

# Migrating Oracle E-Business Suite on AWS

AWS Whitepaper

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## Abstract

This whitepaper covers migration of Oracle E-Business Suite from on-premises to Amazon Web Services (AWS). It covers various tools, best practices, and considerations as customers migrate their Oracle E-Business Suite to AWS.

The intended audience includes Oracle E-Business Suite Database Administrators, Head of IT, Architects, and Oracle E-Business Suite Implementation Consultants.

## Are you Well-Architected?

The [AWS Well-Architected Framework](#) helps you understand the pros and cons of the decisions you make when building systems in the cloud. The six pillars of the Framework allow you to learn architectural best practices for designing and operating reliable, secure, efficient, cost-effective, and sustainable systems. Using the [AWS Well-Architected Tool](#), available at no charge in the [AWS Management Console](#) (sign-in required), you can review your workloads against these best practices by answering a set of questions for each pillar.

For more expert guidance and best practices for your cloud architecture—reference architecture deployments, diagrams, and whitepapers—refer to the [AWS Architecture Center](#).

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# Overview of Oracle E-Business Suite migrations on AWS

[Oracle E-Business Suite](#) is an Enterprise Resource Planning (ERP) solution used by customers to run their Financial, Supply Chain, Manufacturing and Customer Relationship Management (CRM) systems. It is one of the critical workloads in the enterprise.

On their journey to AWS Cloud, customers generally [lift-and-shift](#) their Oracle E-Business Suite workloads to AWS. This is because ERP applications are backbone for any enterprise and customers do need to have experience and expertise to migrate these large applications on AWS. Some customers also look at re-platforming and integrating with AWS native services.

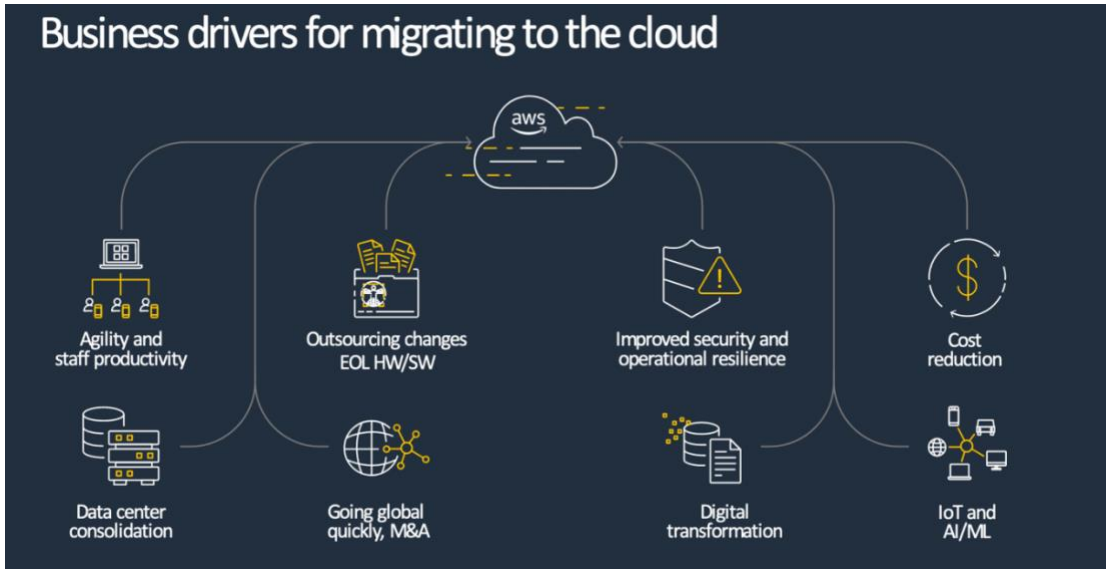
In 2021, AWS published a whitepaper that provided an [Overview of Running Oracle E-Business Suite on AWS](#). Since then, many customers have migrated their workloads with the help of AWS Solutions Architects and [AWS Partners](#). Using insights gained from talking to customers about their Oracle E-Business Suite migrations, AWS has developed best practices for these migrations. It has also discovered tools to help the wider community benefit from customer experiences. This whitepaper shares those best practices for migrating Oracle E-Business Suite to run on AWS.

## Why should customers migrate Oracle E-Business Suite on AWS?

Migrating Oracle E-Business Suite to AWS allows customers to get all the benefits of a mature cloud platform (including reducing cost reduction, performance improvements and higher availability), without making big upfront investments. With more than 200 AWS Cloud services, Oracle customers gain choice, flexibility, and tighter cost control.

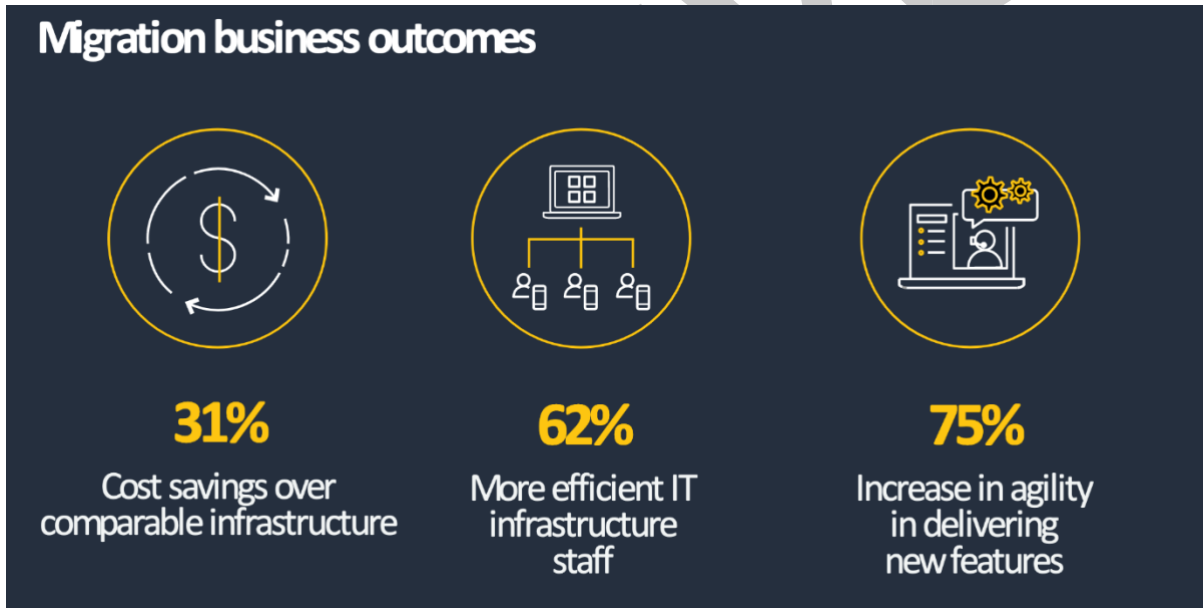
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*Business drivers for migrating to the cloud*

For more details, refer to the “Benefits of Oracle E-Business Suite on AWS” section in the [Overview of Running Oracle E-Business Suite on AWS](#) whitepaper.



*Migration business outcomes*

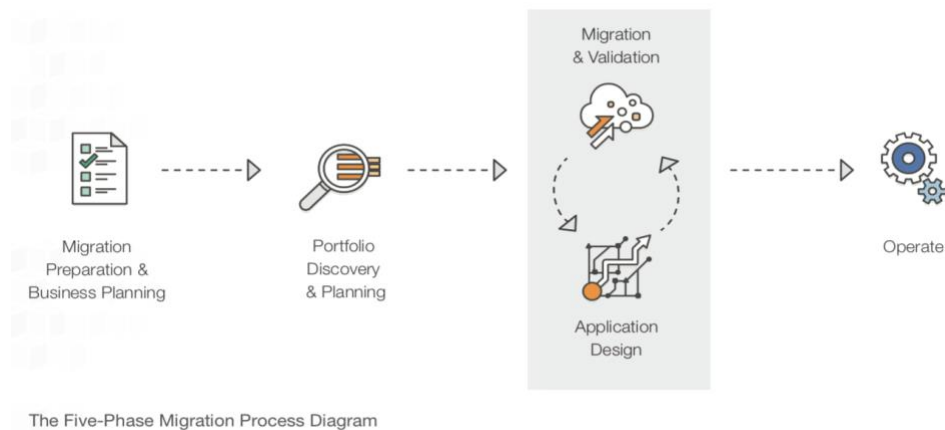
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# Migration methodology

AWS has published various blogs and whitepapers to help customers plan and complete their migrations using migration methodology. For more details, refer to the five-phase-migration-process in the [Migrating to AWS: Best Practices and Strategies](#) whitepaper.

“With the five-phase migration process, you start with the least complex application to learn how to migrate while learning more about the target platform, and then build toward the more complex applications.”

-Stephen Orban



*The five-phase migration process*

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## Migration assessment and planning

Before Oracle E-Business Suite ERP can be migrated, customers need to consider the following:

- **Edge applications** – Application discovery tools such as [AWS Application Discovery Service](#) or TSO Logic can provide useful information on applications and systems interacting with Oracle E-Business Suite. Analyze the edge applications to determine whether they need to be migrated to the cloud first or later. This will also help you calculate the impact of Oracle E-Business Suite migration.
- **Current System Utilization** – Check the current utilization of application servers, database servers, and concurrent processing servers for Oracle E-Business Suite. Utilization must be measured over a few weeks, observing the peak periods for input/output (I/O), and throughput capacity required on the database. You can get this information using various monitoring tools already available within your organization. As part of a migration exercise, discovery tools such as [AWS Application Discovery Service](#) or [Migration Evaluator](#) can also provide insight on current systems utilization, and appropriate instance sizing on AWS.
- **Target instance types** – Provision a database instance for the I/O and throughput that you observed on-premises to serve the real-time and the batch workloads. For more information, refer to the [Right Sizing](#) whitepaper.
- **Downtime** – You also need to plan for a downtime to cutover to the new production instance after migration and setup is done. To reduce the downtime, you can make use of various tools that are discussed throughout the following sections.

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- **Recovery Point Objective (RPO) /Recovery Time Objective (RTO)** – Your current service level agreements (SLAs) can be improved as you migrate to the cloud. AWS recommends that you run the Oracle E-Business Suite production environment across multiple Availability Zones (AZs) within the AWS Region for high availability (HA). Each Availability Zone [Amazon Elastic Compute Cloud](#) (Amazon EC2) instance offers an HA of 99.99% infrastructure availability. Based on your needs, you can also have a multi-Regional setup for disaster recovery (DR).

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- **RAC vs. non-RAC** – You might be running your current production databases underlying Oracle E-Business Suite on [Oracle Real Application Clusters](#) (Oracle RAC). While RAC improves availability and allows more throughput, by using appropriate AWS services and other Oracle HA tools such as Oracle Data Guard, you can achieve a similar level of performance and availability without implementing RAC on AWS. While sizing database nodes on AWS, consider the aggregate CPU, memory, and throughput numbers from all instances in RAC. Running Oracle E-Business Suite on in a non-RAC deployment is discussed in the following sections.
- **Homogeneous vs. heterogeneous migration** – Depending on the source operating system (OS) you are migrating from, Oracle E-Business Suite migration can be considered homogeneous or heterogeneous. Refer to the following table to determine your migration type. If the [Endian formats](#) for source and target OS are different, they are considered to be the heterogeneous migrations of Oracle E-Business Suite.

Table 1 — Migration types

Source OS	Source Endian Format	Recommended Target OS on AWS	Target Endian Format
Windows	Little Endian	Windows	Little Endian
Linux	Little Endian	Linux	Little Endian
IBM AIX	Big Endian	Linux	Little Endian
HP-UX	Big Endian	Linux	Little Endian
Solaris SPARC	Big Endian	Linux	Little Endian
Solaris x86	Little Endian	Linux	Little Endian

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To query the endian-ness of platforms, connect to the database as [SYSDBA](#) using [SQL\\*Plus](#) and run the following command:

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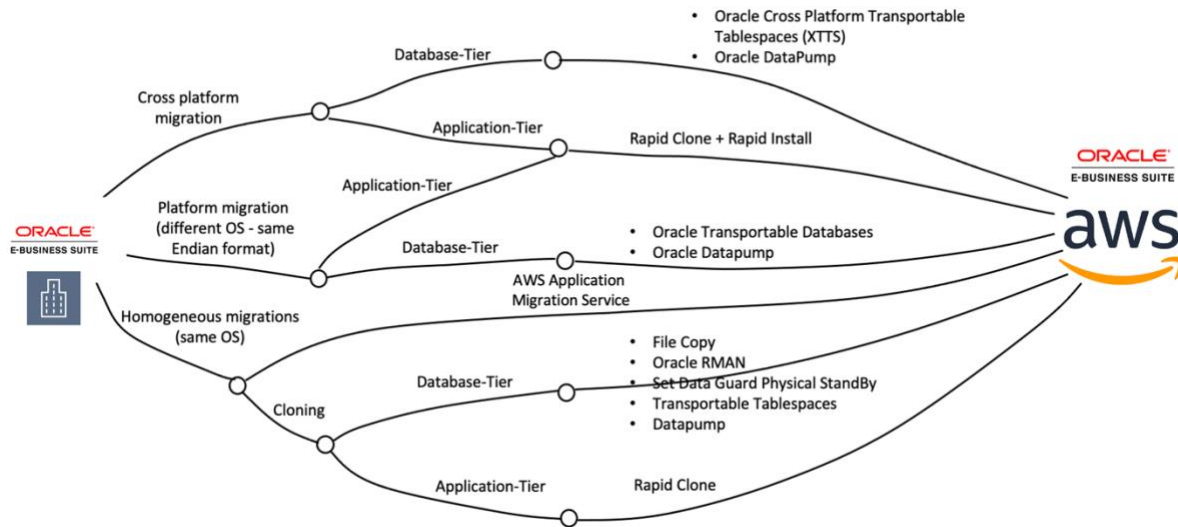
```
SQL> select platform_name, endian_format from
v$transportable_platform;
```

<https://docs.aws.amazon.com/whitepapers/latest/migrating-oracle-e-business-suite/migrating-oracle-e-business-suite.html>

Heterogeneous migrations can be complex because only some versions of the software are available for migration, and you need to do thorough testing.

# Migration approaches

The following diagram shows the migration paths that customers may take depending on the current platform, tooling, and experiences available to them.



Possible migration approaches

The current OS and endian-ness of the platform determines the appropriate tools you will need to migrate your Oracle E-Business Suite to AWS.

The following table identifies each tool and its support for homogeneous and heterogeneous migrations.

Table 2 — Migration tools and their support for homogenous and heterogenous migrations

Migration tool or utility	Application/ Database tier level	Homogeneous OS migration	Heterogeneous OS migration	Notes
---------------------------	----------------------------------	--------------------------	----------------------------	-------

[AWS Application Migration Service](#)

Application and database tier Yes No Block replication

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[Oracle E-Business Suite Cloning](#)

Application tier Yes No File system copy

<https://docs.aws.amazon.com/whitepapers/latest/migrating-oracle-e-business-suite/migrating-oracle-e-business-suite.html>

Migration tool or utility	Application/ Database tier level	Homogeneous OS migration	Heterogeneous OS migration	Notes
<a href="#">Oracle Data Guard</a>	Database tier	Yes	No	Database replication using <a href="#">redo log shipping</a>
<a href="#">Oracle Transportable Tablespaces</a>	Database tier	Yes	Yes	Migration of data files and database tablespaces structure
<a href="#">Oracle RMAN backup and restore</a>	Database tier	Yes	No	<a href="#">Oracle Native Backup tool</a>
<a href="#">Oracle GoldenGate</a>	Not supported for Oracle E-Business Suite Migration	-	-	Logical replication of a database
<a href="#">Oracle Data Pump</a>	Database tier	Yes	Yes	Export/import utility

The preceding table should help you identify the tools for homogeneous or heterogeneous migrations. Further details on some of these tools are provided in the following relevant sections.

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## Migration and assessment tools on AWS

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Along with the Oracle E-Business Suite specific tools mentioned previously, you can also make use of various other AWS services to migrate files/objects from on-premises to AWS.

- <https://docs.aws.amazon.com/whitepapers/latest/migrating-oracle-e-business-suite/migrating-oracle-e-business-suite.html> (Formerly known as TSOLogic) – Can be used for application discovery, building a business case and right sizing environments on AWS.

- [AWS Snowball](#) – Can be used to move terabytes+ of data in about a week on AWS. You can use it to move digital assets such as databases, backups and media content.
- [AWS DataSync](#) – Can be used to move large amounts of data online between on-premises storage and Amazon S3, [Amazon Elastic File System](#) (Amazon EFS), or [Amazon FSx for Windows File Server](#).
- [AWS Storage Gateway](#) – Can be used for implementing hybrid cloud storage use cases such as moving backups to the cloud, or using on-premises file shares backed by cloud storage.
- [AWS Direct Connect](#) – Can be used to establish a dedicated network connection from your premises to AWS.

## Architectures for Running Oracle E-Business Suite on AWS

### High level architecture for running Oracle E-Business Suite on AWS

The whitepaper [Overview of Running Oracle E-Business Suite on AWS](#) discusses various components of Oracle E-Business Suite application tier, its interactions with AWS, and how the requests flow through those components. It also covers how to optimize HA for the Oracle database underlying the Oracle E-Business Suite.

In addition, it discusses how to scale the Oracle E-Business Suite application tier by adding multiple application tier nodes and database replication using Oracle Data Guard.

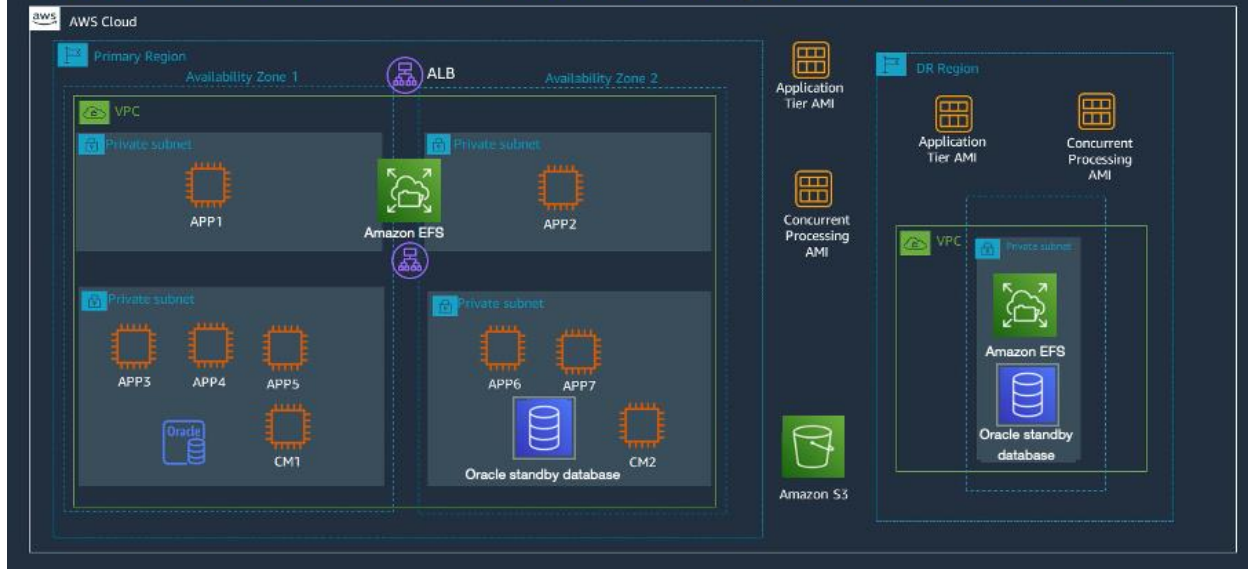
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This whitepaper extends the same architecture and discusses a few other components that may require attention as part of your migration scenario.

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## Oracle E-Business Suite on AWS – High Level Architecture



*High level architecture of Oracle E-Business Suite on AWS*

In the preceding architecture, we have shown multiple application servers deployed across Availability Zones for high availability. Some application tier nodes may reside in a subnet acting as a perimeter network (APP1 and APP2) as part of customer-facing applications, such as Oracle Internet Expenses module within E-Business Suite.

You can enable [Application Load Balancer](#) (ALB) for both internal and external business users. However, during the migration, AWS recommends that you keep the existing configuration, such as reverse proxy (iRules for F5), at the existing on-premises Load Balancer for URL filtering, redirection and so on. You should not remove these dependencies during migration; however, post-migration customers can utilize AWS cloud-native ALB for internal (corporate users) and external (Supplier or third-party connections) needs.

There is also a reverse proxy that front-ends the application tier (APP1 through APP7). This is because customers may have custom rules (such as iRules for F5) configured at the load balancer for URL filtering, redirection, and so on. It may not be possible to remove these dependencies during the migration, so a request from the Load Balancer would take the same path in new E-Business Suite environment.

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<https://docs.aws.amazon.com/whitepapers/latest/migrating-oracle-e-business-suite/migrating-oracle-e-business-suite.html>  
 You can use a third-party Network File Systems (NFS) so that customers can subscribe to AWS Marketplace offerings from the Network Attached Storage (NAS) provider on AWS. This reduces the need for redoing work and procedural change that might be

required when moving to new shared file system. You can also use [Amazon EFS](#) as a shared file system on AWS.

Lastly, to improve availability and achieve DR, you can provision a standby database instance in a different Region and copy the [Amazon Machine Images](#) (AMIs) for application tiers.

This paper now dives deeper into various database architectures for running Oracle E-Business Suite. You may choose different architectures for running Oracle Database, depending on the RTO/RPO, performance and throughput requirements.

## Oracle E-Business Suite database tier on Amazon EC2

Following is the deployment architecture for running Oracle database underlying E-Business Suite in an HA mode on [Amazon EC2](#). In this setup, there is a primary database instance running on Amazon EC2 (subnet1/AZ1). You can select the compute-optimized or memory-optimized EC2 instance, depending on CPU and memory utilization metrics available as part of the migration assessment phase.

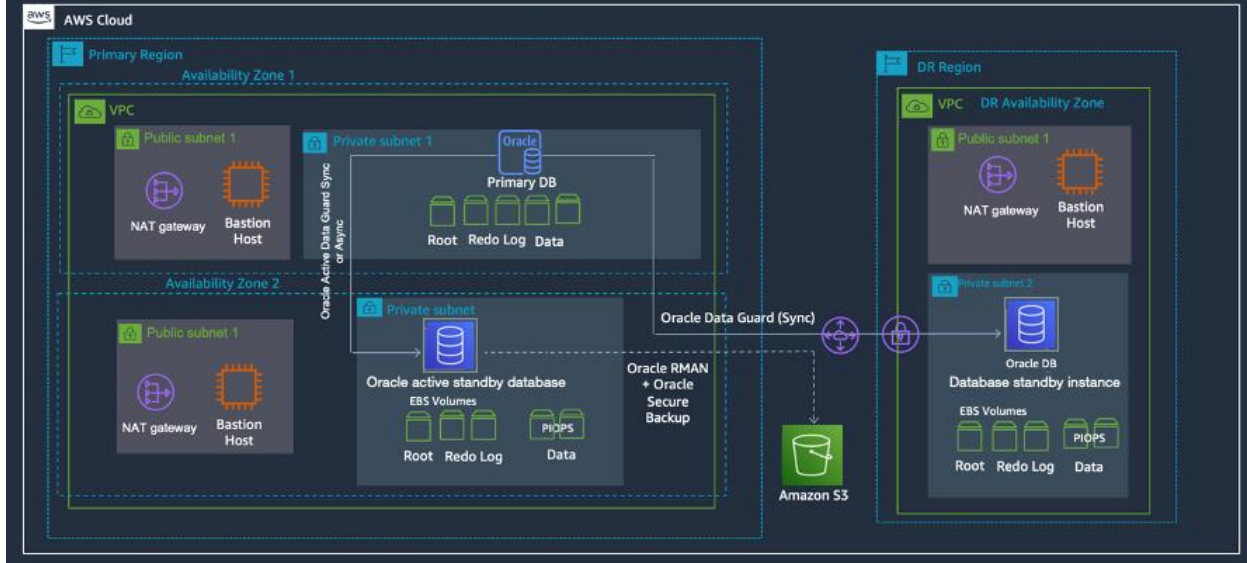
This instance may use [Amazon Elastic Block Store](#) (Amazon EBS) io1 volumes to provide the Provisioned IOPS (PIOPS). Amazon EBS volumes can be provisioned from 4GiB up to 16TiB. Each volume provides up to 64K input/output operations per second (IOPS). You can optionally use Oracle Automatic Storage Management (ASM) for striping and mirroring to achieve more IOPS and throughput than supported by a single EBS, volume and for the HA at the database storage layer.

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# Oracle on Amazon EC2 High Availability Architecture



Oracle on Amazon EC2 HA architecture

For additional availability and reporting offloading capability within the same Region, you can deploy another read-only standby database instance running on an Amazon EC2 instance in a different Availability Zone (private subnet2/Region1) using Oracle Active Data Guard. You can configure Parallel Concurrent Processing (PCP) for the Oracle E-Business Suite environment, and offload specific read-only reporting jobs to active standby database instances.

This can reduce the load on the primary instance, and make the resources available for transactions and other read/write jobs. Refer to Oracle Support Note #[2608030.1](#) (sign-in required) for more details. While improving HA architecture within an AWS Region, you can extend a read-only standby database to another Region for DR purposes.

Cross-Region replication for database can be configured using Oracle Data Guard Physical Standby. Refer to Oracle Support Note #[1963472.1](#) - Business Continuity for Oracle E-Business Suite Release 12.2 Using Oracle 12c (12.1.0.2) Physical Standby Database for more details (sign-in required).

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# Migrating Oracle E-Business Suite to the same operating system

## Oracle E-Business Suite migration using Rapid Clone and Smart Clone (homogeneous - same OS)

### Migration using Rapid Clone

If the source and target OS for Oracle E-Business Suite migration are the same, you can make use of the Oracle Rapid Clone tool to migrate their database to AWS.

**Note:** Cloning from a later version of an OS to an earlier one is not supported.

Rapid Clone does not modify the source system. The `adpreclone.pl` script prepares the source system to be cloned by collecting information about the app-tier, database-tier, and by creating generic templates from existing files that contain source-specific hardcoded values.

After running `adpreclone.pl`, you copy the relevant files and directories from the source system files to the target system, and then run the `adcfgclone.pl` configuration script. The values for various parameters are required to create the context file that will be used to configure the target system. A few of these values are calculated from the current target system, and `adcfgclone.pl` will prompt for the others.

For migrating Oracle E-Business Suite using Rapid Clone, see Oracle Support Note [#1383621.1](#) - Cloning Oracle E-Business Suite Release 12.2 with Rapid Clone (sign-in required).

**For the latest version of this document, visit:**  
**Migration using Smart Clone**

Oracle Application Management Pack for Oracle E-Business Suite also provides the ability to clone an Oracle E-Business Suite system automatically using the Oracle Smart Clone procedure. Smart Clone expects, as a prerequisite, the target Oracle E-Business Suite database to be cloned and discovered in the Enterprise Manager. Smart Clone starts with taking the discovered target database as an input to configure a database target and then clones the applications tier of the source instance. It then applies that to the target Oracle E-Business Suite system.

For more information on the Smart Clone procedure for migrating Oracle E-Business Suite, refer to [Cloning an Oracle E-Business Suite System](#).

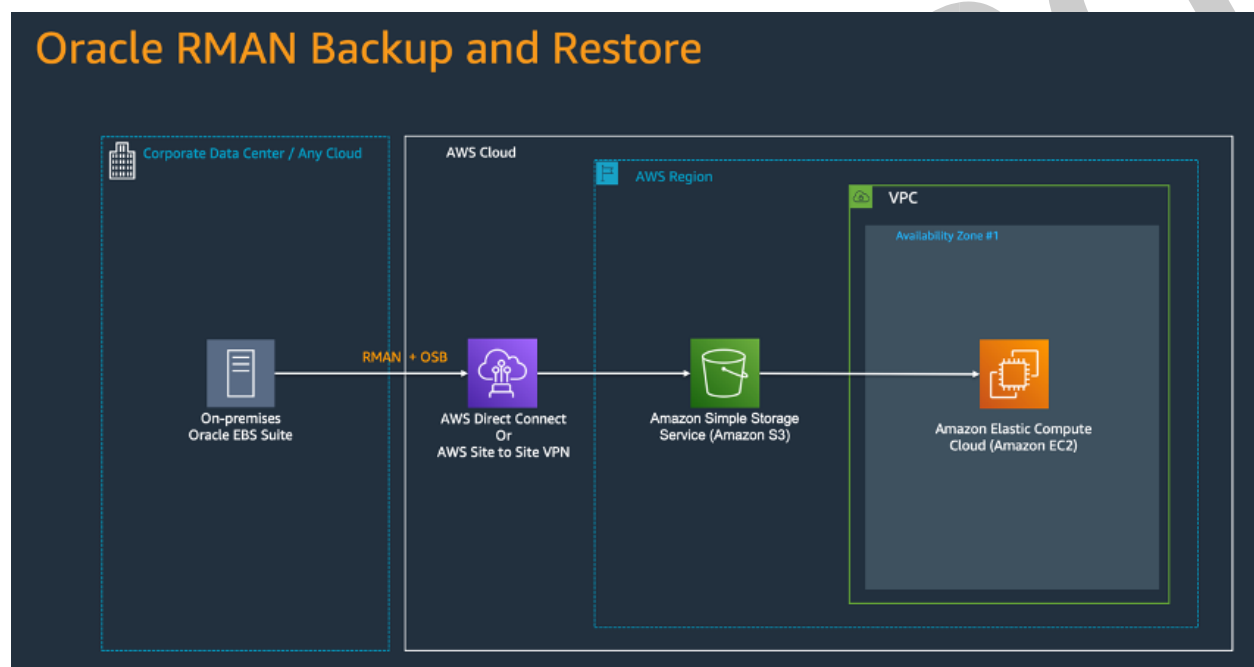
Whether using Rapid Clone or Smart Clone, you can migrate the data from source to target using either Oracle RMAN, Data Guard, Data Pump, Transportable Tablespaces, or by directly copying the .dbf files on the target depending on the downtime available.

## Database migration tools

Various database migration techniques previously mentioned are briefly discussed here.

### Oracle RMAN backup and restore

RMAN is a backup/restore tool for Oracle database. The Oracle Secure Backup (OSB) plugin allows you to copy your backup directly to Amazon S3 and restore it to an Amazon EC2 instance. Refer the following figure.



For the latest version of this document, visit:  
*Oracle RMAN backup and restore*

### Oracle Data Guard

<https://docs.aws.amazon.com/whitepapers/latest/migrating-oracle-e-business-suite/migrating-oracle-e-business-suite.html>  
Oracle Data Guard is a feature used for HA and DR of Oracle databases. This is achieved by setting up a standby database instance in the same or different location, and mirroring the changes from the primary database instance to a standby instance in synchronous or asynchronous mode. Oracle Data Guard can also be used for database

migrations. You can set up an Oracle Data Guard standby database for your on-premises or co-location Oracle instance on Amazon EC2.

Data Guard standby is synchronized, effectively mirroring the live database on the new instance running on Amazon EC2. Lastly, a switchover to the new database instance can be performed during a suitable maintenance window. It is recommended to have a dedicated bandwidth between on-premises or co-location to the AWS Cloud through [AWS Direct Connect](#).

## Oracle Data Pump

The Data Pump utilities allow you to move existing data in Oracle format to and from Oracle databases. For example, Data Pump export files can move data among different Oracle databases that run on the same or different OSs. This is a logical replication (data is extracted and imported into target), so it can be used for homogeneous as well as heterogeneous database migrations.

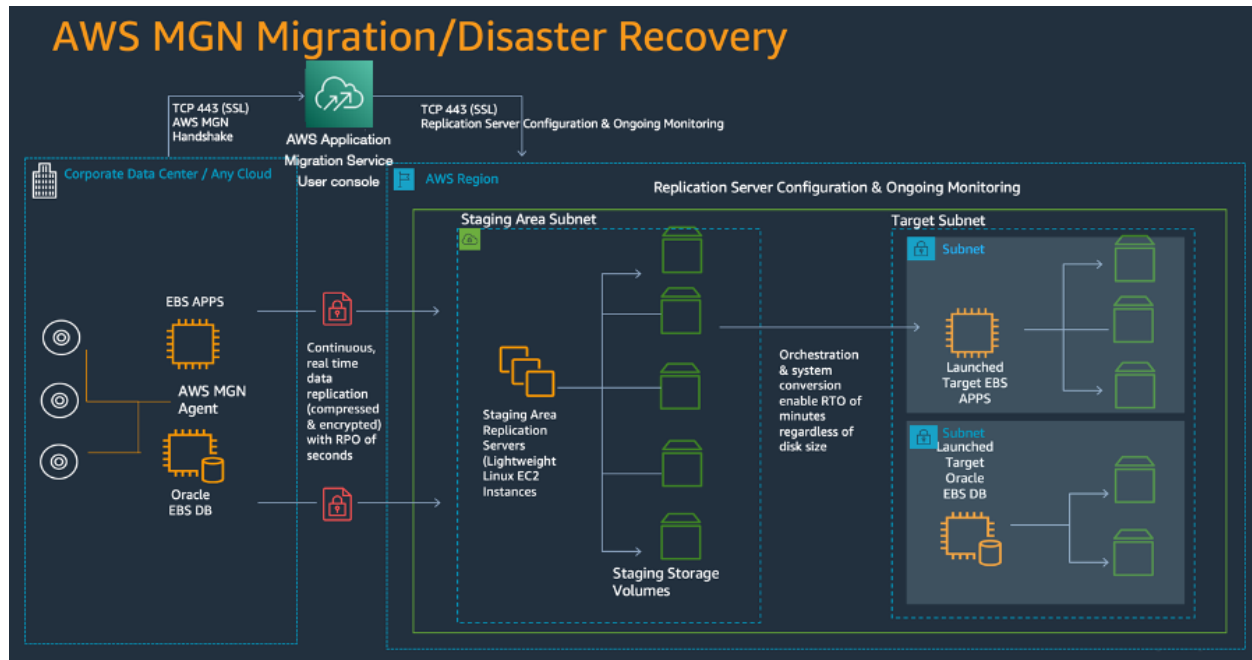
For migrating Oracle E-Business Suite using Oracle Data Pump, refer to the Oracle Support Note #[1926203.1](#) - Export/Import Process for Oracle EBS 12.2 Using Oracle Database 12c (sign-in required). Similar notes exist for other database versions.

## Oracle transportable tablespaces

The Oracle transportable tablespace feature enables you to move a set of tablespaces from one Oracle database to another. To move or copy a set of tablespaces, you must make the tablespaces read-only, copy the data files of these tablespaces, and use Export and Import to move the database information (metadata) stored in the data dictionary. After copying the data files and exporting the metadata, you can optionally put the tablespaces in read/write mode.

## **This version has been archived.** **Migrating Oracle E-Business Suite using AWS Application Migration Service**

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<https://docs.aws.amazon.com/whitepapers/latest/migrating-oracle-e-business-suite/migrating-oracle-e-business-suite.html>  
[AWS Application Migration Service](#) (AWS MGN) is a migration and replication tool available from AWS which can be used for migrating the applications as well as for setting up DR environments on AWS. It works by migrating/replicating the blocks of storage devices from source to target. Because it operates at the block level, it can migrate various workloads, including enterprise resource planning (ERP) applications from virtual machines (VMs), cloud, or physical data center. AWS MGN supports migration from any OS to AWS. Following is an architecture showing various components of AWS MGN and how they work together to migrate workloads on AWS.



*AWS MGN migration/disaster recover*

The AWS MGN orchestration engine automatically launches a fully operational Oracle EBS environment in the target AWS Region, enabling Recovery Time Objective (RTO) of minutes. The AWS MGN automated machine conversion process takes approximately 30 seconds, and ensures that OS machines replicated from physical, virtual, and cloud-based infrastructure will natively boot and run transparently in AWS, by automatically handling all hypervisor and OS configuration changes, boot process changes, and OS activation and installation of target infrastructure guest agents.

Major steps involved in migrating Oracle E-Business Suite environment using AWS MGN are as follows:

1. Identify the list of servers to be migrated by name, and break down the list to migration waves.
2. Install the AWS MGN software agents on the selected servers to initiate replication and monitor the replication process with the AWS MGN console.
3. Assess source Oracle EBS network to plan the network creation in the target infrastructure.

**<https://docs.aws.amazon.com/whitepapers/latest/migrating-oracle-e-business-suite/migrating-oracle-e-business-suite.html>**

4. Create the target network within the target infrastructure of choice.
5. Once server replication is complete, create test target machines using the AWS MGN dashboard and confirm that they are functioning and accessible.

6. Upon confirmation of the successful target machines launch, engage with the business/application owners for Oracle EBS acceptance tests. If corrections are required, modify the target blueprints accordingly and repeat this step. If the acceptance tests are completed successfully, proceed to cutover.
7. Cutover procedure:
  - a. Schedule a migration cutover window.
  - b. Prevent user connectivity to the source Oracle EBS environment.
  - c. Create a final version of the target machines.
  - d. Confirm Oracle EBS Application readiness.
  - e. Redirect user traffic to the new target machines.
  - f. Stop the AWS MGN replication on the source servers that were cutover, and decommission them.

**Notes:**

- For the database tier, use of Oracle native tools outlined in this document is recommended rather than AWS MGN.
- If you're using Oracle ASM or Oracle ASM Filter Driver, refer to [Can Application Migration Service replicate Oracle ASM?](#) in the [Application Migration Service](#) whitepaper.
- If you are using Oracle ASM, note the EC2 volume limits by EC2 Instance Family at [Linux-specific volume limits](#).

## Migrating for Oracle E-Business Suite across operating systems (same Endian format)

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For some customers, it may be the case that source and target platforms are [little endian](#), but OS might be different. For example, Red Hat Linux to SUSE Linux. In such cases, cloning utilities such as Rapid Clone and Smart Clone can't be used. Rather, this would be considered as a "platform" migration. In such scenarios, you can still use the Oracle database tools such as Oracle RMAN, Oracle Data Guard, Oracle Transportable Tablespaces, and so on for migration, but you will need to install a new application tier using the Rapid Install utility and configure it as a target.

<https://docs.aws.amazon.com/whitepapers/latest/migrating-oracle-e-business-suite/migrating-oracle-e-business-suite.html>

This approach is mentioned in the following Oracle Support Notes (sign-in required):

- [2048954.1](#) - Application Tier Platform Migration with Oracle E-Business Suite Release 12.2
- [2011169.1](#) - Transportable Databases for EBS Release12.2

Transportable Database is the fastest way to migrate data between two platforms, because the process is fundamentally one of copying database files and then using Recovery Manager (RMAN) to convert data files (using the RMAN `convert database` command). The E-Business Suite Transportable Databases process for migration does, however, require that the source and target database be of the same release and patchset version.

## Migrating Oracle E-Business Suite across platforms (different Endian format)

### Oracle E-Business Suite cross-platform migration using Oracle Transportable Tablespaces

#### Application tier migration

Cross-platform migration of Oracle E-Business Suite application tier is detailed in the Oracle Support Notes that follow.

Cross-platform migration of Oracle E-Business Suite application tier process (high level):

1. Prepare source and target systems for migration.
2. Run `adpreclone.pl` on the source system.
3. Generate a customer-specific manifest file and upload to the [MyOracleSupport](#) website.
4. Copy `APPL_TOP`, `COMMON_TOP`/java, `COMMON_TOP`/webapps, and so on to the target.
5. Copy the source context file to the target.
6. Generate the target context file using the pairs file and source context file on the target.
7. Run Rapid Install Wizard with `-techstack` option to install technology components.

8. Run AutoConfig on the target.
9. Apply customer-specific patches (obtained from the manifest upload procedure).
10. Review components and technology stack patchset level.
11. Regenerate file system objects.
12. Clean nodes.
13. Run AutoConfig.
14. Update printer and workflow settings.
15. Start all services on the target.

For details, refer to Oracle Support Note [#2048954.1](#) (sign-in required).

## Database migration

Transportable Tablespaces is an Oracle database feature that provides a faster way to move bulk data from one database to another, independent of the OS of the source and target. The Cross-Platform Transportable Tablespaces (XTTS) provides functionality in distributing data and database migration specifically across platforms of different endian (byte-ordering) formats.

This migration method is particularly suited for very large databases where the relative size of metadata is small compared to the data.

Refer to Oracle Support Note [#2674405.1](#) - Using Transportable Tablespaces to Migrate Oracle E-Business Suite Release 12.2 Using Oracle Database 19c Enterprise Edition. (sign-in required) This note also contains the procedure to migrate the Application tier.

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You can also perform incremental data transfer using Oracle Transportable Tablespace. For details, refer to Oracle Support Note [#2471245.1](#) - Reduce Transportable Tablespace Downtime using Cross-Platform Incremental Backup (sign-in required).

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Incremental backup is supported only for the same platforms, and from big endian platforms to Linux OS only. Following is the typical flow for migration using incremental backups when using XTTS.

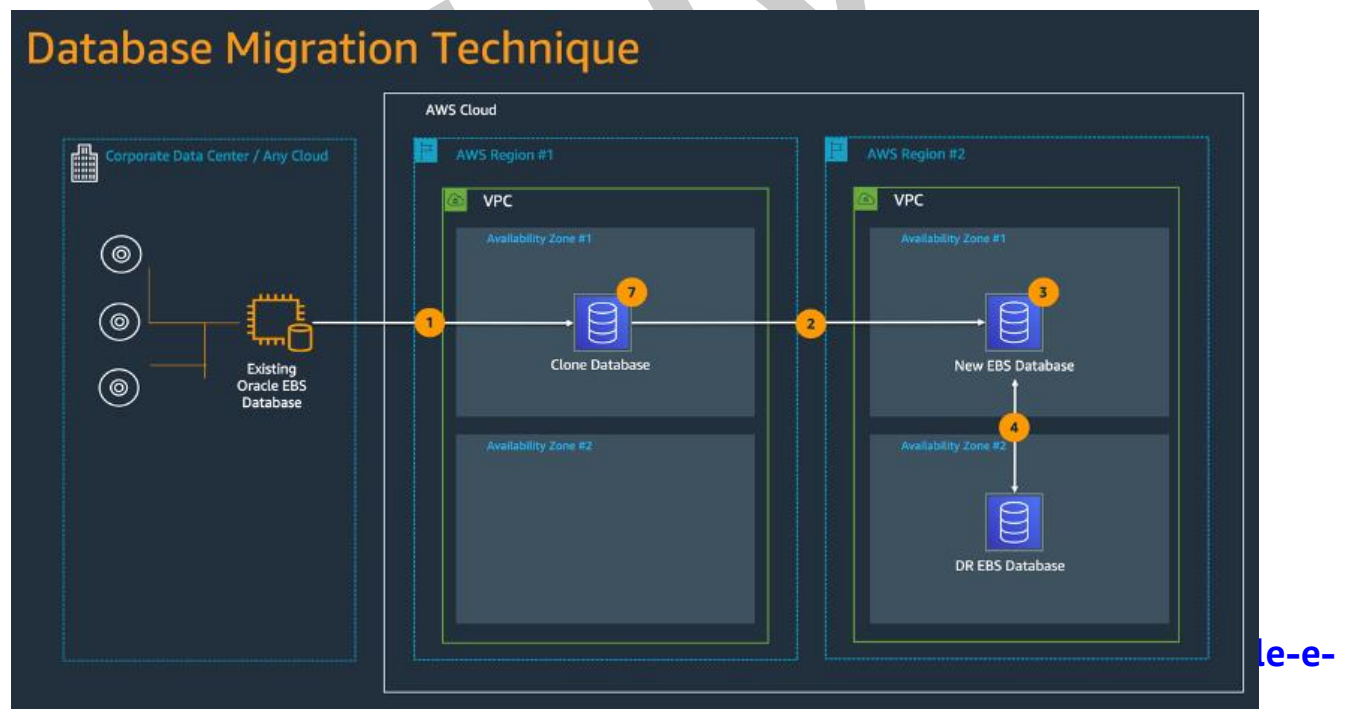
**<https://docs.aws.amazon.com/whitepapers/latest/migrating-oracle-e-business-suite/migrating-oracle-e-business-suite.html>**

Initial phase	Preparation phase	Roll forward phase	Final incremental backup phase	Transport phase
-Install target DB	-Run <code>expdp</code> on source	-Create incremental backup	-Alter source TS to <code>READ_ONLY</code>	-Export tablespaces metadata
-Prepare source	-Transfer dump files and data files on target	-Transfer incremental backup to target	-Create final incremental backup	-transfer metadata to target
-Run scripts	-Convert to target endian format	-Apply incremental backup on target	-Transfer and apply backup to target	-import metadata on target
-Environment variables	-Run <code>impdp</code> on target	-Repeat		

Typical flow for migration using incremental backups using XTTS

## Migration patterns and architectures

This section describes, at a high level, how corporate on-premises customers can migrate to the AWS Cloud.



Database migration technique



## Sequence:

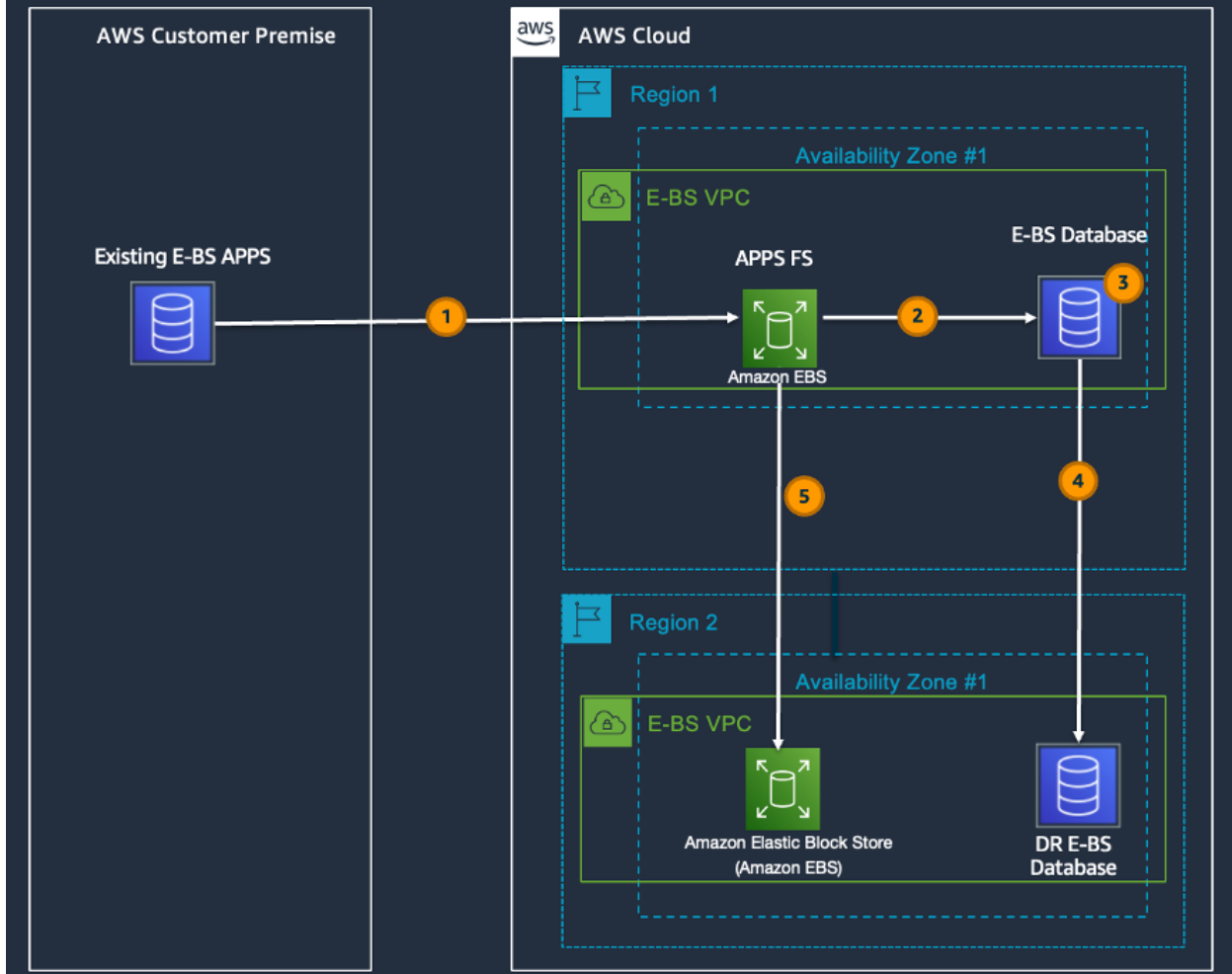
1. Replicate database from on-premises to Clone database. Technology options include:
  - Data Guard
  - Physical Standby
  - RMAN
  - Transportable Tablespaces
  - DataPump
  - [AWS Snowball](#)
  - Dbvisit
2. Snapshot the Clone database to create the Oracle EBS database.
3. Perform upgrades or other activities required in the new Oracle EBS database.
4. Establish replication (if required) from the new Oracle EBS database to the DR database.
5. Repeat steps 2-4 for user acceptance testing (UAT).
6. Repeat steps 2-4 for Go-Live.
7. Destroy the Clone database.

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# Application Migration Technique



Application migration technique

Sequence:

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1. Replicate application files from on-premises to the AWS filesystem. Technology options include:

- [rsync](#) (lift and shift / incremental)
- [tar](#) (lift and shift)

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- AWS MGN
- Fresh install
- Sync up to the newly created database.

2. Perform upgrades or other activities required in the new database.

3. Establish replication (if required) from the new [Oracle EBS](#) database to the DR database.
4. Establish replication (if required) from the new Oracle EBS FS to DR FS
5. Repeat steps 2-5 for UAT
6. Repeat steps 2-5 for Go-Live

## Considerations for running Oracle EBS on AWS

### Sizing

It is important to right size the Oracle E-Business Suite environment while migrating to AWS, because it can save on infrastructure costs and licensing. Right sizing also gives your business users adequate performance from E-Business Suite on the cloud. Migration to the cloud is also an opportunity to fix long-term outstanding issues that you might be having in your current E-Business Suite environment. Following are a few questions that you should ask your IT team when sizing Oracle E-Business Suite on AWS.

- When are the peak periods of usage? (Such as period close, batch data load, and so on.)
- What is the pattern of load and spikes on the system? Is it due to transactional or batch load?
- What is the number of named and concurrent users in the source system and their usage profile?
- How much business data has to be retained in the system online?
- What is the percentage of storage growth year-over-year?
- How many reporting jobs are there? Can those be offloaded to a read-only standby database created using Oracle Active Data Guard?
- What is the response time requirement from the system?

Getting answers to these questions will help you right size your Oracle E-Business Suite instance, and allow selection of the right deployment topology.

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## Throughput requirements

Throughput is another important factor when selecting the compute for the database-tier instance. Throughput determines how much data can be read or written to the disk per second by the compute OS. For some customers, AWS has seen this number as high as 2+ Gb/S when there are events such as period end close and multiple batch jobs running at same time performing heavy read/write operations.

For Oracle RAC workloads, you will have to combine the throughput from all RAC instances when moving to non-RAC based deployment on AWS. Customers can select EBS-optimized instances, which provide dedicated bandwidth up to 38K MB/s, and high throughput up to 4.7 GB/s between compute and storage.

## Integrations with on-premises services

When migrating Oracle E-Business Suite on AWS, you would ideally have the following integration services:

- Single sign-on
  - Enterprise-wide single sign-on with Microsoft Active Directory
  - Integration with [Okta](#)
- Microsoft SharePoint
- Oracle EBS B2B integration using file-based transfers, such as FTP, HTTP, and so on.
- Integrating with CRM/ERP systems such as Salesforce, SAP, and so on.
- Message queue based integration using [Apache Kafka](#), [IBM MQ](#), and so on with Oracle EBS.

Consider the effort involved in services integration, and follow relevant support articles from [MyOracleSupport](#) to integrate with these applications and third-party services.

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# Best practices for migrating Oracle E-Business Suite on AWS

## Proof of concept

After you perform the migration assessment, identify the migration path, and design the target architecture for running Oracle E-Business Suite on AWS, it is important to perform a proof of concept (PoC). Note all the required input and output parameters.

## Migrate vs. upgrade

For homogeneous migrations, you can either upgrade you E-Business Suite on-premises, first and then perform the migration as a separate step. This helps reduce issues related to upgrade vs. migration. This approach requires additional hardware, which you will have to arrange on-premises.

If you are only doing homogeneous migration and do not want to upgrade, you can directly migrate you Oracle E-Business Suite environment to AWS.

For heterogeneous and cross-platform migrations, you can perform re-platforming and migrations in at once, because the new technology stack in the application tier has to be configured by running the Rapid Install utility anyway. Once migrated to the cloud, you can later upgrade to the latest Oracle E-Business Suite version.

## DB tier and app-tier

Due to latency considerations and integration issues, AWS recommends that you perform database tier and application tier migration at the same time.

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## Identification of read-only workloads

If you haven't done this for your on-premises environment, AWS recommends that you identify the read-only workloads such as reports, batch jobs, and ETL jobs, and use Oracle Active Data Guard read-only standby for offloading the read-only workload. This allows you to scale the environment and serve transactional workloads with optimal performance.

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## AWS native services for customizations

Customers often develop custom user interfaces and APIs on top of Oracle E-Business Suite functionality for their business-specific requirements. Although Oracle E-Business Suite has all the underlying technical infrastructure available for building and hosting custom UI, AWS recommends that customers make use of AWS services such as [AWS Elastic Beanstalk](#), [AWS Lambda](#), [Amazon AppFlow](#), [AWS Glue](#), and so on for UI development and data integration. This approach helps customers reduce the load on Oracle E-Business Suite environment, and helps achieve agility and CI/CD adoption. You can also build solutions such as serverless data lakes and machine learning (ML) solutions on AWS surrounding your ERP systems such as Oracle E-Business Suite to analyze data, generate insights, and for predictions.

## Right stakeholders in the discussion

It is important to engage the right stakeholders throughout the process. In AWS discussions with customers, AWS engaged personas such as Head of IT, database administrators (DBAs), and Chief Information Officers (CIOs). When working with AWS teams, it is also helpful to set up deep dive technical discussions in the form of workshops. Also bring everyone on the same page in terms of current skills in the team, implementation timelines, and post-migration activities.

## Conclusion

This whitepaper covered various approaches for migrating Oracle E-Business Suite on AWS. The approach varies depending on the current OS platform and OS on AWS. It also covered advanced architectures for running Oracle E-Business Suite on AWS. However, this is not the only way. You can have variations depending on the volume, performance SLAs, and integrations with other systems. Finally, it covered the considerations and best practices that you should follow for smooth experience while migrating to AWS.

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## Contributors

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May 11, 2022	Updated architectural patterns, added migration utility AWS Application Migration Service (AWS MGN), described integration with on-premises services requirements.
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