

Oracle on AWS
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We Will Discuss

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And
pricing

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Overview
of Oracle
on AWS

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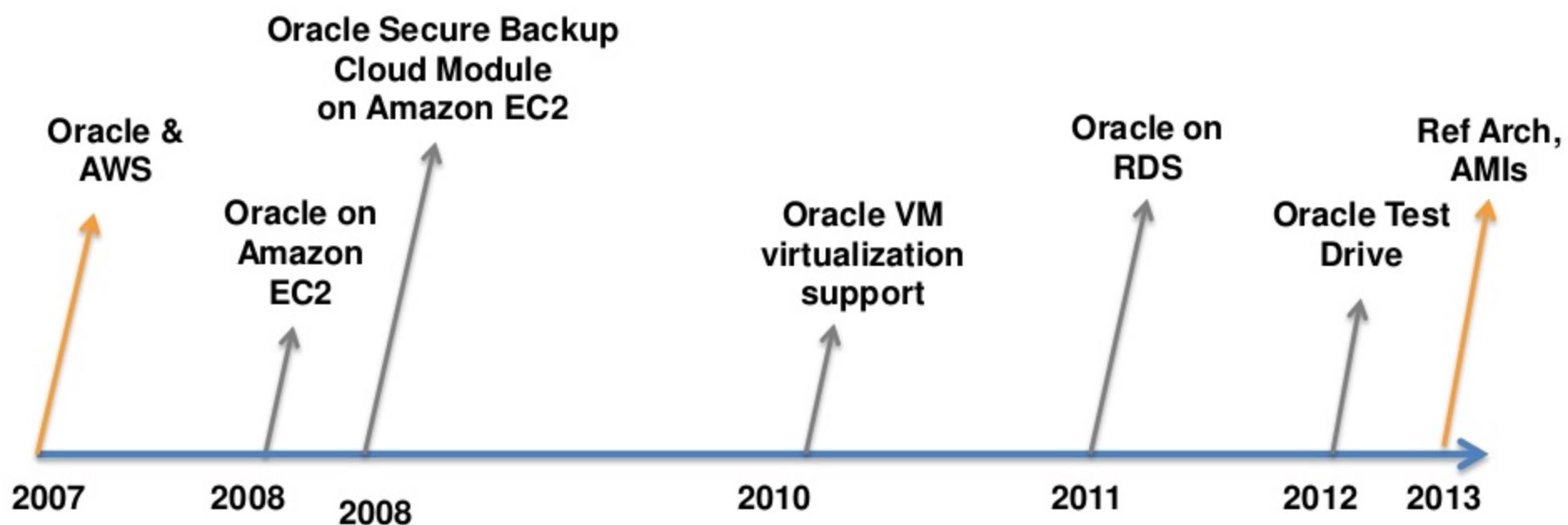
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Roadmap
and
resources

1 Licensing and Pricing

AWS and Oracle

This timeline highlights the collaboration between Oracle and AWS along with the major milestones and joint deliverables.



Licensing and Support

Oracle

Pay-as-you-go

- RDS for Oracle SE One

BYOL

- Enterprise license agreement
- Unlimited license agreement
- Oracle partner network
- BPO license
- Oracle Technology Network

Processor & socket licensing

- Standard Edition: EC2 instances with 4 or less virtual cores are counted as 1 socket
- 0.5 core multiplier for enterprise licenses (processor)

Oracle AWS cloud licensing document: oracle.com/us/corporate/pricing/cloud-licensing-070579.pdf

Oracle Products on AWS

WebCenter

TimesTen

Oracle SOA
Suite

WebLogic
Suite

Identity and Access
Management

Oracle E-Business Suite

Oracle NoSQL

Oracle Fusion
Applications

Hyperion

Coherence

JD Edwards EnterpriseOne

RMAN

OSB

Enterprise
Manager

ATG Web Commerce

GoldenGate

PeopleSoft Applications

Data Guard

Active Data
Guard

<http://www.oracle.com/technetwork/topics/cloud/faqs/098970.html#support>

MySQL
Community Edition



Technical Overview

Services Key for Oracle on AWS

VPC

Security : Best Practices

Use Multiple Layers of Defense

- Security Groups (EC2, VPC, RDS, ElastiCache)
- IPTables
- Bastion Host
- Host-based Firewalls*
- IDS*

Identity and Access Management

- Create Users and Groups within a master account

VPC

- Database in private subnet
- Database access only from application server or bastion host

Protect privacy and enforce your policies with data encryption

- Encrypt data in transit
 - (SSL/TLS) and TDE
- Encrypt data at rest
 - TDE with keys in AWS CloudHSM
 - OS level : Trucrypt, TrendMicro SafeNet, CipherCoud (EBS+RDS), 3RD party

Operating system security

- EC2 Key Pairs
- No external SSH to Oracle DB

AWS Account Management

- Multiple accounts may be created to isolate resources. Accounts may be isolated by: Environment (e.g., dev, test, prod), Major System, Line of business / function, Customer, Risk level

Services Key for Oracle on AWS

PIOPS
and
EBS-Optimized Instances

Storage : Best Practices

Storage

- Use Instance storage for temporary storage or database

EBS

- PIOPS (applies to I/O with a block size of 16KB)
- Stripe using RAID 0, 10, LVM, or ASM
- RAID 10 (can decrease performance)
- Snapshot often : Single volume DB
- 20 TB DB size (max)

File system

- ext3/4, XFS (less mature)
- Try different block sizes : start with 64K

Stripping

- Stripe multiple volumes for more IOPS (e.g., (20) x 2,000 IOPS volumes in RAID0 for 40,000 IOPS)
- ASM with external redundancy
- More difficult to Snapshot : Use OSB

Tuning

- Maintain an average queue length of 1 for every 200 provisioned IOPS in a minute
- Pre-warm \$ dd of=/dev/md0 if=/dev/null
- fio, Oracle ORION
- Oracle Advanced Compression

Services Key for Oracle on AWS

AWS Direct Connect

Networking : Best Practices

VPC

- Use it...VPC by default for new accounts
- Database in private subnet

IDS/IPS

- Trend Micro, AlertLogic, Snort
- Host based
- Conduct penetration test : prior approval from AWS

VPN

- Redundant connections
- Consider two Customer Gateways
- Dynamic routing (BGP) over static (ASA)

Dedicated, secure connection

- Direct Connect - 1 Gbps or 10 Gbps

NAT

- Set up multi-AZ NAT

Fail over

- ELB : Multi-AZ
- Route 53 : Geo/region

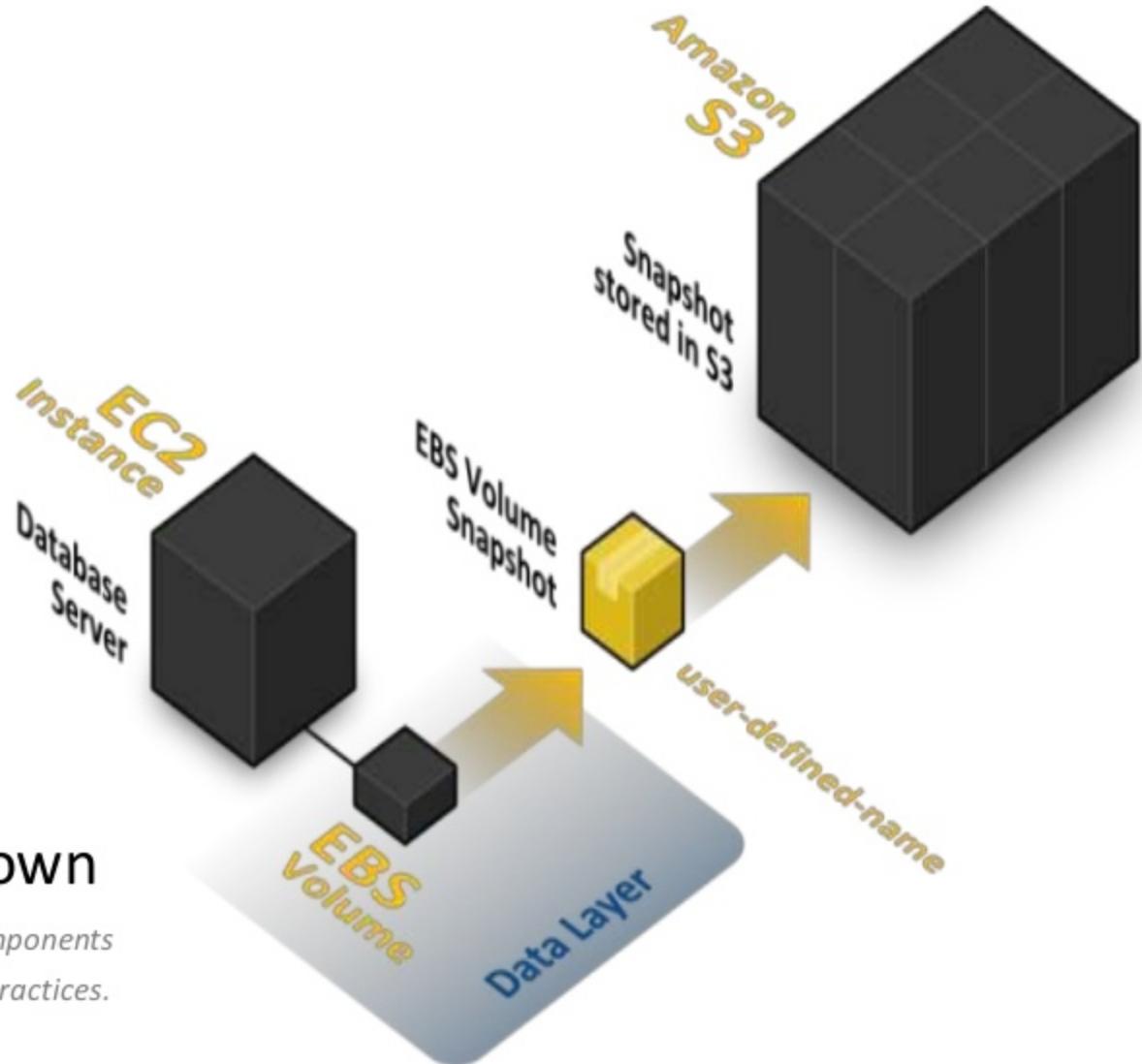
Services Key for Oracle on AWS

AWS CloudFormation

Two ways to deploy Oracle on AWS

Oracle on EC2

- Fully control of database and operating system
- You are responsible for backups
- You are responsible for HA



Setting up Oracle on your own

Put together all the necessary AWS infrastructure components for networking, compute and storage based on best practices.

Install and configure Oracle Database

Two ways to deploy Oracle on AWS

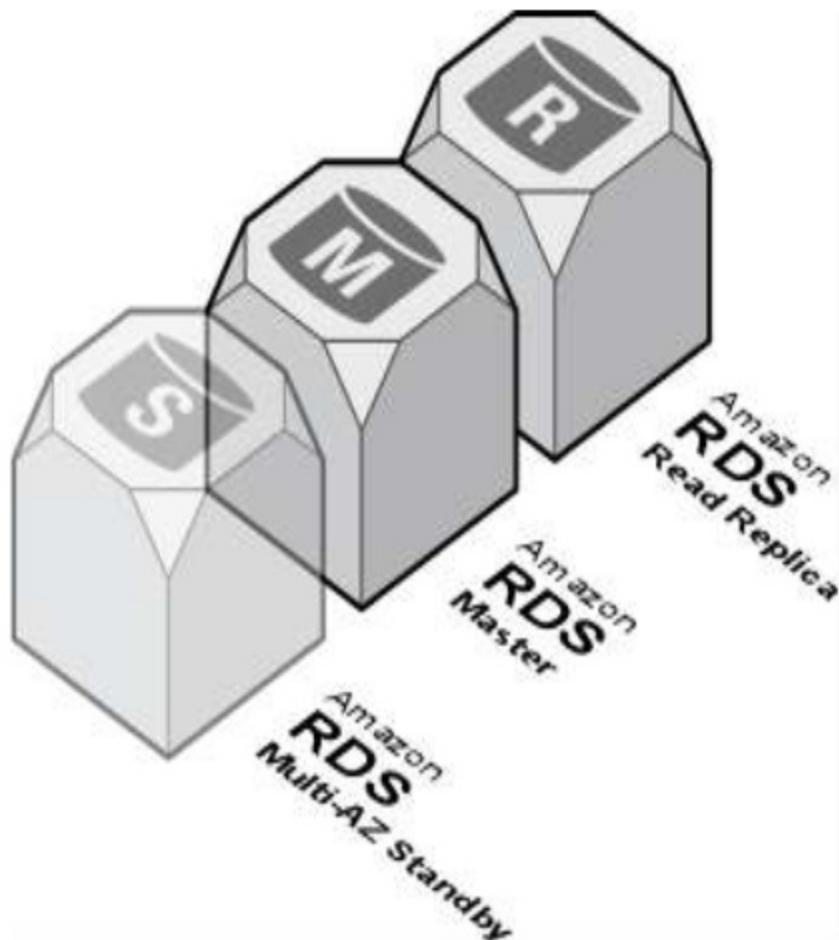
Oracle on RDS

- No access to OS
- AWS does database patching
- One click/API HA
- One click/API for backups
- Some restrictions apply : Ebusiness Suite not supported, UTL_File, UTL_HTTP, etc.

Using Amazon RDS for Oracle

Avoid all the heavy lifting and launch fully configured Oracle

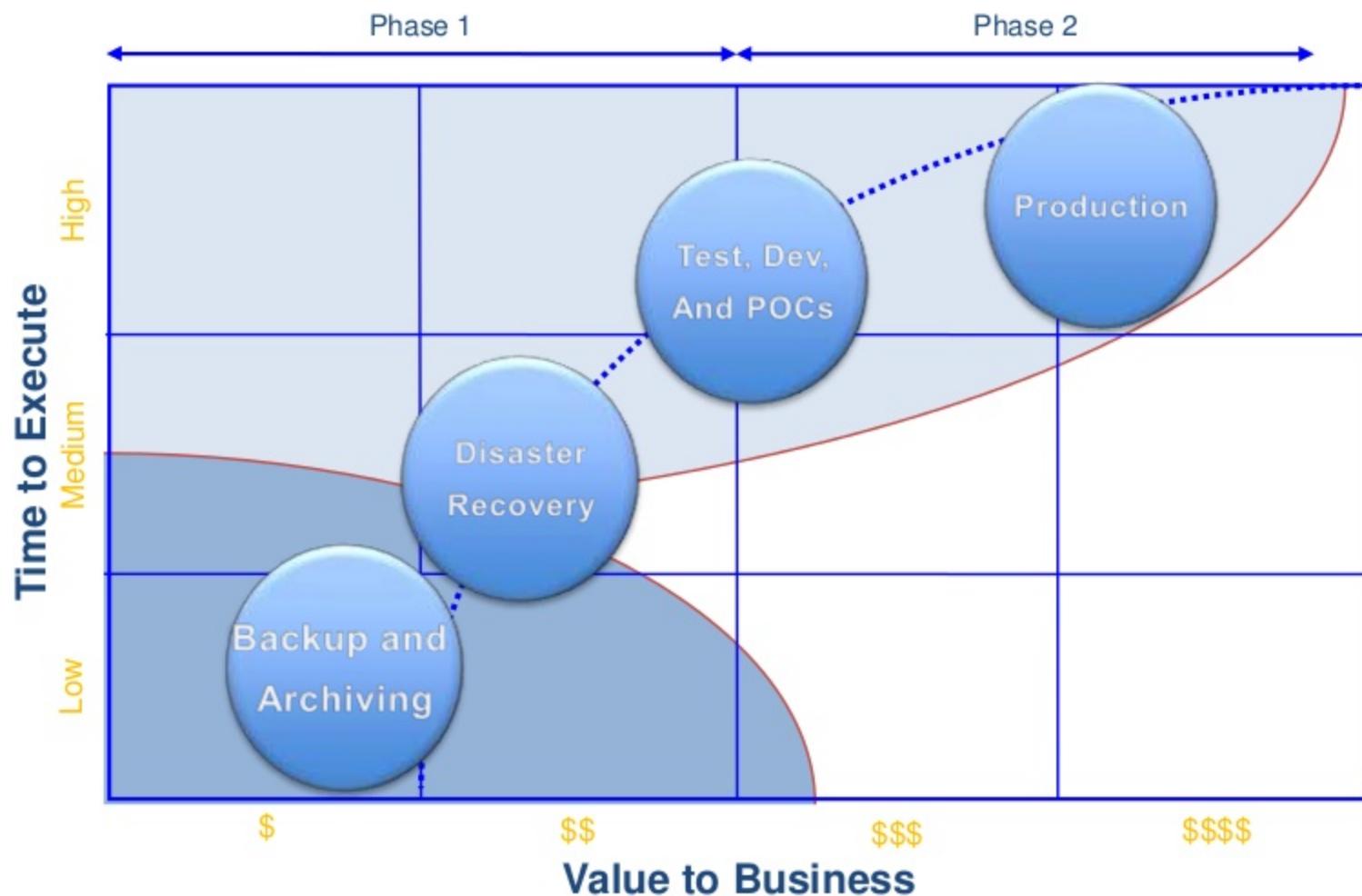
Database instance with a couple of clicks or an API call



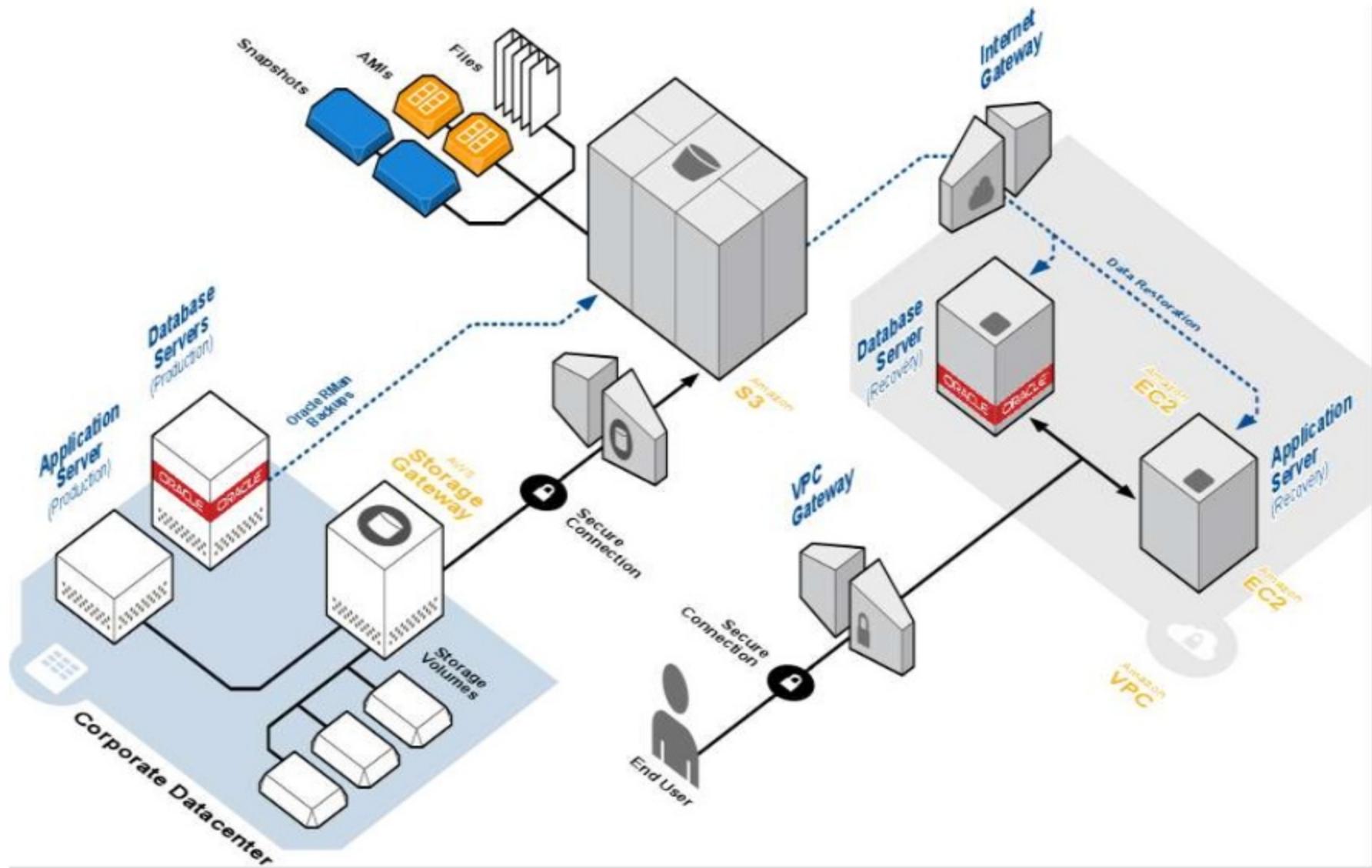


Architecture for typical use cases

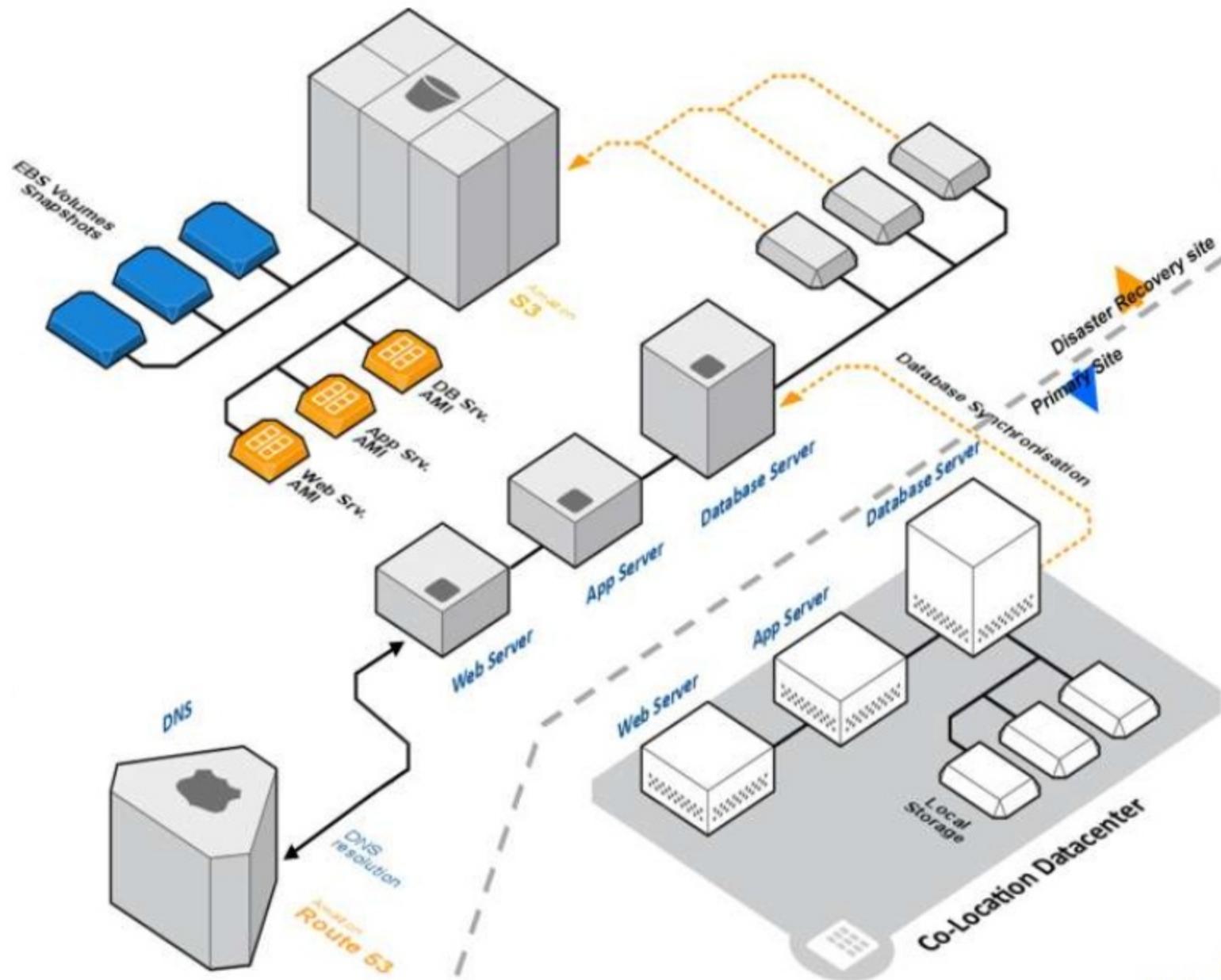
Enterprise Migration Path



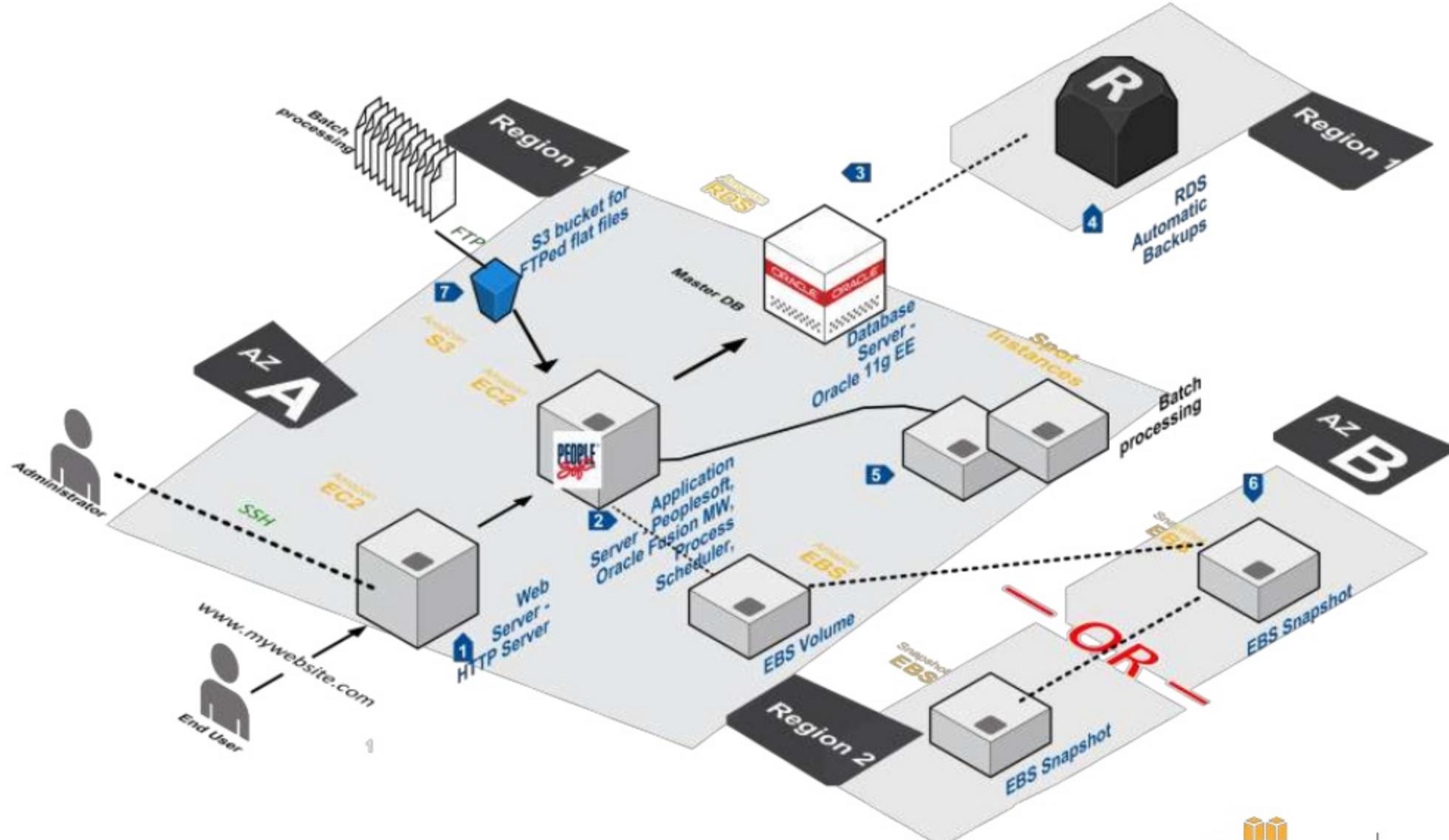
Database Backup to AWS



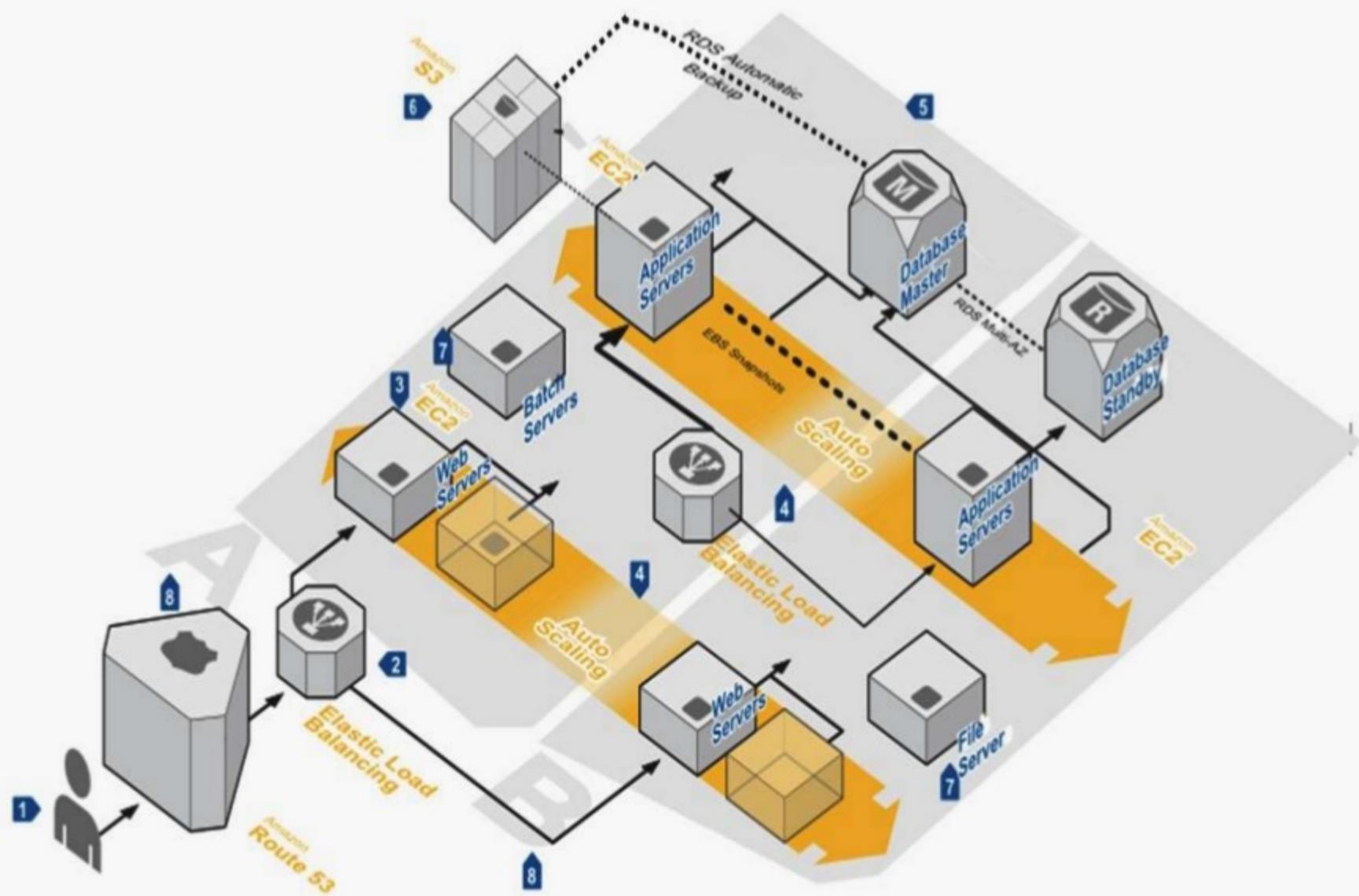
Disaster Recovery Site on AWS



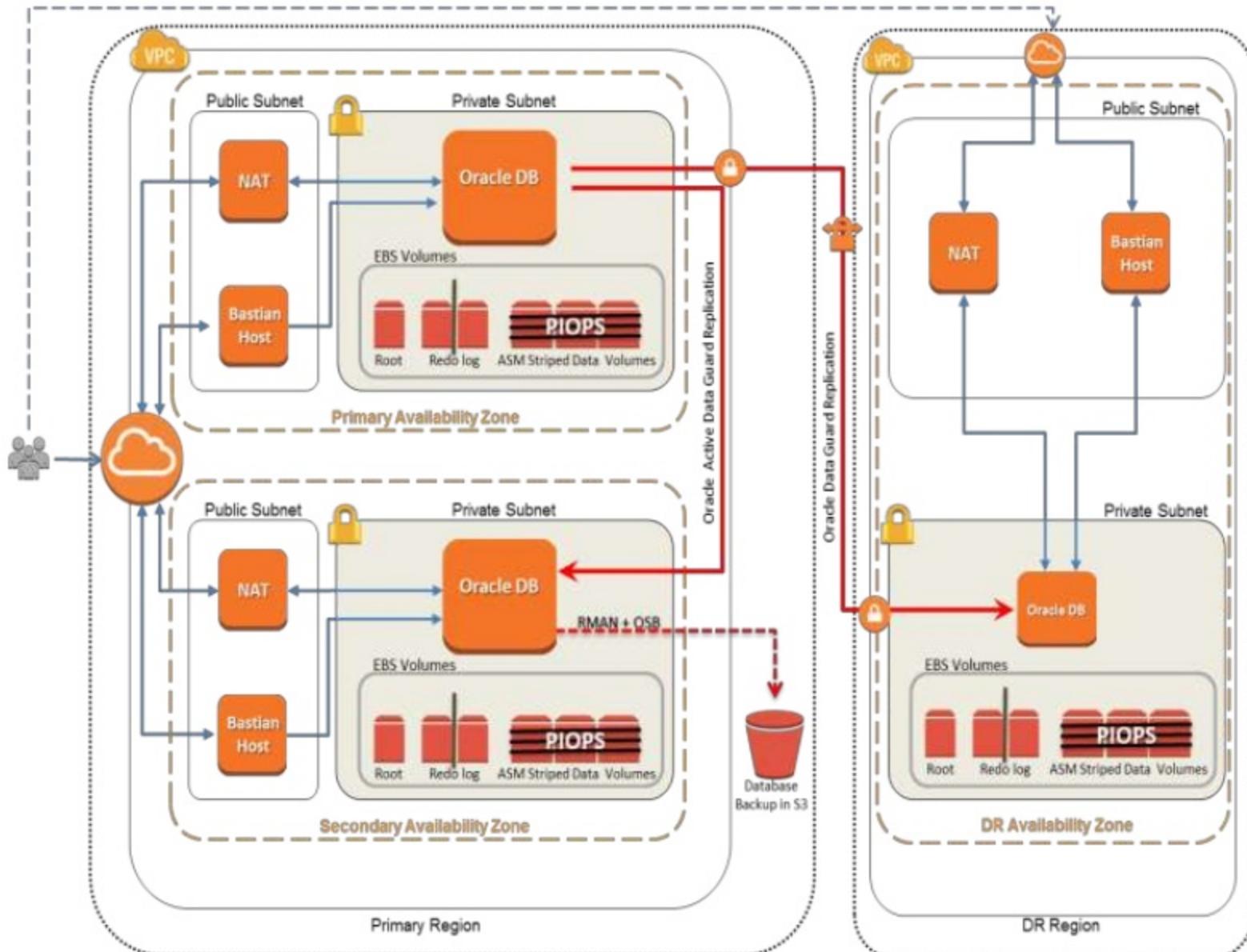
Development, test and QA on AWS



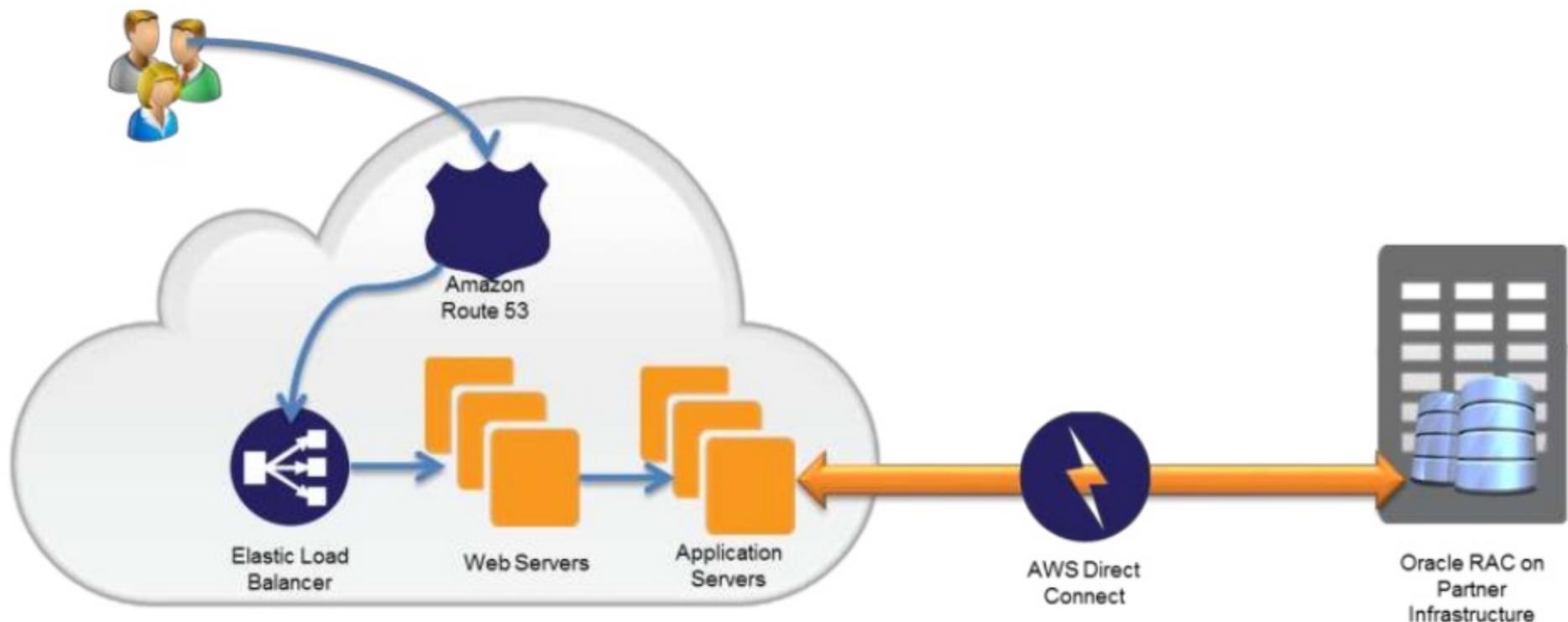
Oracle production on AWS



Oracle Database production on AWS : Details



Oracle Hybrid Architecture

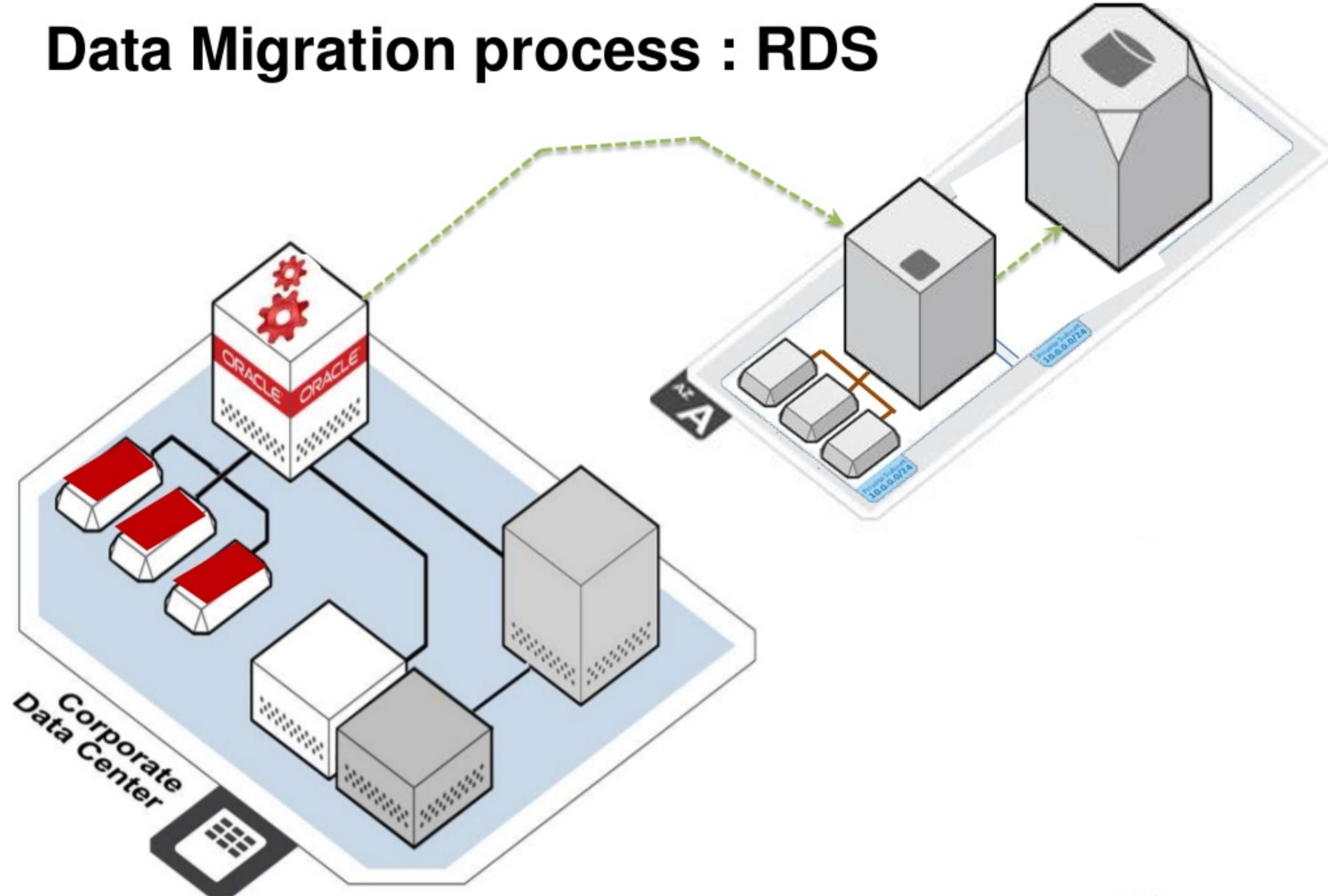


Migrating Data

Data Migration options

- Protocols
 - File transfer to Amazon S3 or EC2 using S/FTP, SCP, NFS, UDP, Aspera, Attunity CloudBeam, Tsunami
 - AWS Import/Export service: Ship your disk to AWS
- Transfer methods
 - Configure on-premises backup application (like NetBackup, CA, CommVault, Riverbed) to use Amazon S3
 - AWS Storage Gateway for asynchronous backup to Amazon S3
 - Database backup tools like Oracle Secure Back
 - Database replication tools like GoldenGate, DbVisit
- Special process for loading to Amazon Oracle RDS

Data Migration process : RDS



Customer Project Migration Lessons Learned

Global manufacturing company with operations
in APAC, Europe, and North America

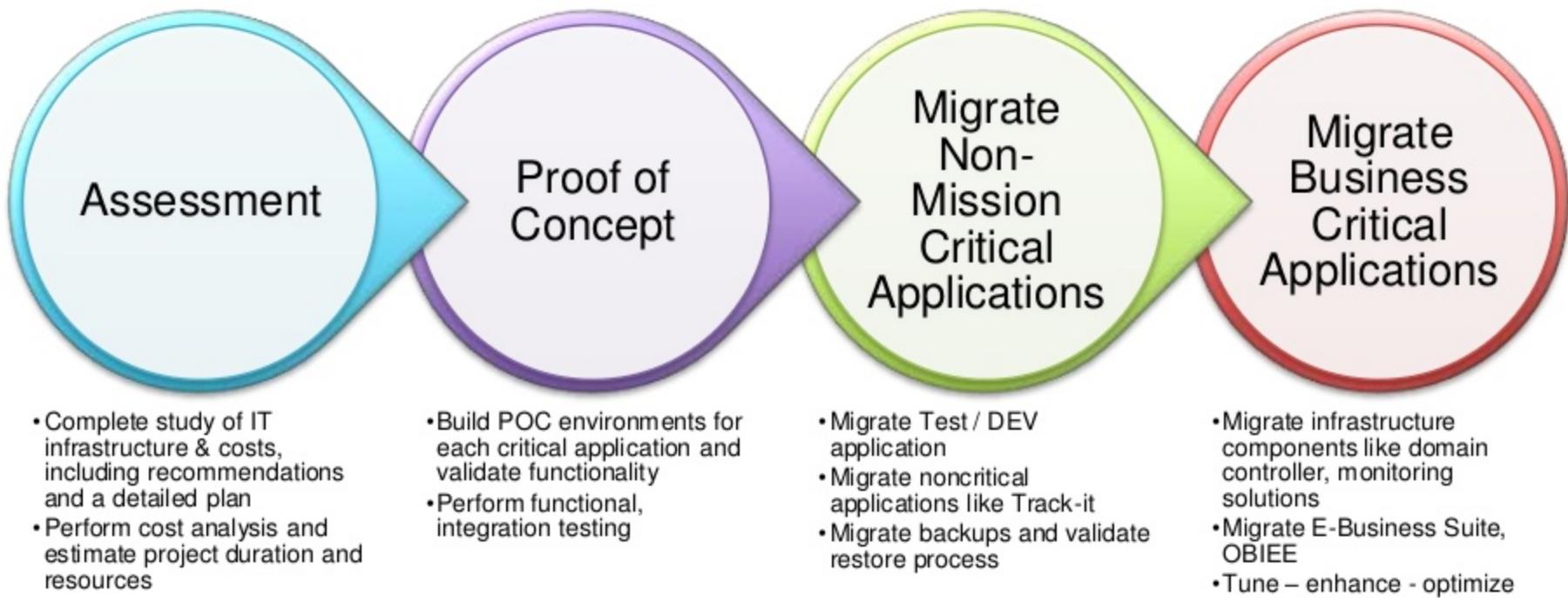
Key Business Drivers

- 1 Vendor consolidation
- 2 Infrastructure management challenge across multiple locations
- 3 Hardware refresh cycles and cost optimization

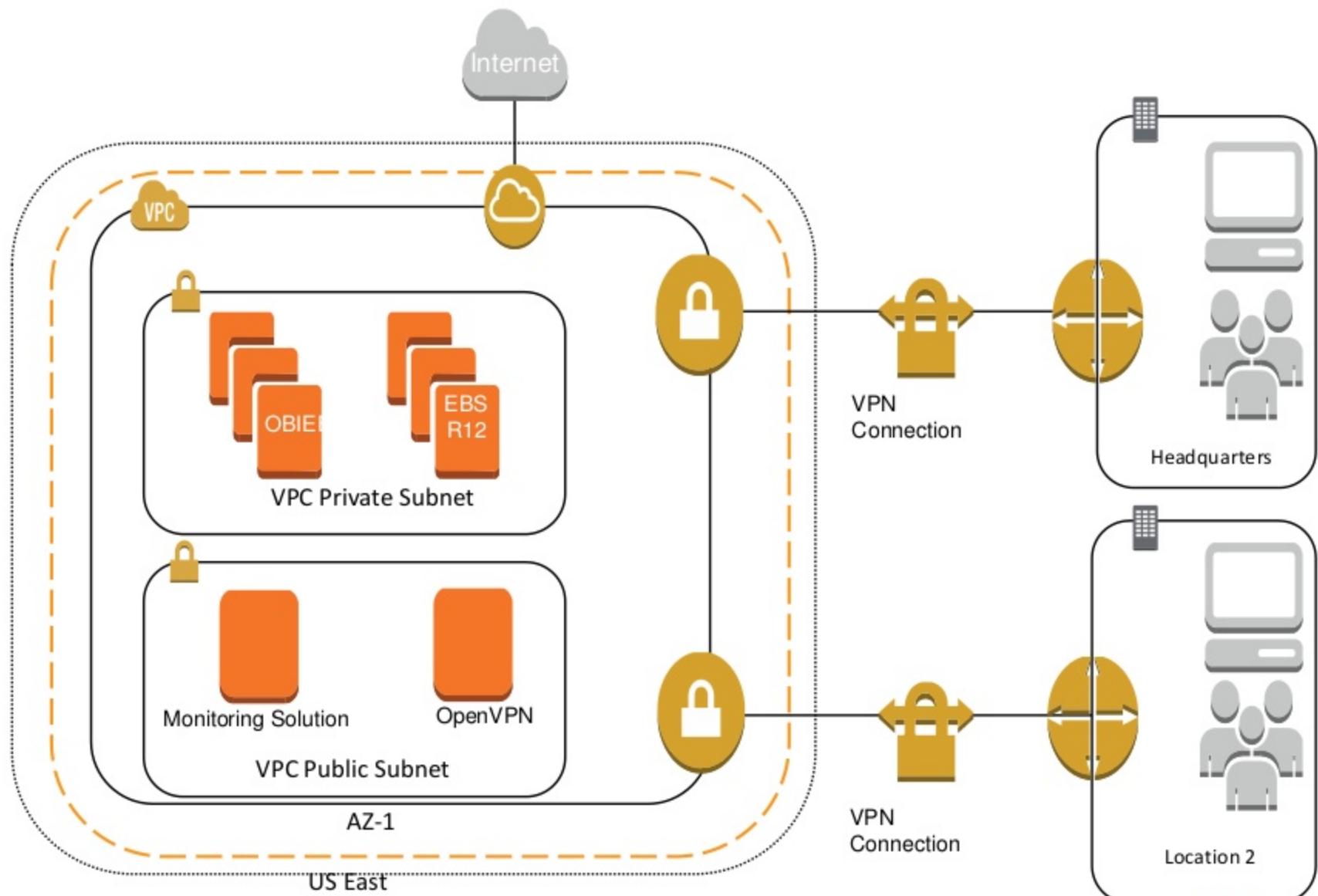
What was achieved

- Capital and operational cost reduction by avoiding new hardware purchases and by redeploying IT staff to projects that directly supported the core business
- Other benefits included:
 - 55% reduction in total IT **operations costs**
 - 35% reduction in backup **infrastructure costs**
 - Ability to start and stop nonproduction services to reduce operational costs
 - Reduction in the number of IT vendors (from 6 to 3)
 - Able to perform an office relocation of HQ in early 2013, with **no interruptions** to business leveraging the centralized AWS computing platform

Migration Process



AWS Architecture



AWS Infrastructure

- Complete infrastructure for North America on Amazon Web Services
 - Office locations and warehouses connected via VPN to VPC on AWS
 - Oracle EBS/OBIEE on Linux
- Complete in-house infrastructure including SQL Server, Oracle EBS, OBIEE and domain controllers, track-it applications , LACROSSE etc.
- Migrate from Tivoli tape backups to Amazon S3 backups using Zamanda/Glacier, Snapshots
- Integrated active directory with Salesforce.com, Office 365, various file, print, fax services throughout North America
- All production backups to Amazon S3 using third-party tool
- All nonproduction backups to Amazon S3 (reduced redundancy store)

Customer Successes



Carters migrated an on-premise Powerbuilder Oracle DB application to Oracle APEX and Database on EC2. This project is documented as a chapter in the book [Migrating to the Cloud](#).



KPIT Cummins

KPIT Cummins runs their Oracle E-Business Suite 12.1.3 environments on Amazon EC2/OVM. They have benefitted from the reduced complexity of AWS "infrastructure at a click."



Advanced Innovations hosts their entire Oracle Applications and technology platform on Amazon EC2. SOA Suite, WebCentre, Beehive, Ebusiness etc.



Blue Gecko deployed SAGE Manufacturing's dev, test, DR and production Oracle E-Business Suite environments on Amazon EC2.

Customer Successes



The French National Railway Corporation uses Amazon EC2 to host their test reservations system backed by Oracle Database. Deploying on the cloud has allowed VSC Technologies to reduce testing and deployment times by two thirds. Oracle Data Integrator/Mainframe.



Capgemini uses AWS to host the development, test and production Oracle E-Business Suite Financials supporting their business in Latin America.



PBS uses AWS to host their internet streaming websites which run on MySQL and Oracle Databases hosted on Amazon EC2.



The European Space Agency's GAIA mission uses an AWS, including Oracle Database on Amazon EC2, to rapidly and cost-effective scan astrometric data sets for indications of planets outside our solar system.

Customer Successes



Amazon.com backs up retail databases using the Oracle Secure Backup Cloud Module. The Client Experience Analytics (CXA) team uses Amazon RDS to support customer simulations against Amazons web properties on an ongoing basis.



Oracle eBusiness Suite 11 - Imperia was established officially on February 3rd, 1932 as the development of a little artisan workshop and started at once to distribute pasta machines around the world.



McGraw-Hill migrated an Oracle WebLogic and Oracle RAC environment to AWS using a hybrid architecture. Oracle WebLogic is clustered on EC2 using ELB and Auto Scaling. The Oracle RAC Database runs in Data Pipe.



Smarter Agent is the leading provider of white label mobile applications and services to real estate industry. Smarter Agent decided to “forklift” entire stack (vs hybrid) to AWS. They used smartShift to move the Oracle 11g Database to AWS RDS and JBoss to EC2.

smartShift customer success :

<http://www.youtube.com/watch?v=t2UcCdnNsRc&feature=youtu.be>

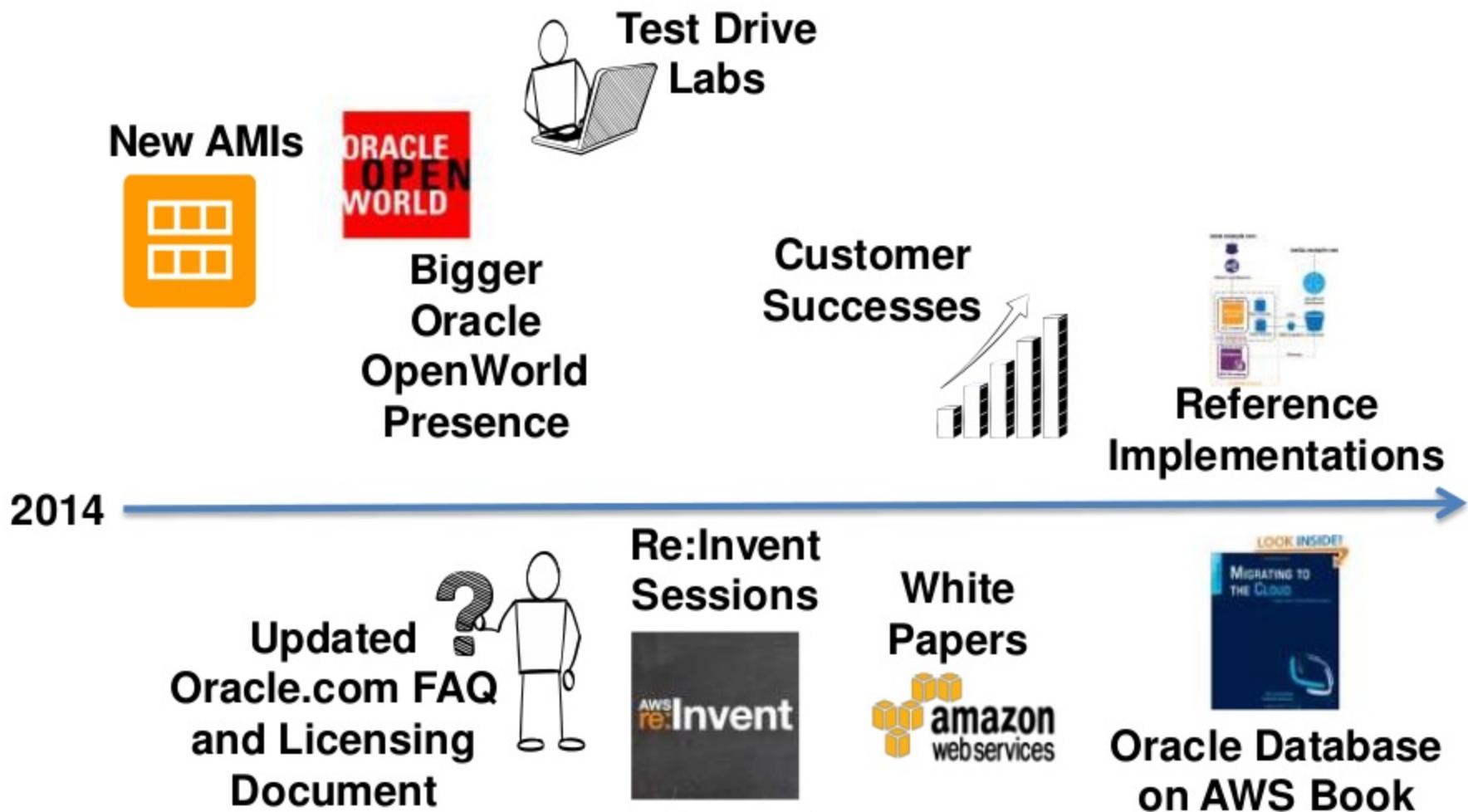


Partner Network

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Roadmap and Resources

Oracle on AWS Roadmap



AWS Resources

- Get started with a free trial
 - <http://aws.amazon.com/free>
- White papers
 - <http://aws.amazon.com/whitepapers/>
- Reference architectures
 - <http://aws.amazon.com/architecture/>
- Enterprise on AWS
 - <http://aws.amazon.com/enterprise-it/>
- Executive-level overview : Extending Your Infrastructure to the AWS Cloud (4 minutes)
 - http://www.youtube.com/watch?v=CsGqu5L_PFI
- Simple Monthly Pricing Calculator
 - <http://calculator.s3.amazonaws.com/calc5.html>
- TCO calculator for web applications
 - <http://aws.amazon.com/tco-calculator/>



Oracle on AWS Resources

- AWS Marketplace Offerings for Oracle Database
 - Oracle 12c and 11g on RHEL (BYOL) :
https://aws.amazon.com/marketplace/search/results/ref=sp_navgno_search_box?page=1&searchTerms=oraclempbyol
- Oracle Database Reference Implementation
 - Standard, enterprise class, large enterprise class and high performance Oracle 11g configuration on AWS
EC2http://media.amazonwebservices.com/AWS_RDBMS_Oracle_11g_on_EC2_Reference_Architecture.pdf
- Oracle Test Drives : <http://awstestdrive.com>
- Amazon Relational Database Service: <aws.amazon.com/rds>
- Running Oracle on AWS: <aws.amazon.com/oracle>
- Oracle FAQ: <http://www.oracle.com/technetwork/topics/cloud/faq-098970.html>
- Pre-configured Oracle AMIs:
https://aws.amazon.com/amis?ami_provider_id=4&selection=ami_provider_id
- Oracle Secure Backup Cloud Module product
Page: <http://www.oracle.com/us/products/database/secure-backup-066578.html>
- Oracle AWS cloud licensing document: <oracle.com/us/corporate/pricing/cloud-licensing-070579.pdf>
- Oracle Enterprise Manager 12c plug in <http://www.oracle.com/technetwork/oem/grid-control/downloads/oem-aws-plugin-1852739.html>

Oracle on AWS : OOW and Reinvent

- OEM 12c as a Hosted Service
 - <http://www.slideshare.net/tomlaszewski/oow-em-blueprintsv3>
- AWS reInvent Sessions
 - Storage Tiering and Ebsuiness Suite customer success:
<http://www.slideshare.net/tomlaszewski/storage-tiering-for-oracle-database-on-aws-and-oracle-ebusiness-suite-on-aws-case-study>
 - Peoplesoft on RDS and customer success:
<http://www.slideshare.net/tomlaszewski/dat202-using-amazon-rds-to-power-enterprise-applications-1-0>
 - Migrating Enterprise Applications: <http://www.slideshare.net/tomlaszewski/ent303-migrating-enterprise-applications-to-aws>
 - Migrating data from on premise to AWS RDS:
<http://www.slideshare.net/tomlaszewski/advanced-data-migration-techniques-for-amazon-rds>
- Oracle OpenWorld Session
 - Best Practices for running Oracle Database on AWS:
<http://www.slideshare.net/tomlaszewski/oracle-db-on-ec2-partner-webinar>

RISO, Inc Details

Customer Migration (Discussed in the Slides) Overview

- Source
 - Infrastructure – on-premise hosted servers
 - Hardware – (Dell PowerEdge, HP ML110)
 - Storage – (Dell Power vault)
 - Database – Oracle 9i/10g, SQL server
 - Fusion middleware
 - Packaged applications – Oracle E-Business Suite, Oracle Business Intelligence Suite, La-crosse, Mobile Field Service
 - Integration with Force.com platform
 - Firewalls, direct connectivity across multiple locations - (CISCO , Barracuda)
 - Tape backups - (Dell ML6000)
- AWS
 - EC2, Amazon EBS, Amazon VPC
 - Multiple instance types (m1.medium, m1.large, m1.xlarge)
 - Storage EBS , PIOPS, Amazon S3, Amazon Glacier
 - Management and monitoring using Nimsoft Monitoring Solution hosted on AWS
 - Connectivity using VPN tunnels
 - Archiving using Amazon Glacier
 - Data transfer using AWS Export/Import
 - DR configuration across regions

Customer Source System Technical Details

- Oracle E-Business Suite
 - Database (RHEL 4)
 - Oracle 9i – 8 cores / 32-bit
 - E-Business Suite (RHEL 4)
 - 11.5.8 – 4 cores / 32-bit
- Oracle Business Intelligence
 - Database (RHEL 5)
 - Oracle 10g – 4 cores
 - OBIEE 10g (RHEL 5)
 - OBIEE 11g – 4 cores
- Microsoft SQL servers
 - Database (Win2008\Hyper-V)
 - MS SQL Server 2005
- Mobile Field Server
 - MWA (Win 2008\VM Ware)
- Oracle E-Business Suite
 - Database & E-Business Suite
- Oracle Business Intelligence
 - Database & OBIEE 10g
- Multiple VPN tunnels from multiple customer locations