption is forced with a Wallet on-site

Protection of Data: 3-Way Mirroring at Oracle Cloud Data Centers

Compressed Backup Options Available

Very Simple and Easy to setup and use: Download an RMAN Cloud Backup Library Module onto your local database server and configure RMAN to start leveraging the Oracle Database Cloud Backup Service through an easy-to-use Web-based GUI

Oracle Database Cloud Backup Service – A Quick Primer

Metered Services

Storage Capacity

Product	Price	Metric
First TB/month	$0.0264	GB / Month
Next 49 TB/month	$0.026	GB / Month
Next 450 TB/month	$0.0255	GB / Month
Next 500 TB/month	$0.0251	GB / Month
Next 4,000 TB/month	$0.0246	GB / Month
Over 5,000 TB/month	$0.0242	GB / Month

This bundled metered service allows you to set and activate the offerings currently available for Oracle Database Backup Cloud Service. Note that the purchase of the 'Pay as you go' service do not require any upfront payment; monthly invoice will be generated based on usage.

Non-metered Services

Database Backup

Product	Price	Features
Database Backup Service	$33.00 / TB / Month	• Unlimited Oracle Database backups • Automatic three-way data mirroring • Regional data isolation • Transparent access via Oracle Database Cloud Backup Module and Recovery Manager (RMAN) • RMAN encryption and compression

Q&A

500+ Technical Experts Helping Peers Globally

ORACLE ACE PROGRAM

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3 Membership Tiers

- Oracle ACE Director
- Oracle ACE
- Oracle ACE Associate

bit.ly/OracleACEProgram

Connect:

oracle-ace_ww@oracle.com

Facebook.com/oracleaces

@oracleace

ORACLE Developer Community

Nominate yourself or someone you know: acenomination.oracle.com

Thank You

Blog: oraclenz.com
Email: francisco.alvarez@redstk.com
Twitter : fcomunoz

Additional Slides

Oracle License In the Cloud

Oracle Licensing

The following Oracle programs are eligible for Authorized Cloud Environments per the policy document:

- Oracle Database Standard Edition
- Oracle Database Standard Edition One
- Oracle Database Standard Edition 2
- Oracle Database Enterprise Edition
- NoSQL Database Enterprise Edition
- Multitenant
- Active Data Guard
- Partitioning
- Real Application Testing
- Advanced Compression
- Advanced Security
- Label Security
- Database Vault
- OLAP
- Advanced Analytics
- Spatial and Graph
- TimesTen Application-Tier Database Cache
- Database In-Memory
- Diagnostics Pack
- Tuning Pack
- Database Lifecycle Management Pack
- Data Masking and Subsetting Pack
- Cloud Management Pack for Oracle Database
- TimesTen In-Memory Database
- Data Integration Suite
- GoldenGate
- GoldenGate for Non Oracle Database
- GoldenGate for Mainframe
- GoldenGate Veridata
- GoldenGate for Teradata Replication Services
- GoldenGate for Big Data
- GoldenGate Foundation Suite

Oracle Licensing

This policy applies to cloud computing environments from the following vendors:

- Amazon Elastic Compute Cloud (EC2)
- Amazon Relational Database Services (RDS)
- Microsoft Azure Platform

For the purposes of licensing Oracle programs in an Authorized Cloud Environment, customers are required to count as follows:

- **Amazon EC2 and RDS** - count two vCPUs as equivalent to one Oracle Processor license if hyper-threading is enabled, and one vCPU as equivalent to one Oracle Processor license if hyper-threading is not enabled.
- **Microsoft Azure** – count one Azure CPU Core as equivalent to one Oracle Processor license.

Oracle Licensing

When counting Oracle Processor license requirements in Authorized Cloud Environments, the Oracle Processor Core Factor Table is not applicable.

When licensing Oracle programs with Standard Edition One, Standard Edition 2, or Standard Edition in the product name, the pricing is based on the size of the instance. Authorized Cloud Environment instances with four or fewer Amazon vCPUs, or two or fewer Azure CPU Cores, are counted as 1 socket, which is considered equivalent to an Oracle processor license. For Authorized Cloud Environment instances with more than four Amazon vCPUs, or more than two Azure CPU Cores, every four Amazon vCPUs used (rounded up to the nearest multiple of four), and every two Azure CPU Cores used (rounded up to the nearest multiple of two) equate to a licensing requirement of one socket.

Under this cloud computing policy, Oracle Database Standard Edition may only be licensed on Authorized Cloud Environment instances up to 16 Amazon vCPUs or eight Azure CPU Cores. Oracle Standard Edition One and Standard Edition 2 may only be licensed on Authorized Cloud Environment instances up to eight Amazon vCPUs or four Azure CPU Cores.

Oracle Licensing

Database Enterprise Edition licensing in an Authorized Cloud Environment

Licensing Oracle Database Enterprise Edition on a single instance of four Amazon vCPUs, where hyper-threading is enabled, would require two processor licenses. (Two Amazon vCPUs are considered equivalent to an Oracle Processor license).

Standard Named User Plus licensing applies, including counting the minimums where applicable.

For Oracle Linux purposes, each Authorized Cloud Environment instance is counted as a "System". "Basic Limited" and "Premier Limited" support is not available for Authorized Cloud Environment instances greater than eight Amazon vCPUs or four Azure CPU Cores.

Licenses acquired under unlimited license agreements (ULAs) may be used in Authorized Cloud Environments, but customers may not include those licenses in the certification at the end of the ULA term.

Oracle Licensing

Google

- It is not an ‘authorized cloud’ where Oracle accepts the virtual cores as a metric
- It is not running with an hypervisor where Oracle accepts the virtual cores as a metric
- It is not the Oracle Cloud where Oracle accepts to count the virtual cores, and even apply the core factor

So, if you want to run an Oracle Database on the Google Cloud, you may have to pay Oracle Licences to cover the whole physical infrastructure of Google data center.

Oracle RAC on AWS

Oracle Real Application Clusters (RAC) does not run on the AWS platform (there are some hacks, but they are unreasonable to use for production deployments), so high availability has to be achieved with backups, Oracle Data Guard, Oracle GoldenGate, or other replication options.

Oracle on AWS (PaaS)

Pros:

- Significantly simplified operations including automated backups and patching.
- Availability of a PAYG model with SE1 license limitations.

Cons:

- Less control over database deployment configuration and patches.
- Harder to troubleshoot issues that require access to the host OS, for example.
- Some Oracle features, such as external tables, are not available.
- Full control over maintenance windows and optimization of upgrade downtime not available.
- No custom backups other than data export through sql.net.
- Maximum 3TB of provisioned database storage.
- No ability to combine several storage performance tiers.

Oracle on Azure (IaaS)

Pros:

- Oracle Enterprise Edition and its options are available for the utility billing model on Azure while only as BYOL on AWS.
- Windows-based license-included images with Oracle software available in addition to BYOL.
- Because Oracle on Azure IaaS is not a managed offering, customers have full control over the deployment and host within the Azure platform limitations, including the ability to choose which patches to apply.
- Azure instances are billed by the minute

Cons:

- Azure is not as broadly adopted
- Azure doesn’t have as much flexibility when it comes to storage performance tiers and selecting instance sizes.
- Oracle on Azure IaaS requires a full-blown database and OS management as opposed to AWS RDS for Oracle where the vast majority of database management is done by the platform automation.

Oracle on Oracle (IaaS)

Pros

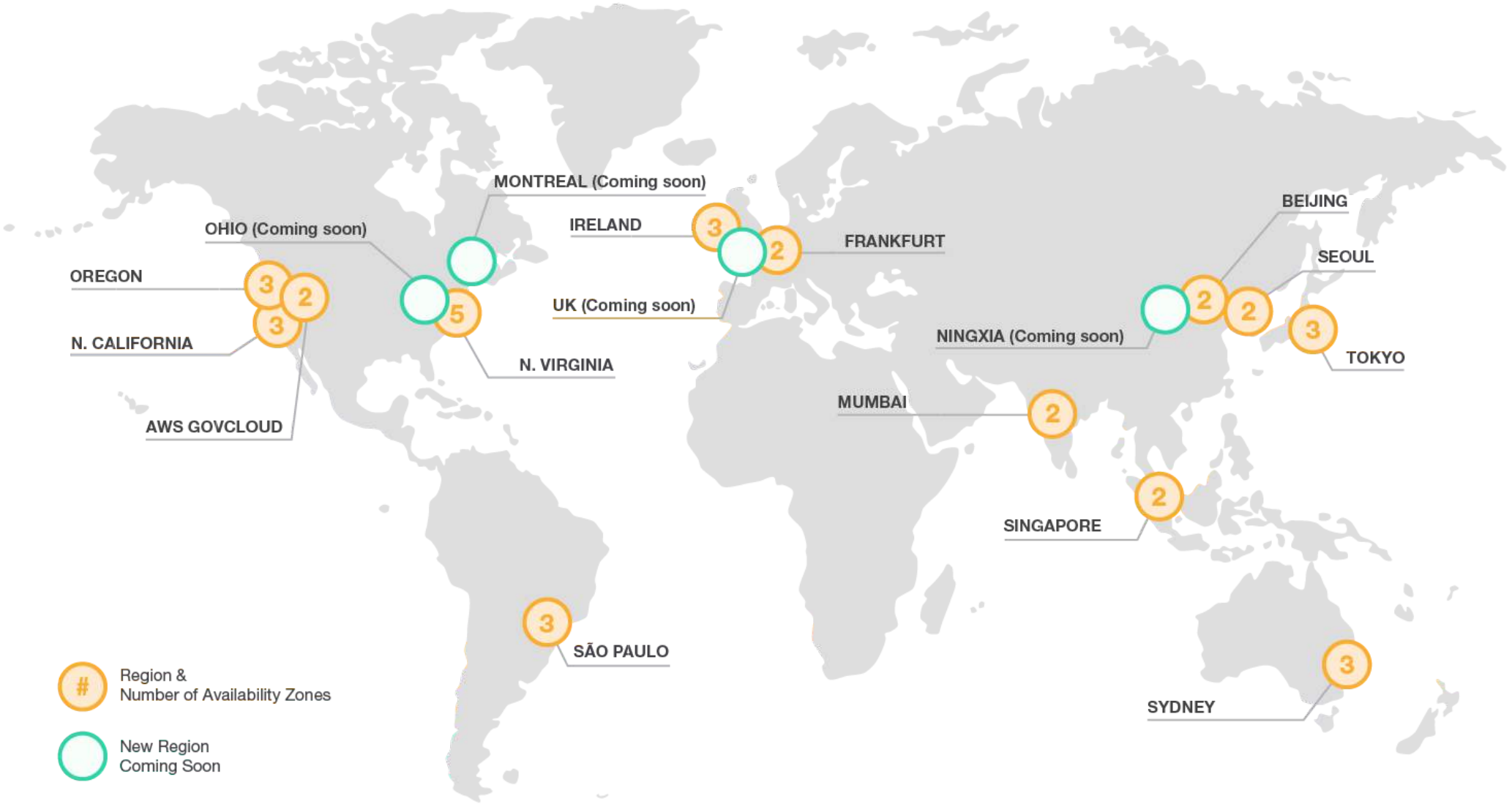
- Oracle Cloud provides customer-dedicated hardware regions for compute.
- It provides a free Storage Cloud Software Appliance to access cloud storage from on-premise via POSIX compliant NFS filesystem.
- Oracle is clearly defining OCPU as a physical core with two execution threads and cores are pinned to the VMs.

Cons:

- Oracle Cloud provides only unmetered compute capacity which may be a pro or a con depending how you look at it. Some customers will like the ability to control the monthly spend better with a monthly subscription as opposed to a pure PAYG model.
- Limited selection of instance shapes compared to AWS.
- No SSD storage and no guaranteed IO performance levels.
- Each VM is limited to 10 block storage disks and up to 20TB of data in total.

Cloud Coverage

AWS


MONTREAL (Coming soon)
OHIO (Coming soon)
IRELAND
FRANKFURT
BEIJING
SEOUL
OREGON
UK (Coming soon)
NINGXIA (Coming soon)
TOKYO
N. CALIFORNIA
N. VIRGINIA
MUMBAI
AWS GOVCLOUD
SINGAPORE
SÃO PAULO
SYDNEY
Region &
Number of Availability Zones
New Region
Coming Soon

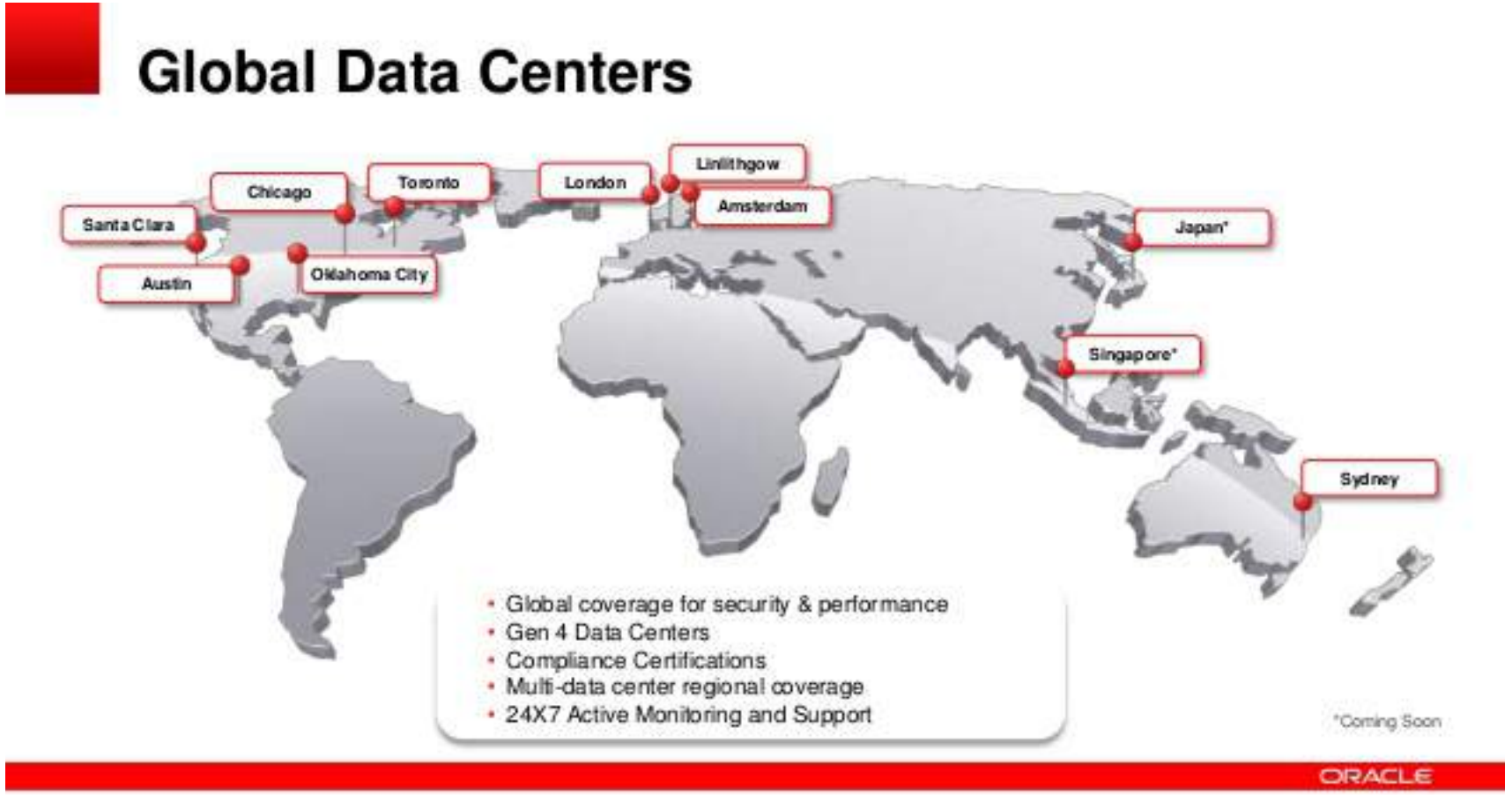
Azure


Canada Central
Canada East
US Gov Iowa
Central US
Central US 2
North Central US
West US
US DoD West
South Central US
US DoD East
East US
East US 2
US Gov Virginia
UK West
North Europe
UK South
West Europe
Germany Northeast
Germany Central
Korea Central
Korea South
China North
Japan East
Japan West
China East
East Asia
West India
Central India
South India
Southeast Asia
Brazil South
Australia East
Australia Southeast
Generally available
Coming soon

Google


Netherlands
Finland
London
Frankfurt
Belgium
Oregon
Iowa
Montreal
N Virginia
Los Angeles
S Carolina
Tokyo
Taiwan
Mumbai
Singapore
São Paulo
Sydney
Current Regions & Number of Zones*
Future Regions & Number of Zones*
* While some regions may launch with 2 zones, all regions are planned for a minimum of 3 zones.

Oracle


Global Data Centers
Linlithgow
Chicago
Toronto
London
Amsterdam
Santa Clara
Japan*
Austin
Oklahoma City
Singapore*
Sydney
• Global coverage for security & performance
• Gen 4 Data Centers
• Compliance Certifications
• Multi-data center regional coverage
• 24X7 Active Monitoring and Support
*Coming Soon
ORACLE

Oracle


Oracle Cloud: Regions
US West
US Central
US East
US Gov
US DOD
US HIPAA
UK North
UK South
UK Gov
EU
Germany West
US PCI
ANZ East
ANZ Central
Singapore
China
Japan East
Japan South
Brazil
Middle East
Canada
Korea
India
Turkey