ORACLE

Oracle Cloud Infrastructure

Panel

Oracle Cloud Infrastructure Customer Panel

ORACLE
Oracle Global Leaders Program

Dr. Marcus Praetzas
Director
Deutsche Bank

Nikitas Xenakis
Principal Solutions Architect
Co-op

Philip Brown
Chief Technology Officer
DSP

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Dr. Marcus Praetzas
Director
Deutsche Bank

Oracle Cloud @ Deutsche Bank

Dr. Marcus Praetzas, July 2021,Deutsche Bank AG

Agenda

1. Introduction

- Deutsche Bank
- Use Cases and Exadata Experience

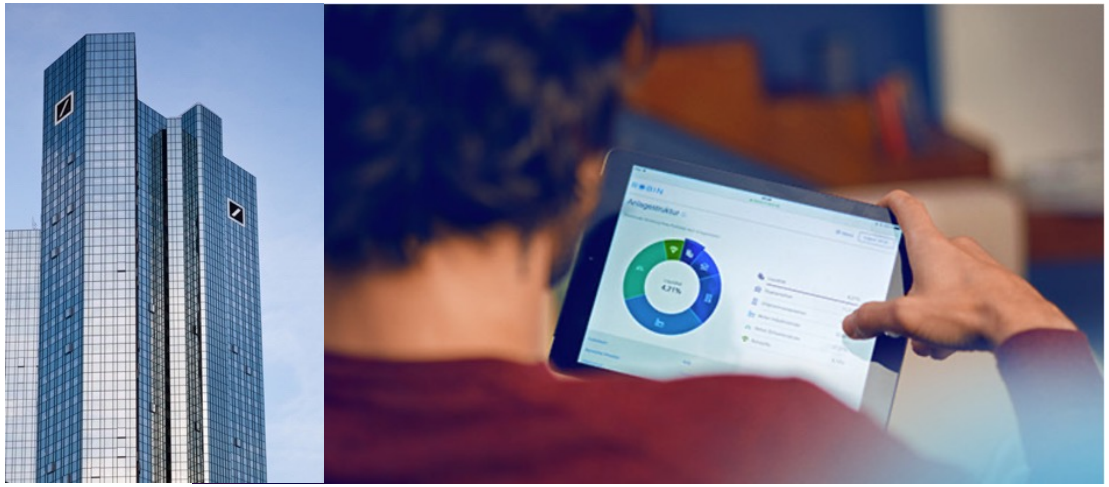
2. Cloud Journey

- Scope & Strategy
- Proof of Concept
- Comparison

3. Oracle Exadata Cloud @ Customer

- Announcement
- Summary and next steps

Deutsche Bank AG



- Founded 1870 in Berlin
- Picture: Frankfurt Branch by Roßmarkt 18 around 1930.
- Internationalisation 1955 – 1988
- Global from 1989 – now
- 1989: Acquisition of the British merchant bank Morgan Grenfell
- 1999: acquisition of Bankers Trust
- 2006: acquisition Berliner Bank, Norisbank
- 2010: acquisition Postbank, SalOp.
- 2017: #PositiveImpact
- 2018: Initial Public Offering of DWS
- 2020: 150 years

Oracle Exadata Experience – in use and increasing since 2010

Stable, resilient, performant and cost efficient operation of the Oracle database estate

20+ (critical) Applications

- Risk & Capital Planning, Regulatory Reporting, Compliance, Tax, Payment Processing, Financial Messaging,

Features

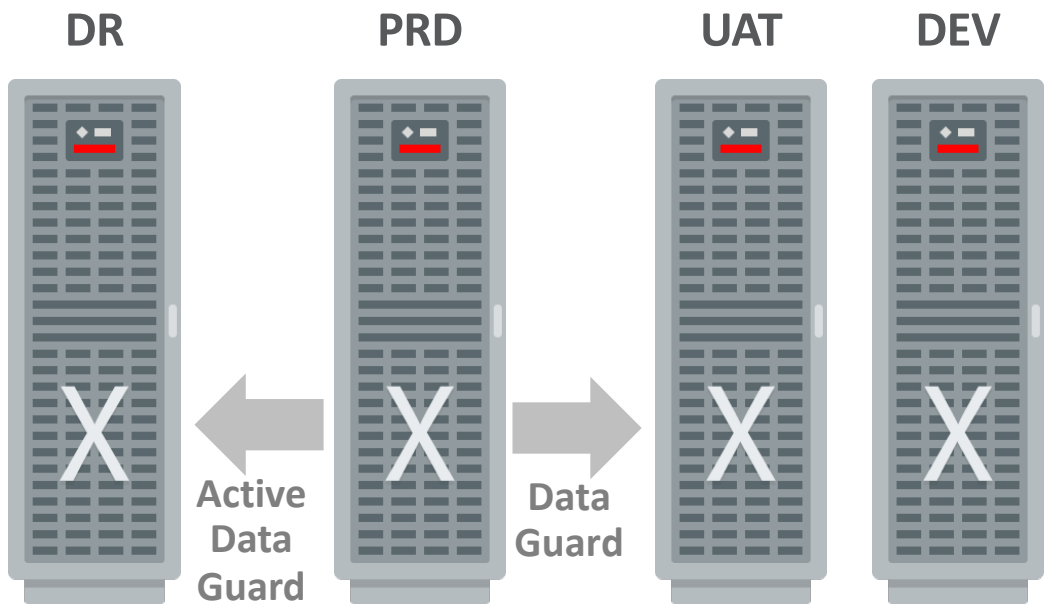
- RAC, In Memory, Multitenant, Active Data Guard

Global Deployment

- 48% Germany, 43% UK, 9% US
- All versions from Exadata X2 to X8

Experience

- Started in 2010
- Initial Focus on performance
- Proven stability ever since



> 65 Exadata Systems and > 37 PB of Data

Exadata … Cloud Journey

Scope & Strategy

Analyze current landscape and identify candidates and use cases – (end 2019)

Database Hosting Service Oracle – 5 Platforms + Standalone

- **V1** Database Hosting Service, VM based, own implementation dating back from 2014. Traditional setup (HP-server, EMC storage, VM-Ware), Global deployment
- **V2** similar to V1 but different infrastructure
- **2 x eGrid** IBM hosted database service (mostly retail). RAC based.
- **Exadata**, Mostly critical systems for performance / stability considerations
- Standalone

Full Scope would include > 12k database instances (DEV-TES-PRD)

DHS-O v1

#databases 2.113
Ora 11.2 **100%**
OEL 5.11 **98%**, OEL 5.8 **2%**
G6 **1%**, G7 **22%**, G8 **77%**

DHS-O v2

#databases 3.095
Ora 11.2 **29%**, 12.1 **70%**, 19.5 **1%**
RHEL 6.x **81%**, RHEL 7.x **19%**
G8 **7%**, G9 **74%**, G10 **19%**

eGrid (IBM)

#databases 649
Ora 11.2 **36%**, 12.1 **63%**, 19.6 **1%**
RHEL 6.x **98%**, RHEL 7 **2%**
X3850 x5 7145 **8%**, 7143 **21%**,
X3650 M4 **33%**, other **38%**

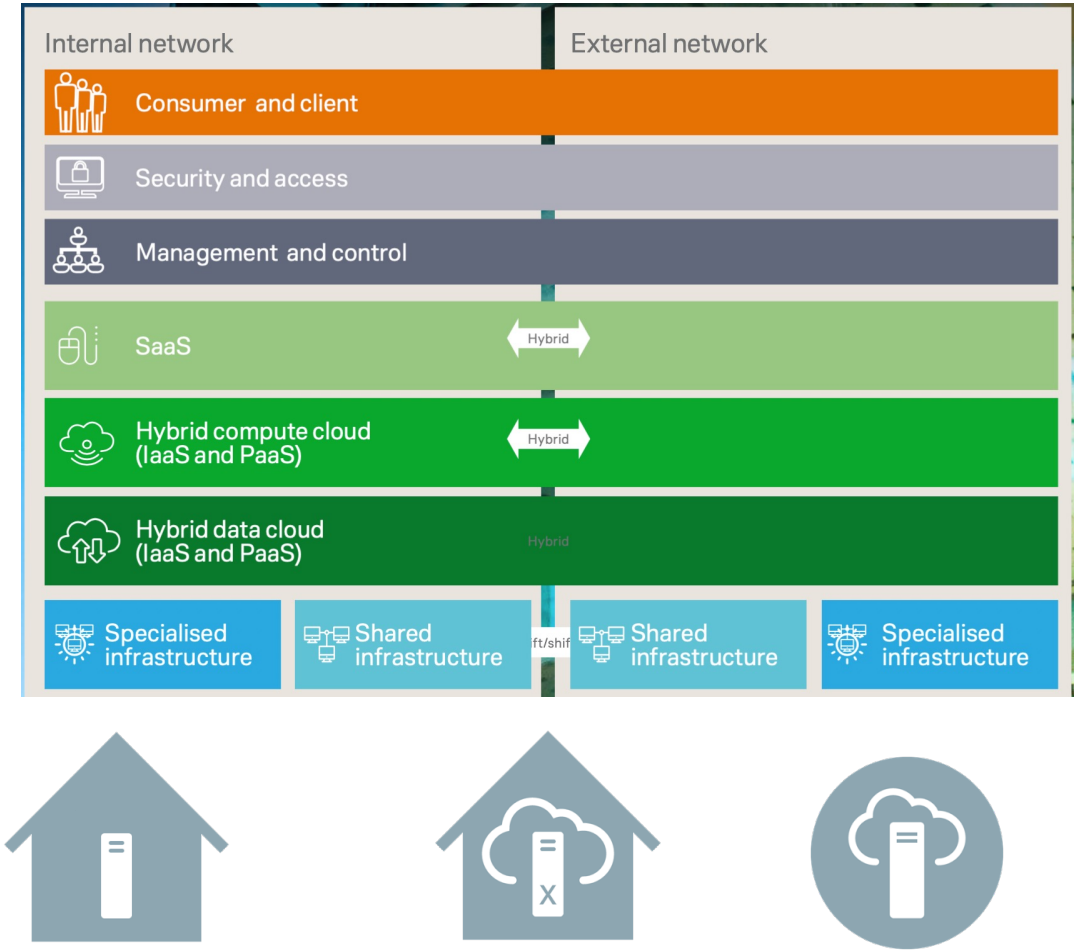
eGrid (Retained)

#databases 81
Ora 11.2 **50%**, 12.1 **50%**
RHEL 6.x **100%**
G7 **100%**

Exadata

#databases 404
Ora 11.2+12.2+18.0+18.4 **98%**,
18.1+19.6 **2%**
OEL 6.x **100%**

Hybrid Cloud Strategy



PoC Exadata Cloud Service + Autonomous Database

Proof of Value of the solution (mid 2020)

- Working with Oracle to connected Oracle Public Cloud Datacenter over a 6 month period.
- Executed 40+ test cases to review functional and none- functional requirements jointly with support from Oracle

Exadata Cloud Services Results

✓ Exadata Cloud Service delivers equivalent level performance, availability and recoverability to Exadata On Premise

Significant additional advantages to Exadata On Premise

✓ Much Easier Setup, Manageability

✓ Much Easier Patching

✓ Dynamic CPU Scaling

✓ Comes with Encryption using TDE and with Standard Audit functionality

Autonomous Database Results

✓ Easier setup than Exadata On Premise: less optionality to customize

✓ Zero configuration required

✓ Operational tasks performed by Oracle: Monitoring, Patching, Backup, Upgrade, Tuning

✓ Usual Oracle Database tools are available

✓ Latest Release Automated features included

✓ Performance equivalent to Exadata Cloud Service

In summary, given the current operational effort, specifically the autonomous database can provide a significant benefit.

Comparison – Recommendation – Negotiation

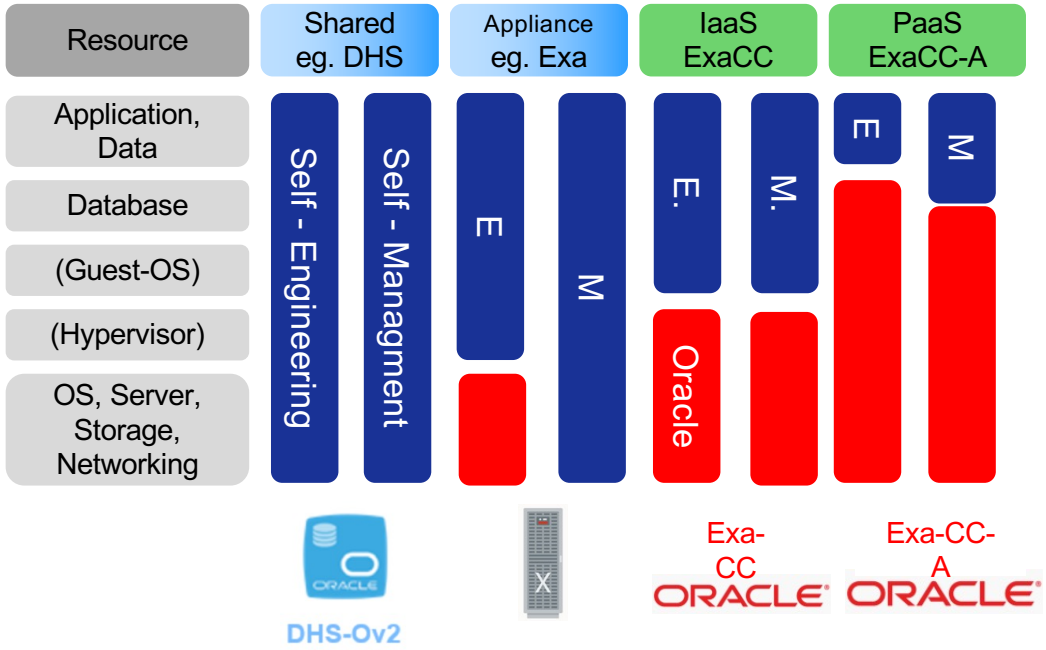
Comparison and recommending Oracle Cloud@Customer – start end 2020

Platform

- Consumption - Flexibility and Speed
- Evergreen – Match Regulatory requirement
- Standardization – Improve Stability
- Automation – Improved Customer Experience
- Time to Market – Improved Business Flexibility

Integration

- SDLC CI/CD support
- Stability, Performance proven platform
- Maintainability tenant isolation (VM,CDB/PDB)
- Backup Cyber resiliency & Large DB restore, Backup solution with Oracle is engineered
- Reduced complexity of Target Op Model by engineered platform solution
- Speed of Path to Production, current Database Engineering team familiar with Exa



Oracle Cloud@Customer (Exa-CC): Exadata X8M Infrastructure. Managed up to HyperV by Oracle Elastic resource utilization. Hosting in any DC.

Oracle Cloud@Customer Autonomous (Exa-CC-A): Same as EXA-CC but database (automated) operation by Oracle and enhanced automation for elastic resource utilization.

Oracle Exadata Cloud@Customer

Deutsche Bank – Oracle – Announcement – 24. June 2021

Press Release

Deutsche Bank Partners with Oracle to Accelerate Technology Modernization

Deutsche Bank selects Oracle Exadata Cloud@Customer to consolidate key databases in its selected data centers

Companies form innovation partnership to modernize Deutsche Bank's mission-critical databases and enable new financial products and services

Frankfurt, Germany and Austin, Texas—June 24, 2021

Oracle and Deutsche Bank, one of the world's largest financial services organizations, today announced a multi-year collaboration to modernize the bank's database technology and accelerate its digital transformation.

The agreement will see Deutsche Bank upgrade its existing database systems and migrate the bulk of its Oracle Database estate to Oracle Exadata Cloud@Customer, an on-premises deployment option of the Oracle Exadata Cloud Service, to support applications that either will not move to the public cloud or may in the future. This will provide a dedicated platform to support and scale the bank's existing mission-critical systems and services including trading, payments processing, risk and capital planning, and regulatory reporting.

Media Release | June 24, 2021

Deutsche Bank Partners with Oracle to Accelerate Technology Modernization

— Deutsche Bank selects Oracle Exadata Cloud@Customer to consolidate key databases in its selected data centers
— Companies form innovation partnership to modernize Deutsche Bank's mission-critical databases and enable new financial products and services

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0 Rating(s)

25 Like(s)

Share

Bernd Leukert · 2nd
Head of Technology, Data and Innovation bei De...
1w

Today, we took another significant and exciting step on our digital transformation journey by partnering with **Oracle** to simplify and modernise our database technology. So what does this mean? First and foremost, it means the databases we keep on premises will benefit from cloud technology – and have the option of running that data in future cloud co-location sites. It means we will reduce the number of Oracle platforms in the bank from 5 to just 1. We will save significant costs and support our sustainability efforts by consuming much less energy in our data centres.

A big thank you and congratulations to **Gordon Mackechnie**, **Gil Perez**, **Marcus Praetzas**, **Harsh Gupta**, **Jens Bernhardt**, **Stephan Pick**, **Shivani Shakir**, **Alistair Charleton** and the rest of the team who made this contribution to our technology journey.

Nasdaq

REUTERS®

CIO 20 JAHRE

manager magazin

IT Finanzmagazin
Das Fachmagazin für IT und Organisation bei Banken, Sparkassen und Versicherungen

WirtschaftsWoche

https://www.db.com/news/detail/20210624-deutsche-bank-partners-with-oracle-to-accelerate-technology-modernization?language_id=1

Summary & Next Steps

Benefit

- Cost: Triple digit million euro cost save over a number of years
- Simplification: Consolidating from 5 Oracle platforms to 1
- Modernisation: Move to a platform that is “evergreen” (updates more regularly)
- Supports our sustainability efforts as we will reduce energy consumption in our data centres
- Oracle’s Exadata Cloud@Customer service can run in Deutsche Bank‘s current data centres as well as in future cloud co-location data centres
- Low transformation risk with Oracle as technology owner
- Furthermore, we will enter into an innovation collaboration with Oracle to ensure we maximise the insights from our on premises databases

Next

- Execution, Execution, and Execution – 12 FRE in 2021
- Development System in July 2021 in Germany / UK
- UAT Testing Systems in August and September
- Production in October and November
- 2022 – start US and Singapore deployment
- 3-5 year Engagement

Continue Oracle – Deutsche Bank

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Nikitas Xenakis
Principal Solutions Architect
Co-op

Moving Business-Critical Java Applications to Oracle Cloud

Nikitas Xenakis, Principal Solutions Architect

About Me

Nikitas Xenakis

Principal Technology Solutions Architect, The Co-op

- 20+ years as Enterprise DBA (v7-12cR2/21c)
- CAB / Beta Member: Oracle Database, Oracle RAC, Data Integration (Goldengate), Weblogic
- Global Leaders Database Development

ORACLE ACE

@Nikitas_Xenakis

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Agenda

- Introduction
- Technology Drivers, Context
- Original Architecture, Challenges
- Technical Considerations
- Database & Middleware Target Architecture in OCI
- Implementation Approach
- Summary

Leading UK Convenience Retailer

- ✓ **Annual Revenue: £11.2B**
- ✓ **2600+ Owned Stores**
- ✓ **Retail, Wholesale, Franchise, Ecommerce, Home Delivery**
- ✓ **14 Distribution Centres**
- ✓ **Logistics Network servicing 10,000+ Outlets**

Co-op HQ, Manchester UK - One of the most sustainable large buildings in the world

Business & Technology Context

2200

Costcutter Stores

2600

Co-op Stores

2500

Independent Co-op Stores

5200

NISA Stores

Support Centre

4000 users

Co-op Data Centre A

Co-op Data Centre B

14

Distribution Centres

6,100,000 members

Cloud

70,000 colleagues

Technology Drivers & Challenges

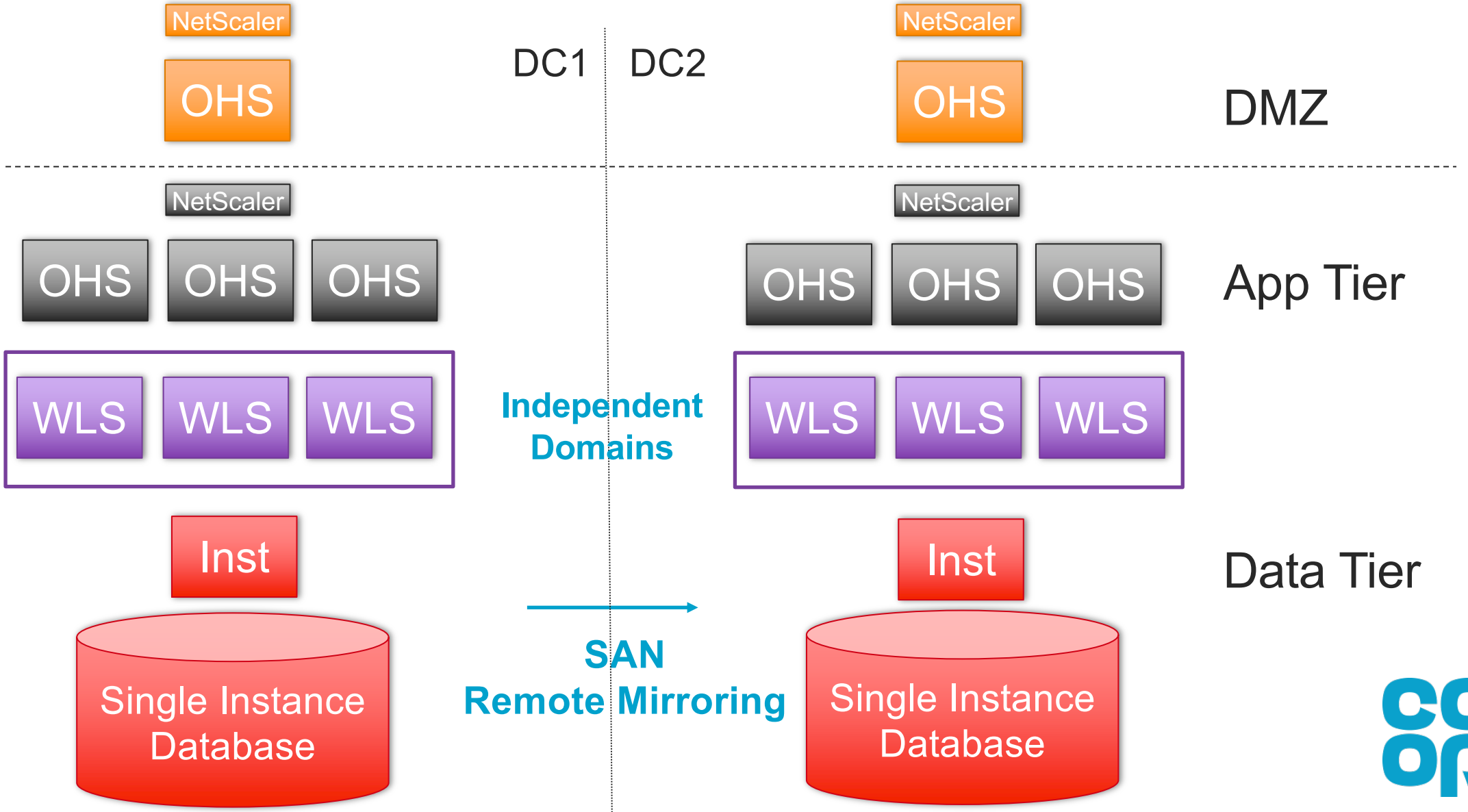
- ✓ **Simplification & Standardisation** of Database & Middleware platforms
- ✓ **"Always-Available" - Develop and maintain a HA/MAA On-Premises and Cloud Landscape for Database and Application Layer**
- ✓ Increase **availability**, **scalability**, **agility**, **security by design**: downtime, poor performance is extremely costly
- ✓ **Cloud (Native) First** and Continuous Delivery **(CI/CD)**
- ✓ **Data Centre Optimization** and **Exit** Strategy

Our Use Case

Our Use Case

- **Business-critical** Ordering App used in Franchise stores
- **Java** based Application, **externally facing** (DMZ) and currently running on-premises in Co-op's Data Centres
- **Limited HA** and **DR** to cover loss of one data centre
- Oracle software versions:
  - **Fusion Middleware - Oracle WebLogic & Oracle Web Tier 12c**
  - **Oracle Database 11gR2**

On-Premises Architecture



Challenges & Drivers

- **Data Centre Optimization and Exit** strategy – Application is medium term lifespan app so needs to be migrated to cloud as part of DC exit.
- Current versions (**WLS & OHS 12.1.3**) of Oracle products are **out of support** (Premier ended Dec 2017, **Extended** to **Jan 2022**) so will impact Oracle support cost & potentially ability to maintain service levels.
- **Services include OHS in DMZ**, open to internet, so needs support & patches.
- Mostly reliable but have issues when OS patching DMZ in particular.
- Limited testing capability for DMZ/OHS so every Windows patch application runs risk of outage
- **Limited HA in DMZ web tier layer** and **database layer** so single component failure **risks non-trivial outage**.

Technical Considerations

Provisioning Options for Weblogic

Traditional Install

- Traditional on-prem or **IaaS** – full install with OUI, WLST etc

Weblogic Marketplace 2019+

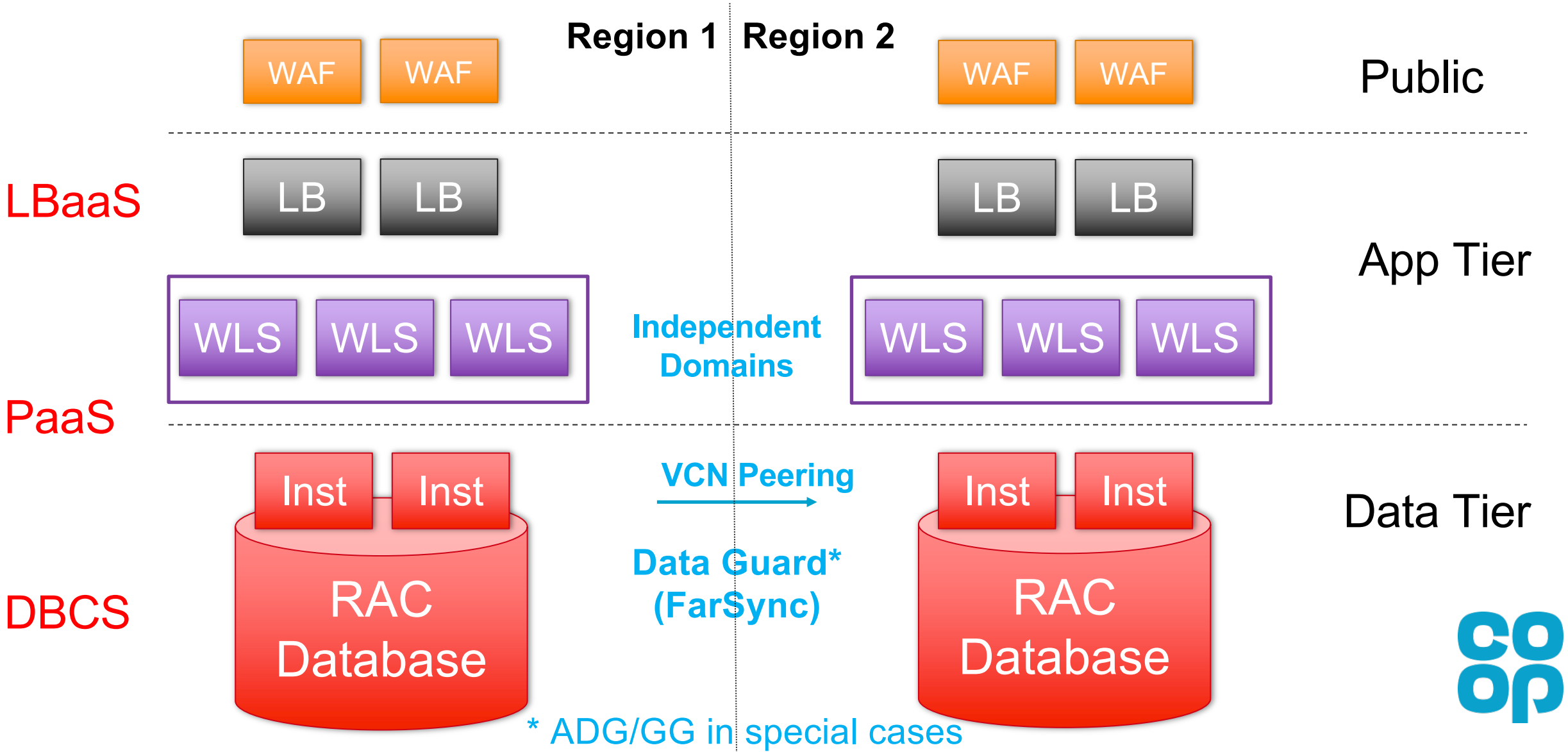
- OCI method, combination of images & configuration via TF (IaC-PaC)

Docker/Kubernetes

- Modern, layered container approach with multiple provisioning options:
  - **"WebLogic on OKE" from OCI Marketplace** New

OKE Online Lab - https://oracle.github.io/cloudtestdrive/AppDev/wls/ll-wls-for-oke-nonjrf/?customTrackingParam=:em:lw:rce:cpo:::RC_WWMK201222P00024:WeblogicEMEAHOLfeb

MAA in OCI – HA/DR General Approach



MAA in OCI Design Patterns

	Database		Middleware
1	Single instance (1PDB in CDB)	Data Guard {&FSFO}	WLS 1 or 3 nodes 1 domains/site
2 **Preferred**	RAC (1 PDB in CDB)	Data Guard	**WLS/OKE** 3 node & **Grid Link**
3	RAC (1 PDB in CDB)	Active Data Guard	WLS 3 node {AC/TAC}
4 **Preferred**	RAC (1 PDB in CDB)	Active Data Guard {& GoldenGate}	(non-Oracle)/(T)AC

Implementation Approach

Key Considerations for this Use Case

Stateless

- No JMS
- No local files
- Session state is for authentication/authorisation (internal mechanism)

Plain Java WebApps

- No ADF / JRF / OPSS etc
- JSP/JSF/JDBC

Traditional database architecture

- Files in and out of the system go via tables, PL/SQL, SQL*Loader
- Flat file data to/from other systems

WebLogic Suite on OCI Marketplace is an option but we have more apps to migrate so want to reuse same compute resources

Containers are strategic deployment for WLS & FMW for Oracle so we in phase 2 will align with that

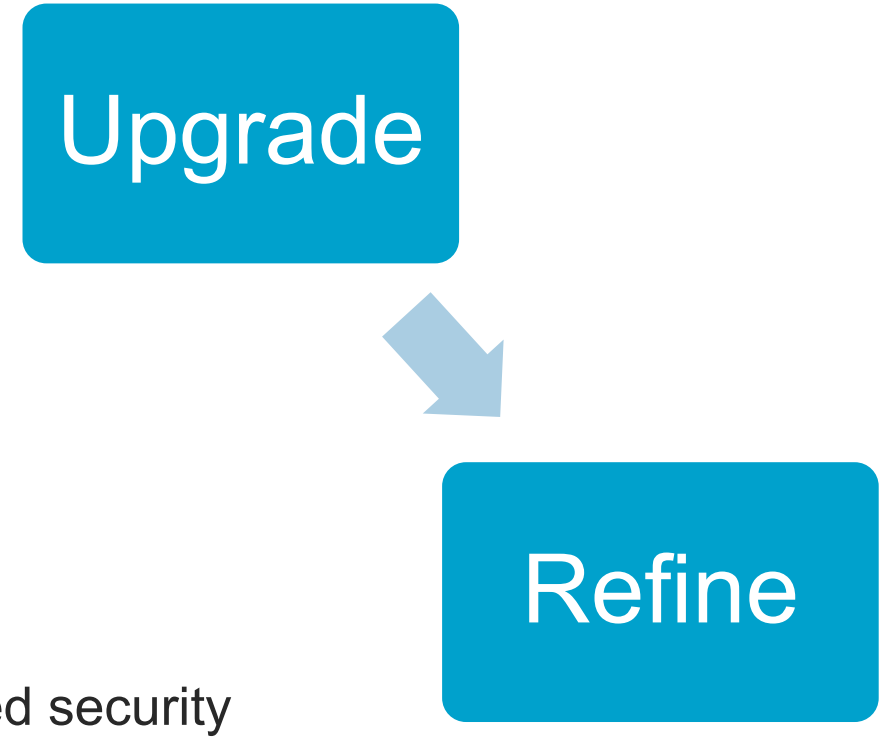
OCI Database options considered for database, with OCI File and Object Storage considered for files

Lift and shift => don't yet want to change (external) developer workflow or make code changes to database… one step at a time

Phased Approach

Phase 1 (Completed)

- **WLS 12.1** to **12.2 upgrade** (Minor changes)
- **DB 11.2 to 19c (19.8) RAC** upgrade (DataPump)
- **WebLogic Suite** on OCI Marketplace image
- Load Balancers through **LBaaS** (remove OHS layers)
- Traditional app deployment through Admin Console



Phase 2 – Next Steps

- Introduce **WAF** into reference architecture for enhanced security
- WLS on OKE Marketplace - **High degree of app consolidation, cost-effective**
- From DBCS to ATP for data storage (use of **ZDM** to eliminate downtime)
- Rework integration code with downstream systems (no local files)

Summary

WebLogic on OCI Marketplace (directly on compute)

- Traditional feel, easy to provision-deploy, includes HA OOTB
- Weblogic Suite includes Active Grid Link for TAC & HA/MAA at both layers
- Predictable costing & performance (BYOL and License included available)

WebLogic in microservice-led containerised platform

- There is quite a lot to learn, though OKE makes the K8s set up much easier
- Nice patching with Jenkins pipelines

Oracle database has different approach to segregation/containerisation

- **Autonomous database is the future** but **DBCS is good stepping stone**

Summary

Migration Experience

- **Easy, simplified and efficient E2E Provisioning** and Configuration
- Similar steps to **link & configure custom libraries** through **“setDomainEnv.sh”**
- **No code changes required** in either application or database layer

Improvements

- **Auto provision database layer when JRF option enabled**
- **Weblogic Marketplace to become a full Oracle PaaS offering**
- **Option and ability to patch Weblogic could be simplified and automated**

Thank You!

Q&A

Co-op HQ

One of the most sustainable large buildings in the world 2013

https://en.wikipedia.org/wiki/One_Angel_Square

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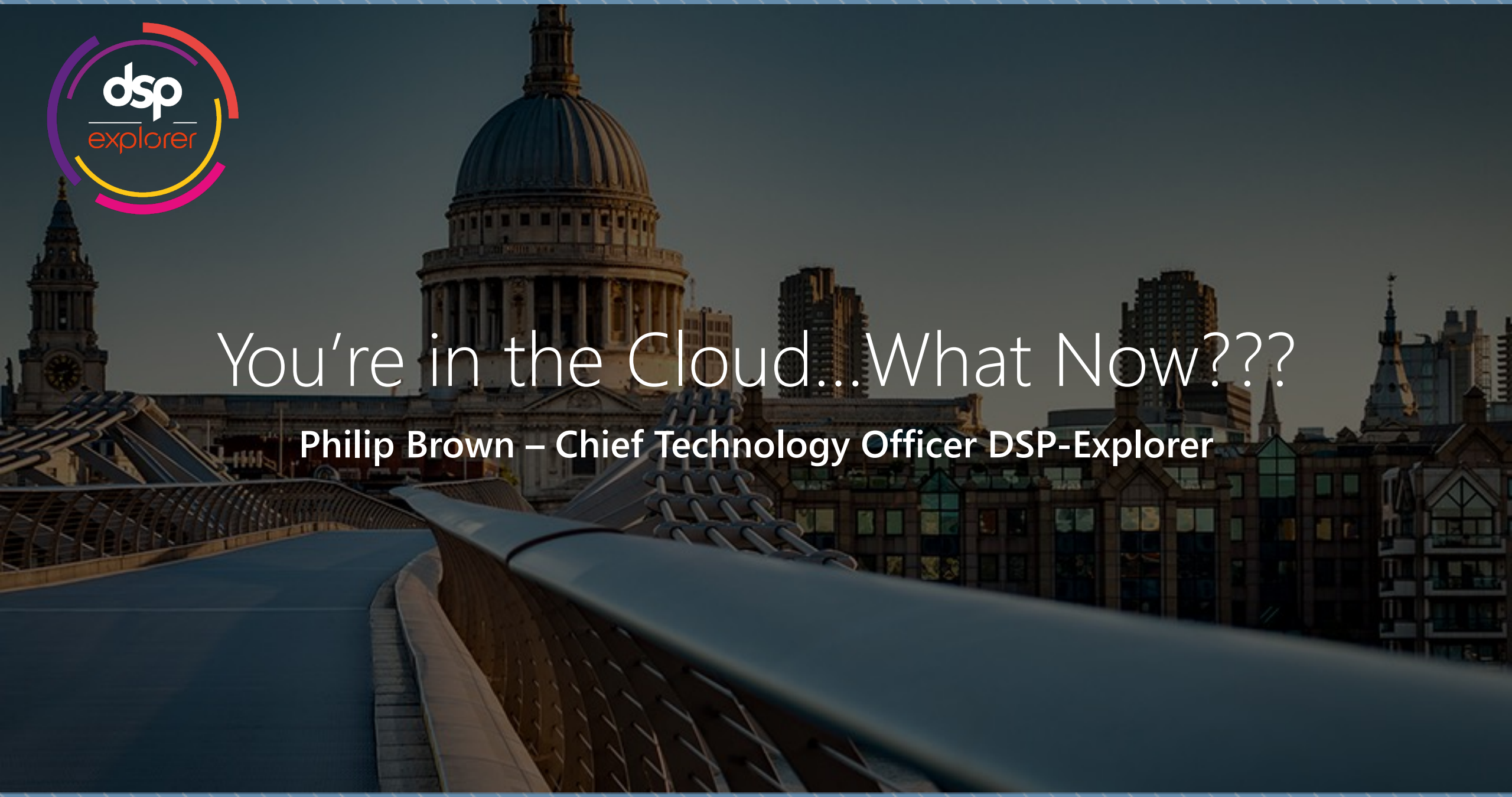


You're in the Cloud…What Now???

Philip Brown – Chief Technology Officer DSP-Explorer

DSP-Explorer – Heritage & Pedigree

20 years in business

Experienced Management Team

Highly skilled consultants

200 clients, annuity focus

24x7x365 Managed Services operation

Enterprise-grade cloud architectures

Increased spotlight on innovation

Tier 1 vendor relationships

Microsoft Partner
Microsoft
Gold Data Analytics
Gold Data Platform
Gold Cloud Platform

ORACLE | Partner

We are an
HM Government
G-Cloud 11
Supplier

UK MANAGED SERVICES awards 2019
HIGHLY COMMENDED

INDEPENDENT UK OUG UK ORACLE USER GROUP 2009 2019
Awards
22 Gold
8 Silver
10 Bronze

dsp explorer

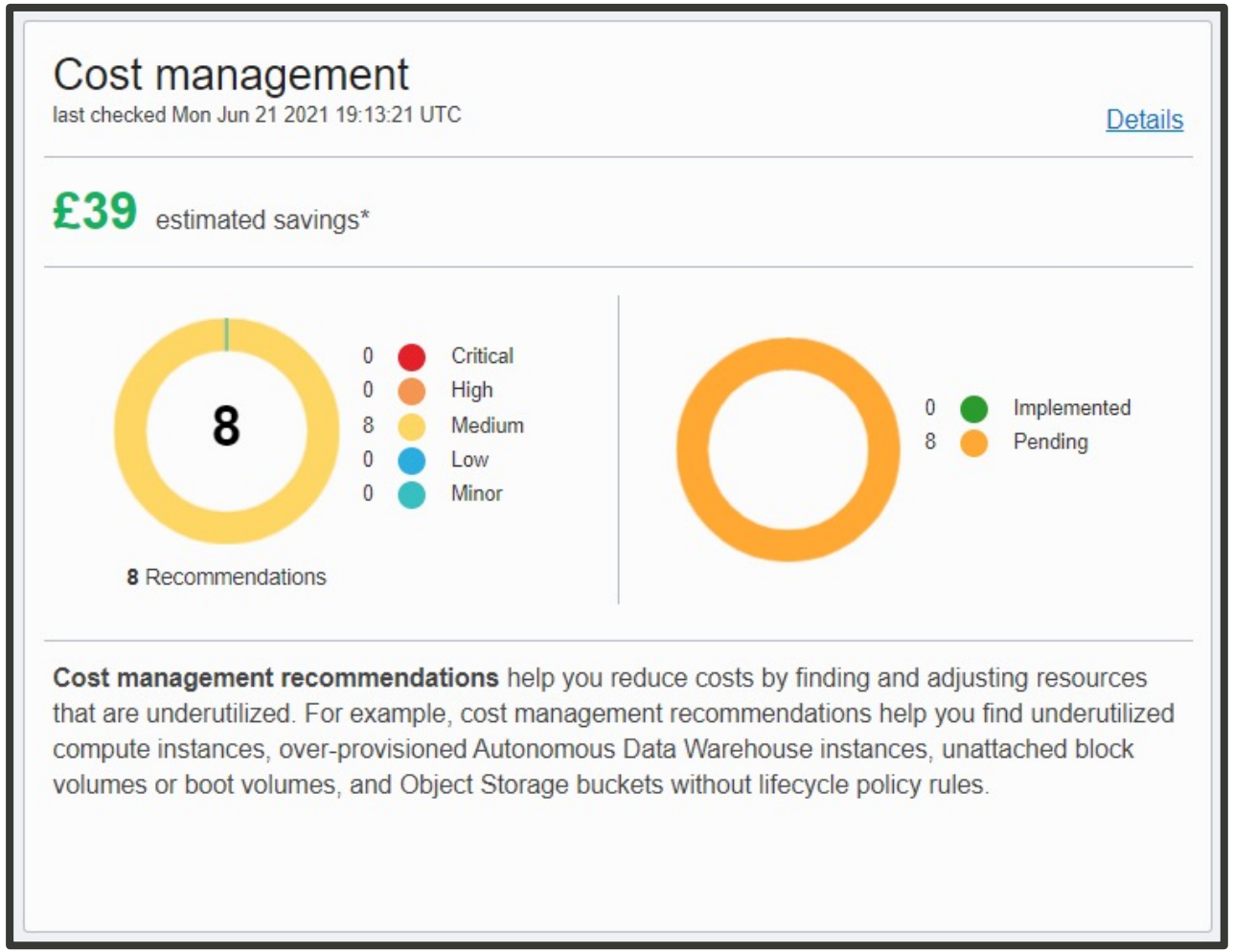
Improve Your Security Posture

Visibility

Enhance

Improve Your Cost Profile

Visibility



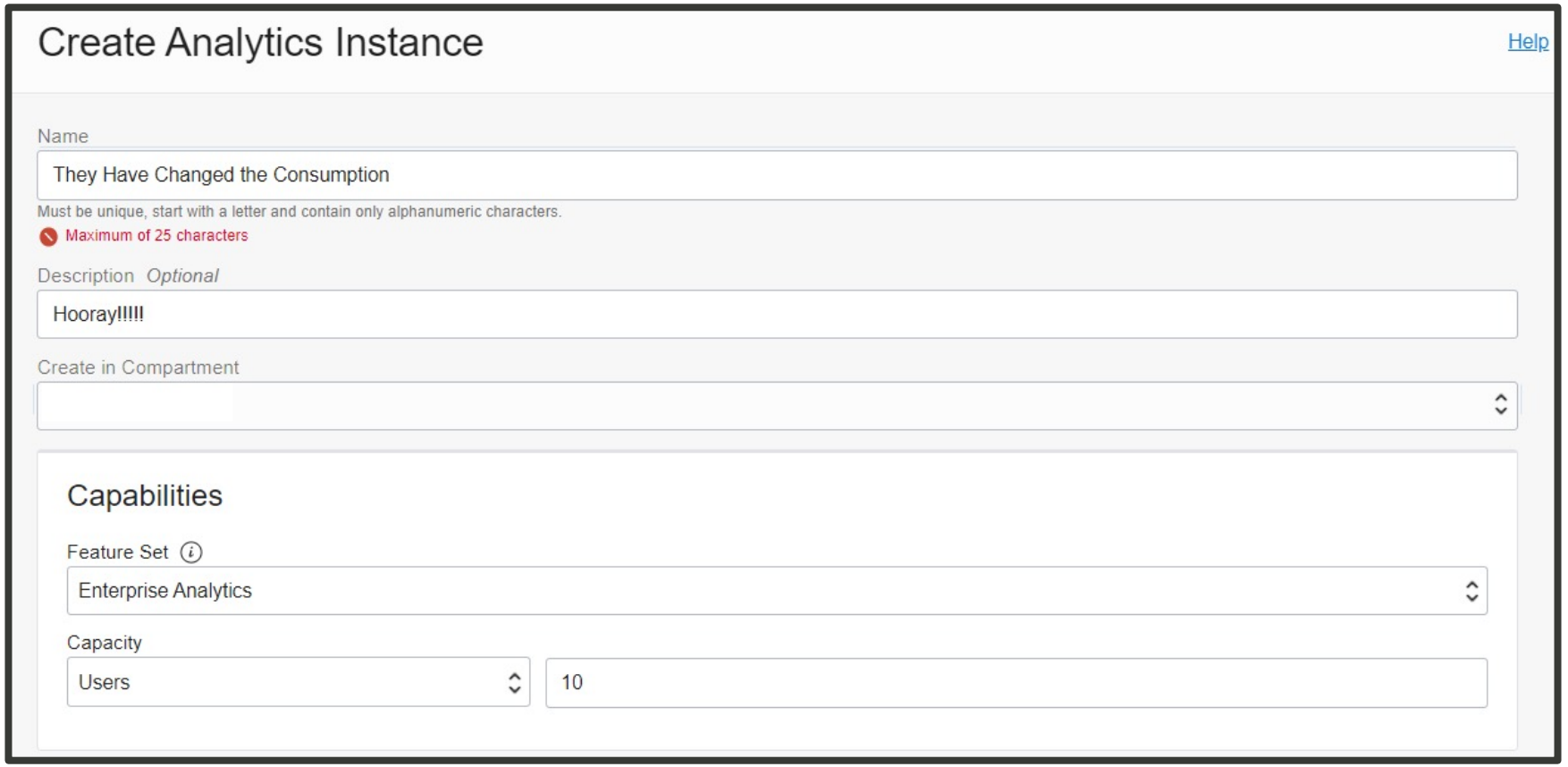
Enhance

Improve Your Governance

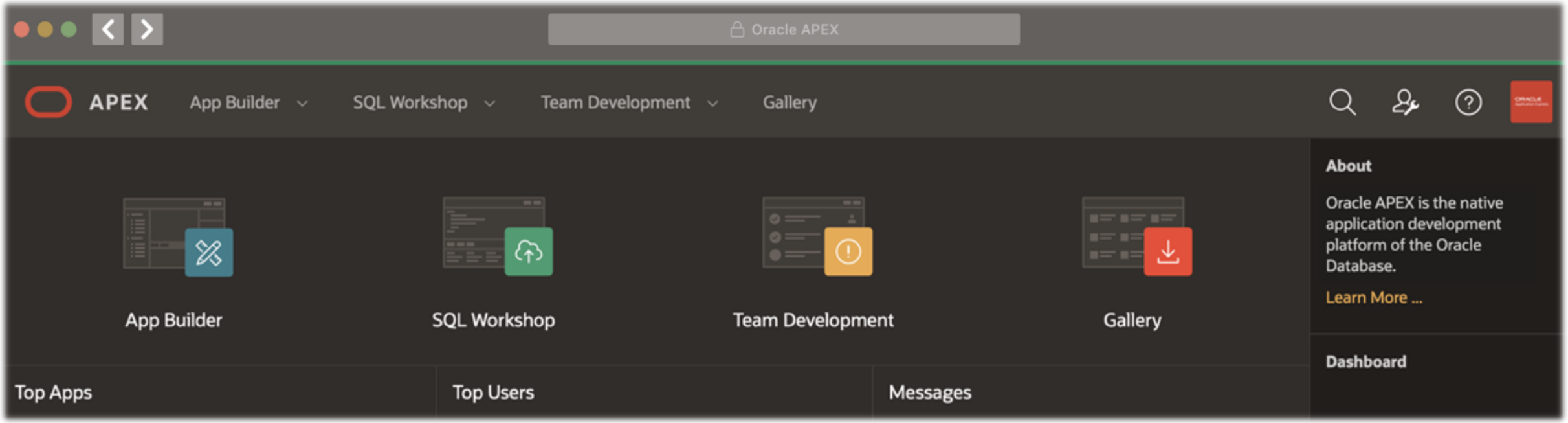
Tenancy Sharing

Hard and Soft Limits

Improve Your ~~Reporting~~...~~Business Intelligence~~...Visualisation!



APEX on ATP, ADW, DB Systems....or Native!



Always Free
Show only Always Free configuration options

Prototype for Free!

Innovation – Proof of Value – Proof of Concept – Prototype - Play

What are Always Free cloud services?

Infrastructure

2 AMD based Compute VMs with 1/8 OCPU and 1 GB memory each.

4 Arm-based Ampere A1 cores and 24 GB of memory usable as one VM or up to 4 VMs.

2 Block Volumes Storage, 200 GB total.

10 GB Object Storage.

10 GB Archive Storage.

Resource Manager: managed Terraform.

5 OCI Bastions.

Databases

Your choice of Oracle Autonomous Transaction Processing, Autonomous Data Warehouse, Autonomous JSON Database, or APEX Application Development. Two databases total, each with 1 OCPU and 20 GB storage.

NoSQL Database with 133 million reads per month, 133 million writes per month, 25 GB storage per table, up to 3 tables.

Observability and Management

Monitoring: 500 million ingestion datapoints, 1 billion retrieval datapoints.

Application Performance Monitoring: 1000 tracing events per hour.

Logging: 10 GB per month.

Notifications: 1 million sent through https per month, 1000 sent through email per month.

Service Connector Hub: 2 service connectors.

Additional services

Flexible Load Balancer: 1 instance, 10 Mbps.

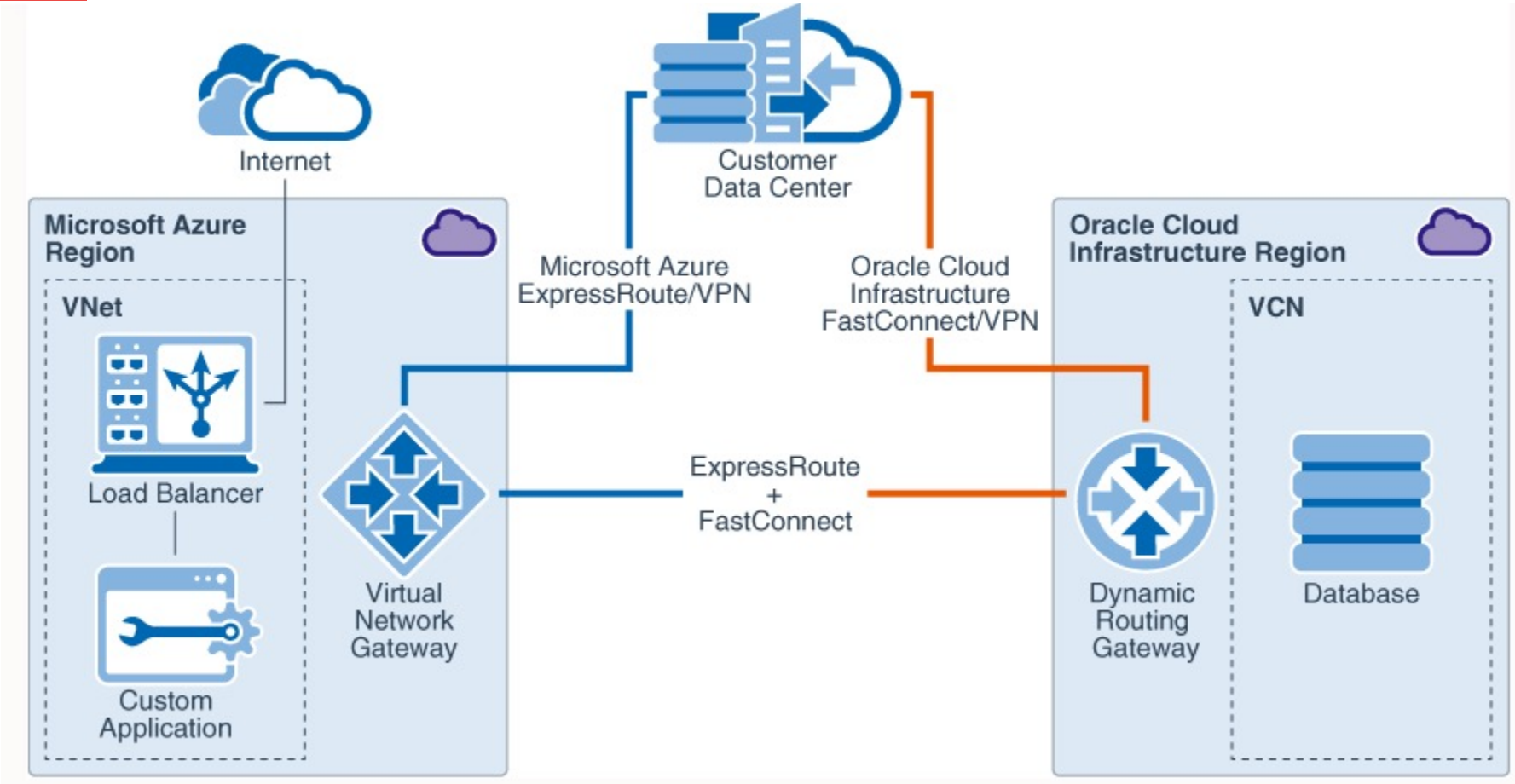
Flexible Network Load Balancer.

Outbound Data Transfer: 10 TB per month.

Machine Learning – Available – Notebooks – In-Database – OAC

https://www.dsp.co.uk/cochlear-implants

Oracle and Azure Interconnect



Thank You and Don't Stop Moving....

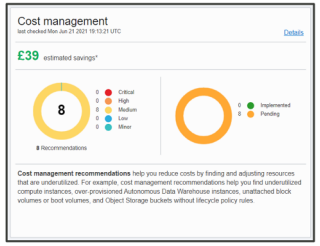
Improve Your Security Posture

Visibility

Enhance

Improve Your Cost Profile

Visibility



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Improve Your Governance

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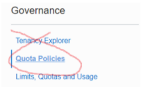

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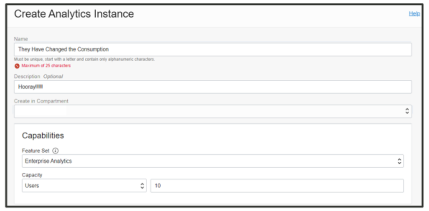

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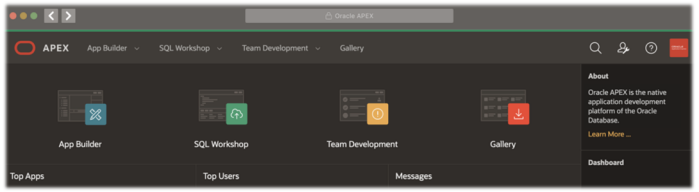

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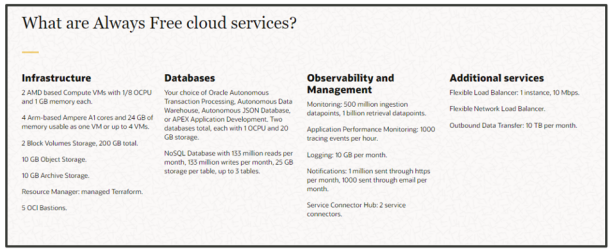

Machine Learning – Available – Notebooks – In-Database – OAC

https://www.dsp.co.uk/cochlear-implants

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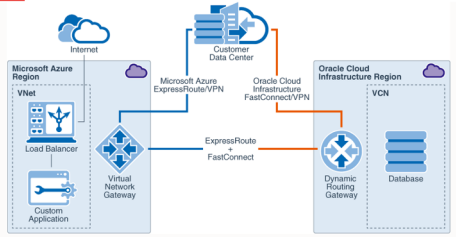

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