Installing JD Edwards EnterpriseOne on Amazon RDS for Oracle

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Contents

Abstract

Amazon Relational Database Service (Amazon RDS) is a flexible, cost-effective, easy-to-use service for running relational databases in the cloud.

In this whitepaper, you will learn how to deploy Oracle's JD Edwards EnterpriseOne (version 9.2) using Amazon RDS for Oracle. Because this whitepaper focuses on the database components of the installation process, items such as JD Edwards EnterpriseOne application servers and application server node scaling will not be covered.

This whitepaper is aimed at IT directors, JD Edwards EnterpriseOne architects, CNC administrators, DevOps engineers, and Oracle Database Administrators,

Introduction

There are two ways to deploy the Oracle database backend for a JD Edwards EnterpriseOne installation on Amazon Web Services (AWS): by using a database managed by the Amazon Relational Database Service (Amazon RDS), or by deploying and managing a database on Amazon Elastic Compute Cloud (Amazon EC2) infrastructure. This whitepaper focuses on the deployment of JD Edwards EnterpriseOne in an AWS environment using Amazon RDS for Oracle.

Why JD Edwards EnterpriseOne on Amazon RDS?

Simplicity, scalability, and stability are all important reasons to install the JD Edwards EnterpriseOne applications suite on Amazon RDS. Integrated high availability features provide seamless recoverability between AWS Availability Zones (AZs) without the complications of log shipping and Oracle Data Guard. Using RDS, you can quickly back up and restore your database to a chosen point in time, and change the size of the server or speed of the disks, all within the AWS Management Console. Management advantages are at your fingertips with the AWS Console Mobile Application.

All this, coupled with intelligent monitoring and management tools, provides a complete solution for implementing Oracle Database in Amazon RDS for use with JD Edwards EnterpriseOne. When designing your JD Edwards EnterpriseOne footprint, consider the entire lifecycle of JD Edwards EnterpriseOne on AWS, which includes complete disaster recovery. Disaster recovery is not an afterthought, it's encapsulated in the design fundamentals.

When your installation is complete, you can take backups, refresh subsidiary environments, and manage and monitor all critical aspects of your environment from the AWS Management Console. You can enable monitoring to ensure that everything is sized correctly and performing well.

Using Amazon RDS for Oracle, you can have enterprise-grade high availability in the database layer, implementing Amazon RDS Multi-AZ configuration. You can use this high availability feature even with Oracle Standard Edition, to reduce the total cost of ownership (TCO) for running the JD Edwards application in the cloud.

AWS gives you the ability to disable hyperthreading and the number of vCPUs in use in your Amazon Elastic Compute Cloud (Amazon EC2) instances, and your RDS for Oracle instances to reduce licensing cost and TCO.

In JD Edwards EnterpriseOne, the application processing is CPU-intensive, and the CPU frequency and number of cores available to the enterprise server plays a large part, affecting the performance and throughput of the system. AWS provides a wide range of instance classes, including z1d Instances, delivering a sustained, all-core frequency of up to 4.0 gigahertz (GHz), the fastest of any cloud instance. Using such

high clock frequency instances for the application tier can help reduce the number of cores needed to run the same workload. This means you can get the same performance using a smaller instance class. This makes AWS a highly suitable public cloud environment for running JD Edwards applications with high performance and throughput requirement.

AWS Support provides a mix of tools and technology, people, and programs designed to proactively help you optimize performance, lower costs, and innovate faster. With core technological capabilities for running high-performance JD Edwards deployments combined with a strong support framework, AWS provides a great experience for customers as a preferred choice for hosting their JD Edwards implementations.

Amazon RDS for Oracle is a great fit for JD Edwards EnterpriseOne. JD Edwards EnterpriseOne also provides for heterogeneous database support, which means that there is a loose coupling between enterprise resource planning (ERP) and the database, allowing installation of Microsoft SQL Server, for example, as an alternative to Oracle.

Licensing

Purchase of JD Edwards EnterpriseOne includes the Oracle Technology Foundation component. The Oracle Technology Foundation for JD Edwards EnterpriseOne provides all the software components you need to run Oracle's JD Edwards EnterpriseOne applications. Designed to help reduce integration and support costs, it's a complete package of the following integrated open standards software products that enable you to easily implement and maintain your JD Edwards EnterpriseOne applications:

- Oracle Database
- Oracle Fusion Middleware
- JD Edwards EnterpriseOne Tools

If you have these licenses, you can take advantage of the Amazon RDS for Oracle Bring-Your-Own-License (BYOL) option. See the Oracle Cloud Licensing Policy for details.

> **Note:** With the BYOL option, you may need to acquire additional licenses for standby database instances when running Multi-AZ deployments. See the JD Edwards EnterpriseOne Licensing Information User Manual for a detailed description of the restricted use licenses provided in the Oracle Technology Foundation for the JD Edwards EnterpriseOne product.

Some historical JD Edwards EnterpriseOne licensing agreements do not include Oracle Technology Foundation. If that is the case for you, you can choose the Amazon RDS "License Included" option, which includes licensing costs in the hourly price of the service. If you have questions about any of your licensing obligations, contact your JD Edwards EnterpriseOne licensing representative.

For details about licensing Oracle Database on AWS, see the Oracle Cloud Licensing Policy.

Performance management

Instance sizing

Increasing the performance of a database (DB) instance requires an understanding of which server resource is causing the performance constraint. If database performance is limited by CPU, memory, or network throughput, you can scale up by choosing a larger instance type. In an Amazon RDS environment, this type of scaling is simple.

Amazon RDS supports several DB instance types. At the time of this writing, instance types that support the Standard Edition 2 (SE2) socket requirements range from:

- The burstable "small" (`db.t3.small`).
- The latest generation general purpose `db.m5.4xlarge`, which features 16vCPU, 64 gigabytes (GB) of memory, and up to 10 billions of bits per second (Gbps) of network performance.
- The latest generation memory-optimized `db.r5.4xlarge` with 16 vCPU, 128 GB of memory, and up to 10 Gbps of network performance.
- The latest generation memory optimized DB instance class, `db.z1d.3xlarge`, with a sustained all core frequency of up to 4.0 GHz, 12 vCPUs, 96 GB memory, and up to 10Gbps network performance.
- The latest generation memory optimized DB instance class, `db.x1e.4xlarge`, with very high memory to vCPU ratio, 16 vCPUs, 488 GB memory, and up to 10Gbps network performance.

For current available instance classes and options, see the DB instance class support for Oracle.

The first time you start your Amazon RDS DB instance, choose the instance type that seems most relevant in terms of the number of cores and amount of memory you are using. With that as the starting point, you can then monitor the performance to determine whether it's a good fit, or whether you need to pick a larger or smaller instance type.

You can modify the instance class for your Amazon RDS DB instance by using the AWS Management Console or the AWS command line interface (AWS CLI), or by making application programming interface (API) calls in applications written with the AWS Software Development Kit (SDK). Modifying the instance class will cause a restart of your DB instance, which you can set to occur right away, or during the next weekly maintenance window that you specify when creating the instance. (Note that the weekly maintenance window setting can also be changed).

Increasing instance storage size

Amazon RDS enables you to scale up your storage without restarting the instance or interrupting active processes. The main reason to increase the Amazon RDS storage size is to accommodate database growth, but you can also do this to improve input/output (I/O). For an existing DB instance with gp2 EBS volumes, you might observe some I/O capacity improvement if you scale up your storage.

Scaling storage capacity can be done manually, or you can set up autoscaling for storage. For details on RDS storage management, see Working with Storage for Amazon RDS DB Instances.

Disk I/O management—provisioned IOPS

Provisioned I/O operations per second (IOPS) is a storage option that gives you control over your database storage performance by enabling you to specify your IOPS rate. Provisioned IOPS is designed to deliver fast, predictable, and consistent I/O performance. At the time of this writing, you can provision up to 80,000 maximum IOPS per instance for EBS-optimized instance classes. The maximum storage size supported in an instance is 64 tebibytes (TiB).

Here are some important points about Provisioned IOPS in Amazon RDS:

- The maximum ratio of Provisioned IOPS to requested volume size (in GiB) is 50:1. For example, a 100 GiB volume can be provisioned with up to 5,000 IOPS.
- If you are using Provisioned IOPS storage, AWS recommends that you use DB instance types that are optimized for Provisioned IOPS. You can also convert a DB instance that uses standard storage to use Provisioned IOPS storage.
- The actual amount of your I/O throughput can vary, depending on your workload.

High availability

The Oracle database provides a variety of features to enhance the availability of your databases. You can use the following Oracle Flashback technology features in both Amazon RDS and in Amazon EC2, which support multiple types of data recovery:

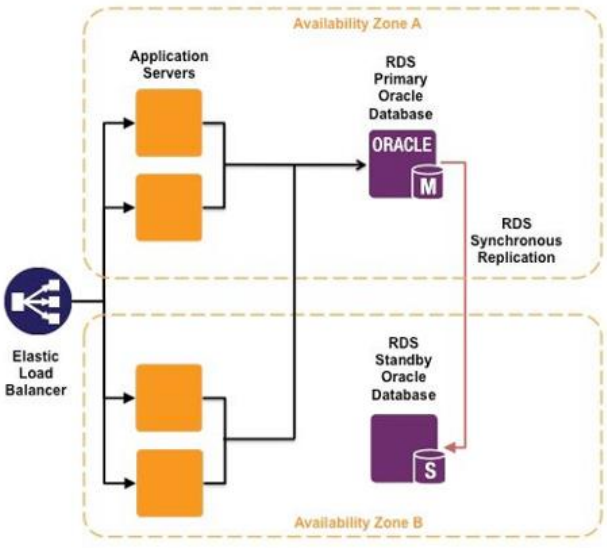
- **Flashback Transaction Query** enables you to see all the changes made by a specific transaction.
- **Flashback Query** enables you to query any data at some point in time in the past.

In addition to these features, design a database architecture that protects you against hardware failures, data center problems, and disasters. You can do this by using replication technologies and the high availability features of Amazon RDS described in the following section.

High availability features of Amazon RDS

Amazon RDS makes it simple to create a high availability architecture. First, in the event of a hardware failure, Amazon RDS automatically replaces the compute instance powering your deployment. Second, Amazon RDS supports Multi-AZ deployments, where a secondary (or standby) Oracle DB instance is provisioned in a different Availability Zone (location) within the same region. This architecture allows the database to survive a failure of the primary DB instance, network, and storage, or even of the Availability Zone.

The replication between the two Oracle DB instances is synchronous, helping to ensure that all data written to disk on the primary instance is replicated to the standby instance. This feature is available for all editions of Oracle, including the ones that do not include Oracle Data Guard, providing you with out-of-the-box high availability at a very competitive cost. For details about high availability features in RDS for Oracle, see Amazon RDS Multi-AZ Deployments. The following figure shows an example of a high availability architecture in Amazon RDS.



High availability architecture in Amazon RDS

You should also deploy the rest of the application stack, including application and web servers, in at least two Availability Zones, to ensure that your applications continue to operate in the event of an Availability Zone failure. In the design of your high availability implementation, you can also use Elastic Load Balancing, which automatically distributes the load across application servers in multiple Availability Zones.

A failover to the standby DB instance typically takes between one and three minutes, and will occur in any of the following events:

- Loss of availability in the primary Availability Zone
- Loss of network connectivity to the primary DB instance
- Compute unit failure on the primary DB instance
- Storage failure on the primary DB instance
- Scaling of the compute class of your DB instance, either up or down
- System maintenance such as hardware replacement or operating system upgrades

Running Amazon RDS in multiple Availability Zones has additional benefits:

- The Amazon RDS daily backups are taken from the standby DB instance, which means that there is usually no I/O impact to your primary DB instance.
- When you need to patch the operating system or replace the compute instance, updates are applied to the standby DB instance first. When complete, the standby DB instance is promoted as the new primary DB instance. The availability impact is limited to the failover time, resulting in a shorter maintenance window.

Oracle security in Amazon RDS

Amazon RDS enables you to control network access to your DB instances using security groups. By default, network access is limited to other hosts in the Amazon Virtual Private Cloud (Amazon VPC) where your instance is deployed.

Using AWS Identity and Access Management (AWS IAM), you can manage access to your Amazon RDS DB instances. For example, you can authorize (or deny) administrative users under your AWS Account to create, describe, modify, or delete an Amazon RDS DB instance. You can also enforce multi-factor authentication (MFA). For more information about using IAM to manage administrative access to Amazon RDS, see Identity and access management in Amazon RDS.

Amazon RDS offers optional storage encryption that uses AES-256 encryption, and automatically encrypts any snapshots and snapshot restores. You can control who can decrypt your data by using AWS Key Management Service (AWS KMS).

In addition, Amazon RDS supports several Oracle Database security features:

- Amazon RDS can protect data in motion using Secure Sockets Layer (SSL), or native network encryption that protects data in motion using Oracle Net Services. You can choose between AES, Triple DES, and RC4 encryption.
- You can also store database credentials using AWS Secrets Manager.

Installing JD Edwards EnterpriseOne on an Amazon RDS for Oracle DB instance

Installing JD Edwards EnterpriseOne is often seen as a complex task that involves setting up a server manager and the JD Edwards EnterpriseOne deployment server, followed by installing the platform pack.

In this section, you will learn an alternative process for installing the platform pack, which is tailored to ensure a successful installation of JD Edwards EnterpriseOne on an Amazon RDS for Oracle database instance (referred to from this point on as an Oracle DB instance).

Prerequisites

To install JD Edwards EnterpriseOne on Amazon RDS for Oracle:

- You should be familiar with the JD Edwards EnterpriseOne installation process and have an understanding of the fundamentals of AWS architecture.
- You should have a functional AWS account with appropriate IAM permissions.
- You should have created an Amazon VPC with associated Subnet-Groups and Security-Groups, and it is ready for use by the Amazon RDS for Oracle service.
- You should have a local database on your deployment server that you can connect to with Oracle SQL Developer.

> **Note:** The deployment server will have two separate sets of Oracle binaries: a 32-bit client and a 64-bit server engine (named `e1local`).

Preparation

The process described in this whitepaper is based on the standard JD Edwards EnterpriseOne installation processes, which are described in the JD Edwards EnterpriseOne Applications Installation Guide.

Prior to continuing, follow the instructions in the JD Edwards EnterpriseOne Applications Installation Guide until section 4.5 (“Understanding the Oracle Installation”).

When you have completed the steps leading up to section 4.5, follow the rest of the instructions in this whitepaper to successfully install JD Edwards EnterpriseOne on an Oracle DB instance.

Key installation tasks

The key elements of installing JD Edwards EnterpriseOne on an Oracle DB instance include:

- Creating the instance
- Configuring the SQL *Plus Instant Client
- Installing the platform pack
- Modifying the original installation scripts that are provided

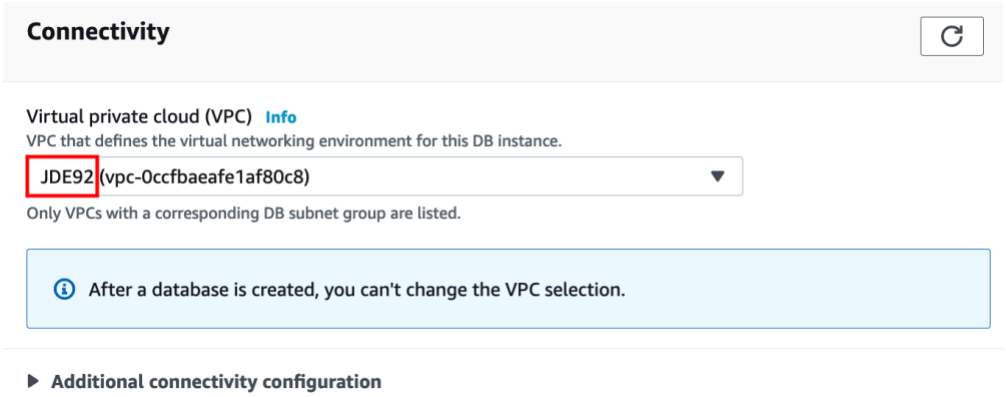
Creating your Oracle DB instance

Using the AWS Management Console, follow these steps.

1. From the top menu bar, choose **Services**.
2. Choose **Database > RDS**. This opens the Amazon RDS dashboard, where you will create your Oracle DB instance.
3. Choose **Create database**.
4. To create an Oracle SE2 environment from the **Create database** screen, do the following:
    a. Under **database creation method**, choose **Standard Create**.
    b. Under **Engine options**, choose **Oracle**.
5. Under **Edition**, choose **Oracle Standard Edition Two**.
6. Under **Version**, choose the latest quarterly release of Oracle Database 19c (which is 19.0.0.0.ru-2020-04.rur-2020-04.r1 at the time of this publication).

7. Under **License**, choose **bring-your-own-license**. `Oracle-se2` must be used in compliance with the latest Oracle licensing. Contact Oracle should further information be required.
8. Under **Templates**, choose **Production**. (AWS Management Console recommends using the default values for a production-ready environment or a development environment. For the purposes of this whitepaper, you will use a production environment.)
9. Under **Settings**, enter the configuration details for the database instance and credentials. For this example, use the following information:
   - **DB Instance Identifier** — `jde92poc`
   - **Master Username** — `jde92pocMaster`
   - **Master Password** — `jde92pocMasterPassword`
10. Under **DB instance size**, choose **Memory Optimized classes (includes r and x classes)**.
11. From the dropdown menu, choose **db. r5.xlarge**.
12. Under **Storage**:
    a. For **Storage type**, choose **General Purpose (SSD)**.
    b. For **Allocated storage**, choose **150 GiB**.
    c. Select (check) Enable storage autoscaling.
    d. For **Maximum storage threshold**, select of **500 GiB**.

    For the purposes of this example, use the settings mentioned above in step 5, steps 8 and 9, and step 10 to choose the Oracle version, instance class, and storage, respectively. These settings can be tailored to meet your specific requirements. AWS encourages you to consult with a JD Edwards EnterpriseOne supplier to ensure these settings are appropriate for your specific use case.
13. Under **Availability & durability**, choose **Create a standby instance (recommended for production usage)**.
14. Under **Connectivity**, use the preconfigured VPC (JDE92) and the settings shown in the following figure. If you have appropriately configured **Subnet Groups** and **VPC Security Groups**, you can use them here.



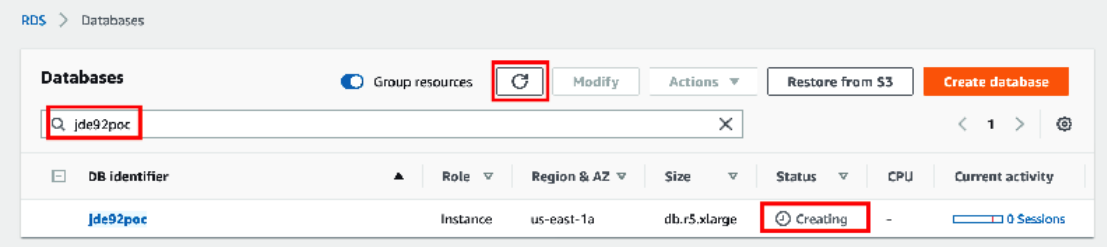
Configure network and security settings

Note: The rest of this procedure assumes that you have already created a VPC to accommodate the Amazon RDS for Oracle installation, and that the VPC name used is **JDE92**. If you need help, see VPC documentation.

15. Under **Database authentication options**, choose **Password authentication**.
16. Expand the **Additional configuration** section. for **Database options**, enter the following settings:
    - **Initial database name** — `jde92poc`
    - **DB parameter group** — `default.oracle-se2-19`
    - **Option group** — `default.oracle-se2-19`
    - **Character set** — `WE8MSWIN1252`
17. For the **Backup**, **Encryption**, and **Performance Insights** sections, use the default settings for this example. However, because these settings do not impact the ability to install JD Edwards EnterpriseOne, AWS encourages you to experiment with and test these settings in your actual implementation.
18. Under **Monitoring**, choose **Enable Enhanced monitoring**.
    a. For **Granularity**, choose **15 seconds**.
    b. For **Monitoring Role**, select **default**.
    c. Under **Log exports**, choose **Alert log**, **Listener log**, and **Trace log**.
    d. For **Maintenance** and **Deletion Protection**, select the defaults.

    Because these settings do not impact the ability to install JD Edwards EnterpriseOne, you should experiment with and test these settings.
19. Click **Create database** to create the RDS Oracle instance.

Creation of the Oracle DB instance begins. This can take some time to complete. Search for your instance to view the progress. Click the **refresh** icon to watch the progress of the Oracle DB instance creation.



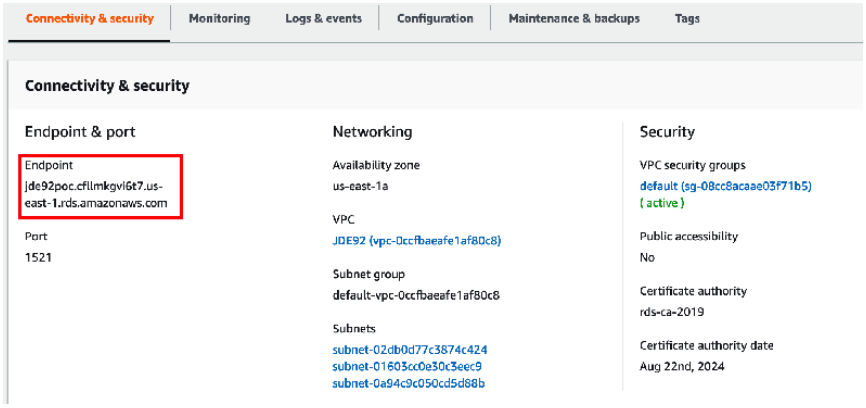
Refreshing the progress view

When the Oracle DB instance is available for use, the **Status** changes to **available**.

Connecting to your Oracle DB instance

When Amazon RDS creates the Oracle DB instance, it also creates an endpoint. Using this endpoint, you can construct the connection string required to connect directly with your Oracle DB instance.

To allow network requests to your running Oracle DB instance, you will need to authorize access. For a detailed explanation of how to construct your connection string and get started, see the Amazon RDS User Guide.



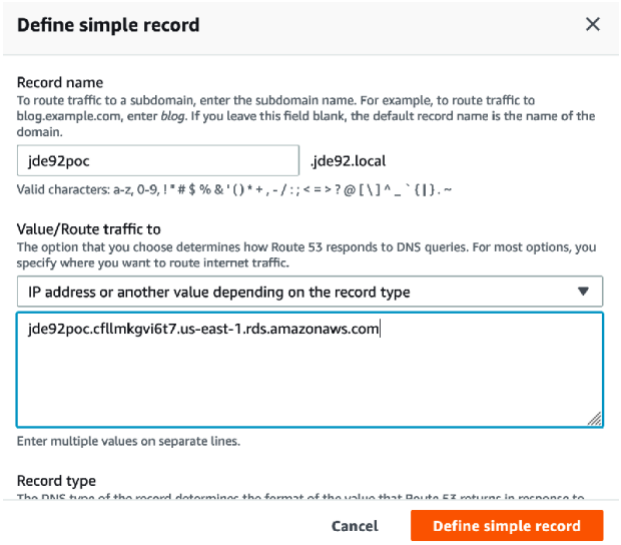
Endpoint for the Oracle DB instance

The endpoint is allocated a Domain Name System (DNS) entry, which you can use for connecting. However, to facilitate a better installation experience for JD Edwards EnterpriseOne, a CNAME record is created so the endpoint can be more human-readable.

The CNAME should be created in the Amazon Route 53 local internal zone, and should point to the new Oracle DB instance.

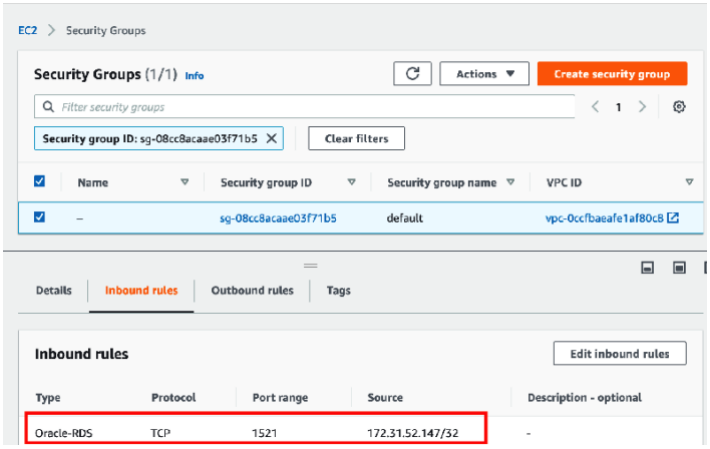
> **Note:** Creating an Amazon Route 53 record set is beyond the scope of this document. For more assistance, see the Amazon Route53 User Guide.

As shown in the following figure, you are creating a simple record called `jde2poc`. You provide the RDS instance's endpoint in the **Value/Route traffic to** section.



CNAME record set

To ensure that connectivity is permitted from the internal subnets in both Availability Zones, you will need to edit the security group for the Oracle DB instance. As shown in the following figure, you have added an `oracle-rds` inbound rule that is allowing connectivity from our internal IP (source) to the RDS instance.



Updating the security group

Configure SQL Developer

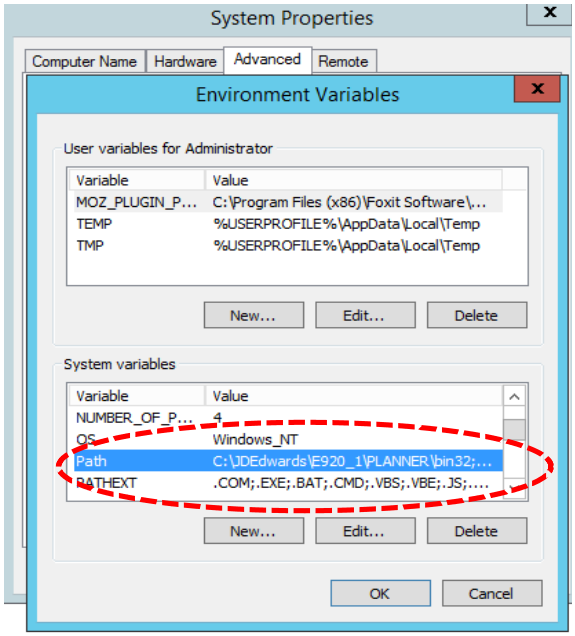
Oracle SQL Developer is used to validate that the appropriate connectivity and permissions are in place and that the Oracle DB instance is accessible. SQL Developer is installed by default with your Oracle client. Optionally, however, see SQL Developer 19.2.1 Downloads to download a standalone version of SQL Developer.

The configuration information used to create the Oracle DB instance will be used as the SQL Developer configuration parameters that are required to connect to the Oracle DB instance.

1. In the **New/Select Database Connection** dialog box, choose **Test** to perform a test connection to the Oracle DB instance. A status of **Success** indicates that the test connection has run and successfully connected to the Oracle DB instance. At this point, connectivity to both `e1local` and `jde92poc` has been proven using the default 64-bit drivers supplied with SQL Developer.

> **Note:** The 64-bit driver is selected by default based on the order of the client drivers in the **Servers** environment variable.

2. To check the deployment server path variables, in File Explorer (assuming Microsoft Windows 10), right-click **This PC** and choose **Properties**.
3. On the **Advanced** tab, choose **Environment Variables**.
4. Locate the **Path** environment system variable in the list.



Path system variable

This enables the observation of the Path environment system variable. The following example shows the 64-bit binaries listed before the 32-bit binaries for Oracle.

```
C:\JDEdwards\E920_1\PLANNER\bin32;C:\JDEdwards\E920_1\system\bin32;
C:\Oracle64db\E1Local\bin;C:\app\e1dbuser\product\12.1.0\client_1\b
in;C:\ProgramData\Oracle\Java\javapath;%SystemRoot%\system32;%Syste
mRoot%;%SystemRoot%\System32\Wbem;%SYSTEMROOT%\System32\WindowsPowe
rShell\v1.0\;C:\ProgramFiles\Amazon\cfn-bootstrap\;C:\Program
Files\Amazon\AWSCLI\”
```

5. To ensure that the remainder of the installation process works, it is critical that SQL*Plus works correctly; specifically, name resolution with `tnsnames.ora`. From the deployment server EC2 instance, open a command window and enter the following command:

```
tnsping ellocal
```

   The file used for `tnsping` is located in the `C:\Oracle64db\E1Local\network\admin` folder.

   In this directory, you'll make changes to the `tnsnames.ora` file; specifically, configuration of the `e1local` database (64-bit installation).

6. This step relates to the 64-bit libraries, not to the libraries that the JD Edwards EnterpriseOne deployment server code uses.

   The JD Edwards EnterpriseOne deployment server code uses 32-bit executables and the `tnsnames.ora` file on the client side to connect to databases (which are 64-bit). For this example, these files are located in `C:\app\e1dbuser\product\12.1.0\client_1\network\admin`.

   Ensure that the Oracle DB instance is in the `tnsnames.ora` file in both locations (32-bit and 64-bit).

   To proceed, you must be able to log into SQL*Plus to the Oracle DB instance using `tnsnames.ora`.

Installing the platform pack

The platform pack is run from the deployment server, connecting to a remote database.

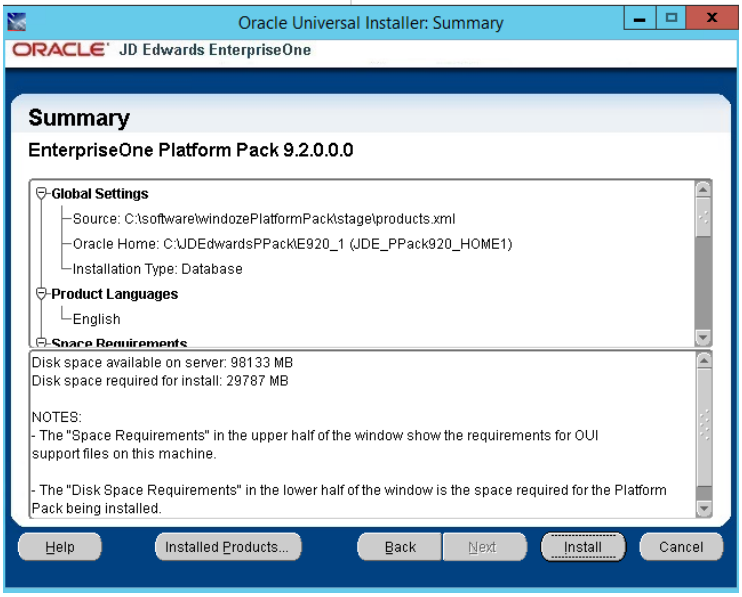
To proceed, you need the Oracle Platform Pack for Windows. You can obtain it from https://edelivery.oracle.com with the appropriate MOS (My Oracle Support) login.

In this section, the installation directory is `C:\software\windowsPlatformPack\install`. To install the platform pack:

1. To run the Java-based installation program for the Oracle Platform Pack for Windows, run `setup.exe` from within the installation directory.
2. Choose **Next**.
3. Under **Select Installation Type**, choose **Database**, and then choose **Next**.
4. Under **Specify Home Destination** > **Destination**, Leave the **Name** field as the default. Under **Path**, choose where to locate the installer files, based on the installation preferences. This is a temporary location, and you can remove these files after the database is populated. After you enter the file path, choose **Next**.
5. Under **Would you like to Install or Upgrade EnterpriseOne**, choose **Install**, and then choose **Next**.
6. Under **Database Options**, enter database information:
    a. **Database type** — **Oracle**
    b. **Database server** — The database server name is not important, and you can use the name of the deployment server (in this case, `jde92dep`).
    c. Enter and confirm your password.
    d. Choose **Next**.
7. Under **Administration and End User Roles**, use the defaults and choose **Next**.
8. A warning appears. Ignore it and choose **Next**. Ignore the **Database Server name** warning.

    Configuration for the Oracle DB instance and a username and password are supplied on the form. Unique string identifiers are provided for the tablespace directory (`c:\tablespace001`) and the Index tablespace directory (`c:\indexspace001`). These will be replaced at a later stage of the installation process.
9. Choose **Run Scripts Manually** to defer the execution of the installation scripts. **Important**: Should the installation scripts run at this stage, the installation will fail. Choose **Next**.

    The installation process will attempt to connect to `jde92poc` using the information you provided. This connection must succeed for the installation to proceed. The following figure indicates that the installation process was able to connect to the Oracle DB instance specified (`jde92poc`).



Installation process connected to the Oracle DB instance

10. Choose **Install**.

    The installation process starts, and creates a set of specific database installation scripts for the options selected throughout the platform pack installation wizard.

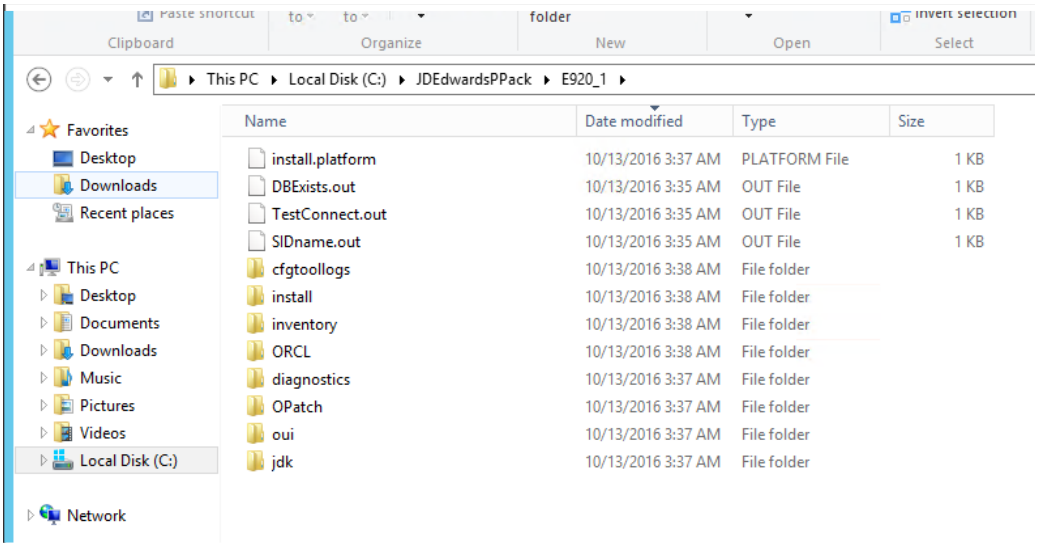
When installation is complete, instead of the default scripts, the custom values you provided are configured. Because you selected **Run Scripts Manually**, the database is not loaded, but scripts are created specifically for the current input parameters.

As the installation process proceeds, you can view logging at `C:\JDEdwardsPPack\E920_1`.

Modifying the default scripts

After modifying the default scripts, the **post installation wizard** installation scripts are created; however, it is assumed that they will run on the database server itself. As a result, you need to modify these scripts to ensure a seamless installation on the Oracle DB instance.

When you view the specified installation directory (`C:\JDEdwardsPPack\E920_1`), you will see that a folder structure was created. You will make the required modifications within this directory.



Folder structure for the installation directory

The modifications required to achieve a seamless installation are summarized as follows:

- **Change the `dpump_dir1` entry in all scripts to `DATA_PUMP_DIR`**. The Data Pump files need to be moved from the various directories on the deployment server install media to the `DATA_PUMP_DIR` directory on the RDS DB instance using `DBMS_FILE_TRANSFER.PUT_FILE`. You can also use the Amazon S3 integration feature now available with RDS Oracle to move the dump file. For details, see Integrating Amazon RDS for Oracle with Amazon S3 using S3_integration, and Image X.
- **Change the syntax of the `CREATE TABLESPACE` statements**. Amazon RDS supports Oracle Managed Files (OMF) only for data files, log files, and control files. When creating data files and log files, you cannot specify physical file names. See Changing the Syntax of the CREATE TABLESPACE Statements in this document for additional details.
- **Rename the pristine data dump file and the import data script**. Change the name of the pristine data dump file, and also the import data script for the TEST environment and pristine environment. (The standard scripts change the import DIR, and you are going to change the filename.)
- **Change the database grants**. Change the database grants to remove “create any directory”, as this is not a grant that works on Amazon RDS. See Changing the Database Grants in this document for additional details.

Throughout this process, the updated scripts are located in the `ORCL` directory. You can run these scripts at any time by executing the following command. However, this is the master script for the database installation, and you should **NOT** run it at this stage.

```
cmd> InstallOracleDatabase.BAT
```

If, throughout this process, you make any mistakes or encounter failures, run the following command. This command completely unloads and drops any database components that were created by the installation script.

```
cmd> drop_db.bat
```

You should back up **all** the scripts in the `ORCL` directory. If required, you can run the installer again to generate a set of new, pristine scripts.

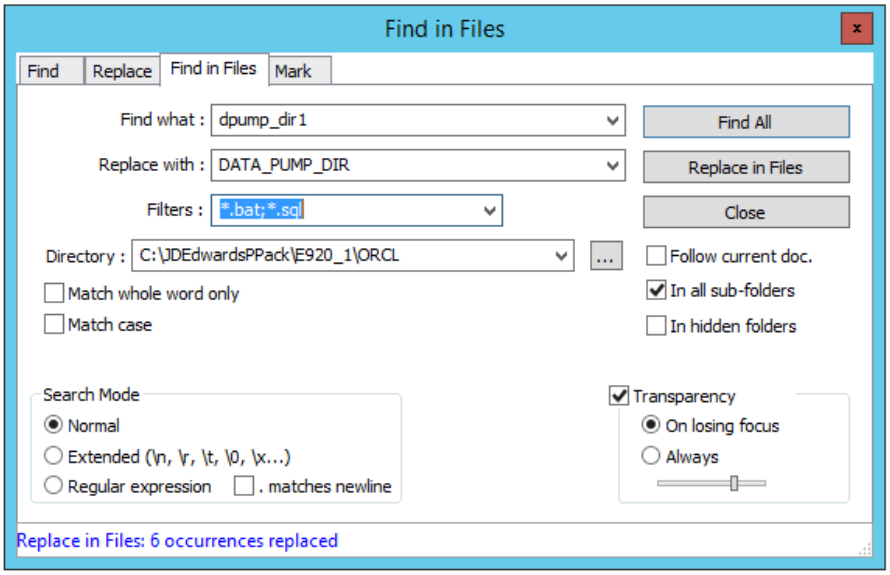
Create the JDE Installers standard data pump directories

From SQL Developer connected to the Amazon RDS for Oracle database instance, perform the following steps. The Windows global search and replace commands were completed using notepad++. However, you can use any text editor.

Changing `dpump_dir1`

Use the global search and replace for *.sql and *.bat files in the `c:\JDEdwardsPPack\E920_1\ORCL` directory:

- Replace dpump_dir_1 with DATA_PUMP_DIR
- Replace log_dir1 with DATA_PUMP_DIR



*Find and replace the *.sql and *.bat files*

Now, create the datapump directories ‘log_dir1’ and ‘dpump_dir1’ as shown:

```
Sqldeveloper> exec
rdsadmin.rdsadmin_util.create_directory('log_dir1');

Sqldeveloper> exec
rdsadmin.rdsadmin_util.create_directory('dpump_dir1');
```

- Confirmation messages such as `anonymous block completed` are displayed; you can safely ignore them.
- You can confirm that the directory was created by running the following SQL statement:

```
SELECT directory_name, directory_path FROM dba_directories;
```

After replacing the `.sql` and `.bat` files, the code output changes. For example, this code:

```
Impdp %SYSADMIN_USER%/%SYSADMIN_PSSWD%@%CONNECT_STRING%
DIRECTORY=dpump_dir1
DUMPFILE=RDBSPEC01.DMP,RDBSPEC02.DMP,RDBSPEC03.DMP,RDBSPEC04.DMP
LOGFILE=log_dir1:Import_%USER%.log TABLE_EXISTS_ACTION=TRUNCATE
EXCLUDE=USER
```

Becomes this code:

```
Impdp %SYSADMIN_USER%/%SYSADMIN_PSSWD%@%CONNECT_STRING%
DIRECTORY=DATA_PUMP_DIR
DUMPFILE=RDBSPEC01.DMP,RDBSPEC02.DMP,RDBSPEC03.DMP,RDBSPEC04.DMP
LOGFILE=DATA_PUMP_DIR:Import_%USER%.log
TABLE_EXISTS_ACTION=TRUNCATE EXCLUDE=USER
```

Changing the syntax of the `CREATE TABLESPACE` statements

By default, pristine `create tablespace` statements found in the files, such as `crtabsp_co.nt`, `crtabsp_sh.nt`, and `crtabsp_env.nt`, look like the following example.

```
CREATE TABLESPACE &&PATH.&&RELEASE.t
```

```
 logging
datafile '&&TABLE_PATH\&&PATH.&&RELEASE.t01.dbf' size 1500M,
         '&&TABLE_PATH\&&PATH.&&RELEASE.t02.dbf' size 1500M
autoextend on next 60M maxsize 5000M
extent management local autoallocate
segment space management auto
online;
```

These statements must be modified to reflect the following example.

```
CREATE bigfile TABLESPACE &&PATH.&&RELEASE.t
logging
Datafile SIZE 1500M AUTOEXTEND ON MAXSIZE 5G;
```

Note: The next step of applying updates is either a manual or a scripted task, due to differences in many of the tablespaces.

The following updates must be applied.

```
crtabsp_co.nt
create bigfile tablespace &&PATH.&&RELEASE.t
logging
datafile size 1500M AUTOEXTEND ON MAXSIZE 5G ;

create bigfile tablespace &&PATH.&&RELEASE.i
logging
datafile size 1500M AUTOEXTEND ON MAXSIZE 5G ;
crtabsp_sh.nt
create bigfile tablespace sy&&RELEASE.t
logging
datafile size 250M AUTOEXTEND ON MAXSIZE 750M;

create bigfile tablespace sy&&RELEASE.i
logging
datafile size 100M AUTOEXTEND ON MAXSIZE 750M;


create bigfile tablespace svm&&RELEASE.t
logging
datafile size 10M AUTOEXTEND ON MAXSIZE 150M;
```

```
create bigfile tablespace svm&&RELEASE.i
logging
datafile size 10M AUTOEXTEND ON MAXSIZE 150M;

create bigfile tablespace ol&&RELEASE.t
logging
datafile size 250M AUTOEXTEND ON MAXSIZE 350M;

create bigfile tablespace ol&&RELEASE.i
logging
datafile size 100M AUTOEXTEND ON MAXSIZE 150M;

create bigfile tablespace dd&&RELEASE.t
logging
datafile size 350M AUTOEXTEND ON MAXSIZE 450M;

create bigfile tablespace dd&&RELEASE.i
logging
datafile size 125M AUTOEXTEND ON MAXSIZE 750M;
crtabsp_env.nt
create bigfile tablespace &&ENV_OWNER.ctli
logging
datafile size 1000M AUTOEXTEND ON MAXSIZE 1500M;

create bigfile tablespace &&ENV_OWNER.ctlt logging
datafile
size 1000M AUTOEXTEND ON MAXSIZE 1500M;

create bigfile tablespace &&ENV_OWNER.dtai
logging
datafile size 1000M AUTOEXTEND ON MAXSIZE 4500M;

create bigfile tablespace &&ENV_OWNER.dtat
logging
datafile size 1000M AUTOEXTEND ON MAXSIZE 4500M;
```

Renaming the pristine data dump file and the Import data script

These changes are made to **`ORCL\InstallOracleDatabase.BAT`**.

You are changing `DTA` to `DDTA` to load the `DEMO` data as opposed to the empty tables.

```
-approx line 363 - PRISTINE

@REM-----------------------------------
@set USER=%PS_DTA_USER%
@set PSSWD=%PS_DTA_PSWD%
@set FROMUSER=%PS_DTA_FROMUSER%
@set LOAD_TYPE=DDTA
@set JDE_DTA=%DATABASE_INSTALL_PATH%\demodta
@echo ************************************************************
@echo create and load %USER% Business Data Tables
@echo
@echo "Calling Load for %PS_DTA_USER% load type DTA" >>
logs\OracleStatus.txt
@echo "InstallOracleDatabase:#6 call load %PS_DTA_USER% DTA TSTDTA
@callLoad.bat
@if ERRORLEVEL 4 (
@goto abend
```

```
-approx line 554 - TESTDTA

@rem-----------------------------------------
@if "%RUN_MODE"=="INSTALL"(
@set user=%DV_DTA_USER%
@set PSSWD=%DV_DTA_PSWD%
@set FROMUSER=%PS_DTA_FROMUSER%
@set LOAD_TYPE=DDTA
@set JDE_DTA=%DATABASE_INSTALL_PATH%\demodta
@echo ************************************************************
@echo create and load %DV_DTA_USER% Business Data Tables
@echo
@echo "Calling Load for %DV_DTA_USER%load type DTA"
>>logs\OracleStatus.txt
@call Load.bat
@if ERRORLEVEL 4(
@goto abend
```

Changing the database grants

`Create_dir.sql` has the following statement that you need to change. Amazon RDS for Oracle does not support creating directories on the RDS instance, so you must remove this statement.

Before

```
grant create session, create table, create view, create any
directory, select any dictionary to jde_role;
```

After

```
grant create session, create table, create view, select any
dictionary to jde_role;
```

Advanced configuration

Start an SQL Developer session to the RDS DB instance and log in as the administrative user (`jde92pocmaster`).

Run the following SQL command.

```
SELECT directory_name, directory_path FROM dba_directories;
```

This is the result:

```
DIRECTORY_NAME      DIRECTORY_PATH
--------------      --------------
BDUMP               /rdsdbdata/log/trace
ADUMP               /rdsdbdata/log/audit
OPATCH_LOG_DIR      /rdsdbbin/oracle/QOpatch
OPATCH_SCRIPT_DIR   /rdsdbbin/oracle/QOpatch
DATA_PUMP_DIR       /rdsdbdata/datapump
OPATCH_INST_DIR     /rdsdbbin/oracle/Opatch
LOG_DIR1            /rdsdbdata/userdirs/01
DPUMP_DIR1          /rdsdbdata/userdirs/02
```

To see files in `DATA_PUMP_DIR1` directory, run the following.

```
SELECT * FROM TABLE
(RDSADMIN.RDS_FILE_UTIL.LISTDIR('DATA_PUMP_DIR1'))ORDER BY mtime;

SELECT * FROM TABLE
(RDSADMIN.RDS_FILE_UTIL.LISTDIR('LOG_DIR1')) ORDER BY
mtime;
```

The following command deletes a single file named **`Import_TESTCTL_CTL.log`** from the `LOG_DIR1` directory stored on the Oracle DB instance.

```
exec utl_file.remove('LOG_DIR1','Import_TESTCTL_CTL.log');
exec utl_file.fremove('DATA_PUMP_DIR','Import_TESTCTL_CTL.log');
```

The `DATA_PUMP_DIR` is used in the following SQL command to generate deletes for all log files in `LOG_DIR1DATA_PUMP_DIR`.

```
SELECT 'exec utl_file.fremove('DATA_PUMP_DIR','''|| filename||''');' FROM
TABLE (RDSMDMIN.RDS_FILE_UTIL.LISTDIR('LOG_DIR1')) WHERE filename LIKE
'%log' ORDER BY mtime;
```

Moving DMP files

When connected to `e1local` on the deployment server using SQL Developer, run the following commands.

```
DROP DATABASE LINK jde92poc;
CREATE DATABASE LINK jde92poc CONNECT TO jde92pocmaster IDENTIFIED
BY "aws_Poc_Password"
USING'(DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=jde92poc.jde92.loca
l)(PORT=1521))(CONNECT_DATA=(SERVER=DEDICATED)(SERVICE_NAME=jde92po
c)))';

SELECT directory_name, directory_path FROM dba_directories;
'C:\Oracle64db\admin\e1local\dpdump';
```

These commands create the following:

- A new database directory to read the dump files from the deployment server

- A database link to the Amazon RDS for Oracle DB instance to be a conduit to move the dump files from the deployment server to the Oracle DB instance

Copying `DMP` files from an ORCL directory to a specified `DATA_PUMP` directory

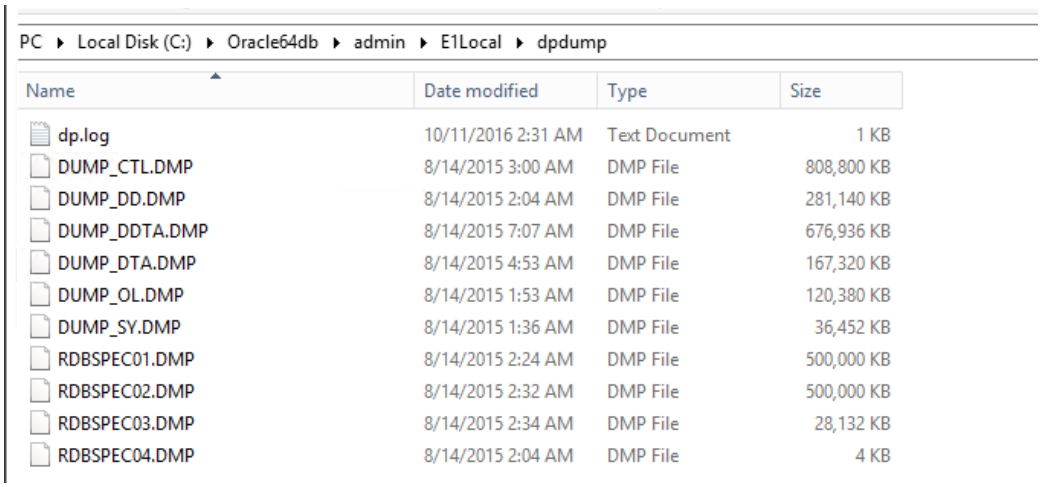
Locate `*.dmp` files in the `ORCL` directory and copy them to `C:\Oracle64db\admin\e1local\dpdump`, as defined in the previous `e1local` database directory (`DATA_PUMP_SRM`).

You'll see that there are two `DUMP_DTA.DMP` files in the find results. The one in `demodta` must be renamed `DUMP_DDTA.DMP`. It's important to name it exactly as specified, because there are associated changes in the import scripts. `DUMP_DTA.DMP` comes from `ORCL\proddta`.

The reason for this renaming is that one of the dump files (the larger one) is for `DEMO` data, which is imported into `TESTDTA` and `PRISTINE`, while the smaller file (`DUMP_DTA.DMP`) does not contain any data – just table and index structures.

Now, all of the `*.dmp` files that must be copied into the Oracle DB instance are in an `e1local` directory named `DATA_PUMP_SRM`. It's time to move these files to the RDS DB instance directory named `DPUMP_DIR1` that you created.

The following figure shows how this directory looks on the deployment server.



DPUMP_DIR1 directory on deployment server

In the Appendix, you will find a script you can use to copy the `.dmp` files from the deployment server to the RDS DB instance via a database link. Run this script from SQL Developer connected to the `e1local` database.

When these commands finish successfully, you can run the following command against the Oracle DB instance (`jde92poc`) to ensure that the files have arrived.

```
SELECT substr(filename,1,30),type, filesize, MTIME
FROM TABLE(RDSADMIN.RDS_FILE_UTIL.LISTDIR('DPUMP_DIR1'))ORDER BY
mtime;
```

The following output indicates that the files were transferred correctly.

SUBSTR(FILENAME,1,30)	TYPE	FILESIZE	MTIME
DUMP_CTL.DMP	file	828211200	14-OCT-16
RDBSPEC01.DMP	file	512000000	14-OCT-16
RDBSPEC02.DMP	file	512000000	14-OCT-16
RDBSPEC03.DMP	file	28807168	14-OCT-16
RDBSPEC04.DMP	file	4096	14-OCT-16
DUMP_DTA.DMP	file	171335680	14-OCT-16
DUMP_DD.DMP	file	287887360	14-OCT-16
DUMP_OL.DMP	file	123269120	14-OCT-16
DUMP_SY.DMP	file	37326848	14-OCT-16
DUMP_DDTA.DMP	file	693182464	14-OCT-16

A screenshot that shows the files were transferred correctly.

Confirming files are transferred:

```
create bigfile tablespace &&ENV_OWNER.ctli
logging
datafile size 1000M AUTOEXTEND ON MAXSIZE 1500M ;

create bigfile tablespace &&ENV_OWNER.ctlt
logging
datafile size 1000M AUTOEXTEND ON MAXSIZE 1500M ;

create bigfile tablespace &&ENV_OWNER.dtai
logging
datafile size 1000M AUTOEXTEND ON MAXSIZE 4500M ;

create bigfile tablespace &&ENV_OWNER.dtat
logging
datafile size 1000M AUTOEXTEND ON MAXSIZE 4500M
```

Change the database grants to not include ‘create any directory’

Because Amazon RDS Oracle does not support creating directories on the RDS instance, the creation of directories in the installation scripts must be done manually. You do this by using the AWS custom function `rdsadmin.rdsadmin_util.create_directory`.

Grants before

```
Grant create session, create table, create view, create any
directory, select any dictionary to jde_role;
```

Grants after

```
Grant create session, create table, create view, select any
dictionary to jde_role;
```

Running the installer

At this point, you have made all the modifications that are required to facilitate the smooth installation of JD Edwards EnterpriseOne.

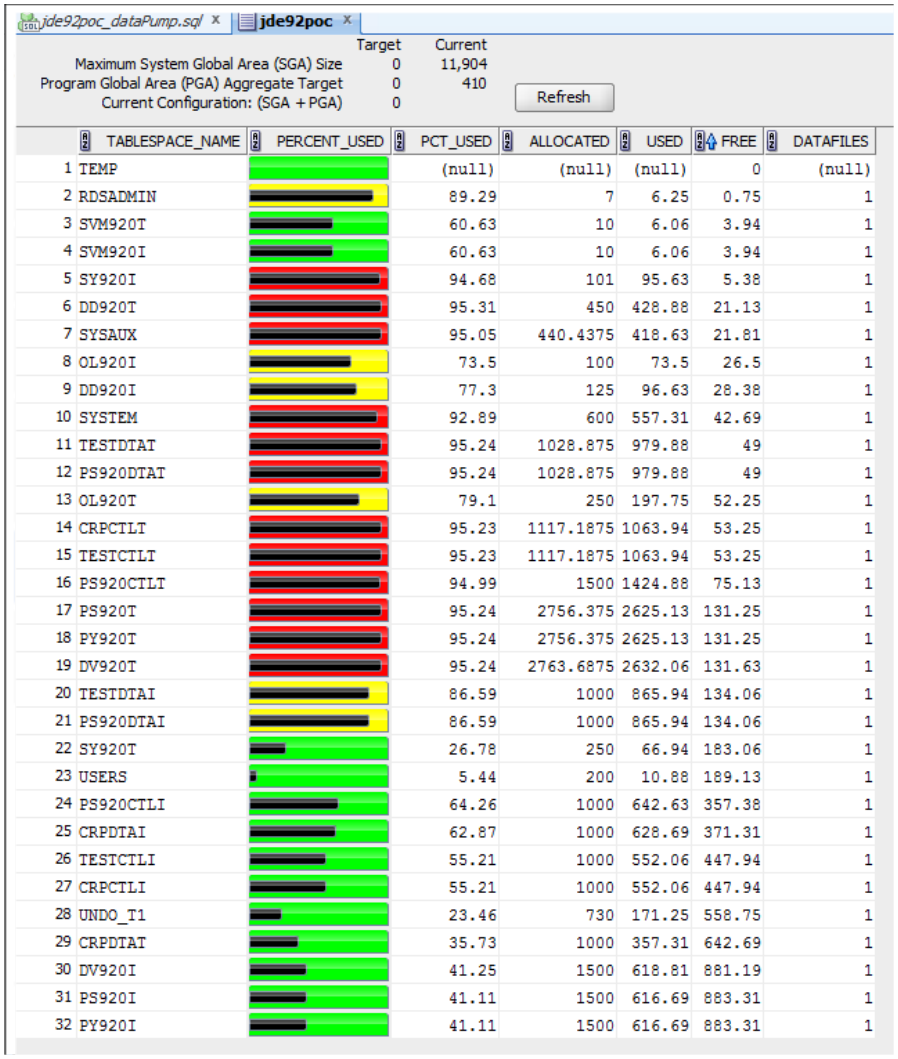
If you encounter any issues, be sure that anything you defined in the installation wizard is also defined in `ORCL\ORCL_SET.BAT`. If you forget items such as passwords or settings, you can retrieve them from this file. However, be sure to delete this file when the installation is complete.

Open a command window on the deployment server and run `InstallOracleDatabase.bat from the C:\JDEdwardsPPack\E920_1\ORCL` directory.

You can `use C:\JDEdwardsPPack\E920_1\ORCL\logs` to track progress and view the script output.

You cannot view the output of the data pump operations, because they are not multiples of the block size of the database.

When the installation is complete, you should see that the database is populated. The following screenshot is from Oracle SQL Developer and shows you the properties of the target database. All JD Edwards EnterpriseOne tablespaces now have space allocated and tables created.



jde92poc_dataPump.sql | jde92poc

	Target	Current
Maximum System Global Area (SGA) Size	0	11,904
Program Global Area (PGA) Aggregate Target	0	410
Current Configuration: (SGA + PGA)	0	

Refresh

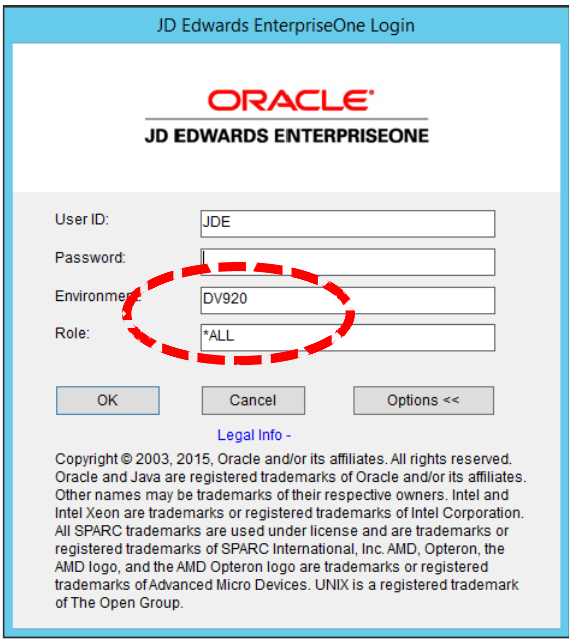
	TABLESPACE_NAME	PERCENT_USED	PCT_USED	ALLOCATED	USED	FREE	DATAFILES
1	TEMP		(null)	(null)	(null)	0	(null)
2	RDSADMIN		89.29	7	6.25	0.75	1
3	SVM920T		60.63	10	6.06	3.94	1
4	SVM920I		60.63	10	6.06	3.94	1
5	SY920I		94.68	101	95.63	5.38	1
6	DD920T		95.31	450	428.88	21.13	1
7	SYSAUX		95.05	440.4375	418.63	21.81	1
8	OL920I		73.5	100	73.5	26.5	1
9	DD920I		77.3	125	96.63	28.38	1
10	SYSTEM		92.89	600	557.31	42.69	1
11	TESTDTAT		95.24	1028.875	979.88	49	1
12	PS920DTAT		95.24	1028.875	979.88	49	1
13	OL920T		79.1	250	197.75	52.25	1
14	CRPCTLT		95.23	1117.1875	1063.94	53.25	1
15	TESTCTLT		95.23	1117.1875	1063.94	53.25	1
16	PS920CTLT		94.99	1500	1424.88	75.13	1
17	PS920T		95.24	2756.375	2625.13	131.25	1
18	PY920T		95.24	2756.375	2625.13	131.25	1
19	DV920T		95.24	2763.6875	2632.06	131.63	1
20	TESTDTAI		86.59	1000	865.94	134.06	1
21	PS920DTAI		86.59	1000	865.94	134.06	1
22	SY920T		26.78	250	66.94	183.06	1
23	USERS		5.44	200	10.88	189.13	1
24	PS920CTLI		64.26	1000	642.63	357.38	1
25	CRPDTAI		62.87	1000	628.69	371.31	1
26	TESTCTLI		55.21	1000	552.06	447.94	1
27	CRPCTLI		55.21	1000	552.06	447.94	1
28	UNDO_T1		23.46	730	171.25	558.75	1
29	CRPDTAT		35.73	1000	357.31	642.69	1
30	DV920I		41.25	1500	618.81	881.19	1
31	PS920I		41.11	1500	616.69	883.31	1
32	PY920I		41.11	1500	616.69	883.31	1

Properties of the target database

You've now completed all the tasks for installing JD Edwards EnterpriseOne on the Amazon RDS Oracle DB instance. The following steps enable you to verify that you can connect to the populated instance.

Logging into JD Edwards EnterpriseOne on the deployment server

1. Click the application launch icon to start JD Edwards EnterpriseOne. The JD Edwards EnterpriseOne login screen is displayed.
2. Enter your UserID and password.
3. For **Environment**, enter `DV920`**.**
4. For **Role**, enter `*.ALL`**.**



Logging in to DV920 for testing

5. Log out and then log back in to the `jdeplan` environment and continue with the standard installation.

Because there are no further deviations from a standard installation beyond this point, you can proceed to create an installation plan and run the installation workbench. Follow the instructions in section 5 of the JD Edwards EnterpriseOne installation process, "Working with Installation Planner for an Install".

Validation and testing

The successful completion of the installation workbench will give you confidence that the Amazon RDS Oracle database installation is working. Proceeding to install web servers and enterprise servers and connecting them to the Amazon RDS for Oracle DB instance are some of the remaining installation steps.

Remember to delete the `.dmp` files on the Amazon RDS instance to ensure that they do not contribute to the amount of storage you are using on the Amazon RDS instance. Any files stored in database directories contribute to the space you are using in the Amazon RDS instance.

Use the following statement to build the commands you need to run to delete the `.dmp` files. Run this statement only when you know that your installation succeeded

```
SELECT 'exec utl_file.fremove(''DPUMP_DIR1'','''||filename|| ''');'
FROM table(RDSADMIN.RDS_FILE_UTIL.LISTDIR('DPUMP_DIR1'))
```

```
WHERE filename LIKE '%DMP' ORDER BY mtime;
```

Running on Amazon RDS for Oracle Enterprise Edition

This paper walks through the implementation of JD Edwards on Amazon RDS for Oracle standard edition only. However, if you are running or plan to run on Amazon RDS for Oracle Enterprise Edition, there are some additional features you can leverage in the areas of high availability and security.

- **Flashback Table** recovers tables to a specific point in time. This can be helpful when a logical corruption is limited to one table or a set of tables instead of to the entire database. At the time of this publication, the Flashback Database feature is available only on self-managed Oracle databased on Amazon EC2, and not in Amazon RDS for Oracle.
- **Transparent Data Encryption** (TDE) protects data at rest for customers who have purchased the Oracle Advanced Security option. TDE provides transparent encryption of stored data to support your privacy and compliance efforts. Applications do not have to be modified and will continue to work as before. Data is automatically encrypted before it is written to disk, and automatically decrypted when reading from storage. Key management is built in, which eliminates the task of creating, managing, and securing encryption keys. You can choose to encrypt tablespaces or specific table columns using industry-standard encryption algorithms, including Advanced Encryption Standard (AES) and Data Encryption Standard (Triple DES).
- **Oracle Virtual Private Database** (VPD) enables you to create security policies to control database access at the row and column level. Essentially, Oracle VPD adds a dynamic `WHERE` clause to an SQL statement that is issued against the table, view, or synonym to which an Oracle VPD security policy was applied. Oracle VPD enforces security to a fine level of granularity directly on database tables, views, or synonyms. Because you attach security policies directly to these database objects and the policies are automatically applied whenever a user accesses data, there is no way to bypass security.
- **Fine Grained Auditing** (FGA) can be understood as policy-based auditing. It enables you to specify the conditions necessary to generate an audit record. FGA policies are programmatically bound to a table or view. They allow you to audit an event only when conditions that you define are true; for example, only if a specific column has been selected or updated. Because every access to a table is not always recorded, this creates more meaningful audit trails. This can be critical given the often commercially sensitive nature of the data retained in the JD Edwards EnterpriseOne backend databases.

As `db.z1d` instances class delivers a sustained all core frequency of up to 4.0 GHz, the fastest of any cloud instance; this can also reduce the costs for customers using core-based licensing cost while running enterprise edition since they will need to have fewer cores now.

Conclusion

This whitepaper described many of the capabilities and advantages of using AWS and Amazon RDS as the foundation for installing the JD Edwards EnterpriseOne application. Specifically, this whitepaper focused on a way of configuring Amazon RDS for Oracle as the underlying database for the JD Edwards EnterpriseOne application. The whitepaper articulated all the steps for installing the JD Edwards EnterpriseOne application, and the steps required to set up an Amazon RDS Oracle DB instance. Having JD Edwards EnterpriseOne and Amazon RDS for Oracle running in the AWS Cloud enables you to enjoy the advantages of simple deployment, high availability, security, scalability, and many additional services supported by Amazon RDS and AWS.

Appendix: Dumping deployment service to RDS

The following code snippet shows example usage of `DBMS_FILE_TRANSFER` package to transfer the `datapump dumpfile` for deployment service to RDS Oracle.

```
Begin
DBMS_FILE_TRANSFER.PUT_FILE(
source_directory_object=> 'DATA_PUMP_SRM',
source_file_name=> 'DUMP_CTL.DMP',
destination_directory_object=> 'DPUMP_DIR1',
destination_file_name=> 'DUMP_CTL.DMP',
destination_database=> 'jde92poc'
);
DBMS_FILE_TRANSFER.PUT_FILE(
source_directory_object=> 'DATA_PUMP_SRM',
source_file_name=> 'RDBSPEC01.DMP',
destination_directory_object=> 'DPUMP_DIR1',
destination_file_name=> 'RDBSPEC01.DMP',
destination_database=> 'jde92poc'
);
DBMS_FILE_TRANSFER.PUT_FILE(
source_directory_object=> 'DATA_PUMP_SRM',
source_file_name=> 'RDBSPEC02.DMP',
destination_directory_object=> 'DPUMP_DIR1',
destination_file_name=> 'RDBSPEC02.DMP',
```

```
destination_database=> 'jde92poc'
);
DBMS_FILE_TRANSFER.PUT_FILE(
source_directory_object=> 'DATA_PUMP_SRM',
source_file_name=> 'RDBSPEC03.DMP',
destination_directory_object=> 'DPUMP_DIR1',
destination_file_name=> 'RDBSPEC03.DMP',
destination_database=> 'jde92poc'
);
DBMS_FILE_TRANSFER.PUT_FILE(
source_directory_object=> 'DATA_PUMP_SRM',
source_file_name=> 'RDBSPEC04.DMP',
destination_directory_object=> 'DPUMP_DIR1',
destination_file_name=> 'RDBSPEC04.DMP',
destination_database=> 'jde92poc'
);
DBMS_FILE_TRANSFER.PUT_FILE(
source_directory_object=> 'DATA_PUMP_SRM',
source_file_name=> 'DUMP_DTA.DMP',
destination_directory_object=> 'DPUMP_DIR1',
destination_file_name=> 'DUMP_DTA.DMP',
destination_database=> 'jde92poc'
);
DBMS_FILE_TRANSFER.PUT_FILE(
source_directory_object=> 'DATA_PUMP_SRM',
source_file_name=> 'DUMP_DD.DMP',
destination_directory_object=> 'DPUMP_DIR1',
destination_file_name=> 'DUMP_DD.DMP',
destination_database=> 'jde92poc'
);
DBMS_FILE_TRANSFER.PUT_FILE(
source_directory_object=> 'DATA_PUMP_SRM',
source_file_name=> 'DUMP_OL.DMP',
destination_directory_object=> 'DPUMP_DIR1',
destination_file_name=> 'DUMP_OL.DMP',
destination_database=> 'jde92poc'
);
DBMS_FILE_TRANSFER.PUT_FILE(
source_directory_object=> 'DATA_PUMP_SRM',
source_file_name=> 'DUMP_SY.DMP',
destination_directory_object=> 'DPUMP_DIR1',
destination_file_name=> 'DUMP_SY.DMP',
destination_database=> 'jde92poc'
);
```

```
DBMS_FILE_TRANSFER.PUT_FILE(
source_directory_object=> 'DATA_PUMP_SRM',
source_file_name=> 'DUMP_DDTA.DMP',
destination_directory_object=> 'DPUMP_DIR1',
destination_file_name=> 'DUMP_DDTA.DMP',
destination_database=> 'jde92poc' );
END;
```

Contributors

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Document revisions

Date	Description
March 24, 2021	Document review and addition of various new RDS Oracle capabilities.
Dec 2016	First publication