

SharePlex® 9.2.9

# Installation and Setup Guide for Oracle on RDS



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Quest Software Inc.

Attn: LEGAL Dept

4 Polaris Way

Aliso Viejo, CA 92656

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SharePlex Installation and Setup Guide for Oracle on RDS

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# About this Guide

This manual provides instructions for installing and setting up SharePlex on an Amazon RDS Oracle database.

## Other SharePlex documentation

For the complete SharePlex documentation set, go to <https://support.quest.com/shareplex/technical-documents>.

---

# Overview and Requirements

The deployment of SharePlex for an Oracle database hosted on the Amazon RDS service is slightly different from deploying SharePlex for an on-premises Oracle database. In a typical on-premises database environment, a SharePlex administrator can install and set up SharePlex directly on the production database system. However, in an RDS environment, SharePlex cannot be installed on the underlying operating system, which is fully managed by Amazon.

To replicate to or from an Oracle database on RDS, you install SharePlex on a server that is external to the RDS deployment of the Oracle database, and then configure SharePlex to interact with the RDS database through a remote connection. Once SharePlex is deployed, it operates the same way as it does when capturing from, or posting to, an on-premises source and target.

## Requirements and support

Understand the following when using SharePlex in an RDS environment.

### SharePlex AMI

In all but one of the supported configurations for replication to or from an RDS database, you need to obtain a SharePlex AMI (Amazon Virtual Machine Instance). This instance is an Amazon Linux virtual machine, hosted on Amazon EC2, with SharePlex pre-installed. An Oracle client is included in the image. You launch the SharePlex instance from your EC2 account and then perform a few tasks to set up licensing and connectivity to the database.

For more information, see [Configure a SharePlex AMI instance](#) on page 8.

### Supported Oracle versions on RDS

Capture from RDS is supported for Oracle versions 11g R2 (supported 11g R2 versions are 11.2.0.4.v11 or later) and 12c R1 (supported 12c R1 versions are 12.1.0.2.v7 or later). Post is supported for all Oracle versions that are supported by RDS and SharePlex.

## Supported Oracle features on RDS

Support of Oracle features on RDS is limited to the default option groups: **default:oracle-ee-12-1** and **default:oracle-ee-11-2**.

## Not Supported

The following SharePlex or Oracle features are not supported for Oracle databases on RDS:

- Encryption of replicated data
- Compression of replicated data
- Replication of Oracle Spatial objects

## SharePlex configuration tasks

This guide leaves off at the point where you have installed SharePlex and configured the environment to support connection to Oracle sources and targets in an RDS environment. There is still a little work to do before replication can start. To configure SharePlex to replicate your data, see the following guides:

SharePlex [Administration Guide](#): This guide contains instructions for creating the configuration file that contains your replication rules, controlling and monitoring replication, activating replication, and other important tasks.

SharePlex [Reference Guide](#): This guide contains detailed information about how to use each of the SharePlex commands and parameters.

---

# Configure a SharePlex AMI instance

These instructions help you to create your SharePlex instance.

## Prerequisites

- Create an Amazon Web Services (AWS) account and (recommended by Amazon) an Identity and Access Management User, or obtain the AWS credentials of an existing account that will be used for SharePlex.
- Have your SharePlex license key available.
- Each SharePlex AMI requires an incoming SSH rule that opens port 22 for incoming connections by users who will issue SharePlex commands or perform other replication-related administrative tasks. The **One-Click Launch** method provides a predefined security group with an existing incoming SSH rule that you can link to one or more IP addresses, or you can select a different security group. The **Manual Launch** method enables you to create a custom security group, or you can select an existing group. To create a custom security group before you start the launch, see the Amazon AWS documentation.
- SSH access to your SharePlex instance is allowed only by public key authentication using a *key pair*. The public key of the key pair is embedded in your SharePlex instance, and a private key is stored by you (the SharePlex user) in a file on the computer from which you will connect to SharePlex. You specify the file in the connection string. The **One-Click Launch** method requires you to select an existing key pair. The **Manual Launch** method enables you to create a key pair or select an existing one. To create a key pair, see the Amazon AWS documentation.

## Create the SharePlex AMI instance

### *To find SharePlex on Amazon AWS*

1. Log on to Amazon Marketplace with your AWS account credentials.
2. In the Search box, type **SharePlex**.



3. Click the **SharePlex for Database Replication** link that is returned by the search. The SharePlex page is displayed, where you can compare costs based on various infrastructure options.
4. Click **Continue to Subscribe** at the top of the page.
5. You have the option of creating a SharePlex instance in either of the following ways:
  - **One-click launch:** Launches a default SharePlex instance, with limited customization options. The instance launches with a default name, which you can change after the launch process is completed.
  - **Manual Launch:** Provides additional customization options for your SharePlex instance, including the ability to specify a name and create a key pair or security group.

### **To create a SharePlex AMI instance with one click**

1. Select **One-Click**.
2. Specify the following settings. See the Amazon RDS help if you need more information about these features.
  - Version:** Select the SharePlex version that you want to run.
  - Region:** Select the Amazon region that will host the SharePlex instance.
  - EC2 Instance Type:** Select the virtual machine attributes for the SharePlex instance.
  - VPC Settings:** Select or create a virtual private cloud network and subnet for your SharePlex instance.
  - Security Group:** Select an existing security group, or select **Create new based on seller settings** to customize the existing SSH rule to your own IP addresses. **NOTE:** Any Amazon-generated **default** security groups shown in the list do not provide enough security for production replication across external networks.
  - Key Pair:** Select a key pair, which will be used as authentication when you log on to the SharePlex instance. **NOTE:** To log into SharePlex with the selected key pair, you must be in possession of the **.pem** file that contains the private key of that key pair.
3. Click **Launch with One Click**. You are notified that your instance of the software is being deployed on EC2. You can view the status of this instance on the EC2 console and assign it a name if desired.

### **To create a SharePlex AMI instance manually**

1. Select **Manual Launch**.
2. Click **Launch**.
3. Under **Version**, select the SharePlex version that you want to run.
4. Under **Launch**, find the Amazon region that will host the SharePlex instance, then click **Launch with EC2 Console**.
5. Select an instance type that matches your processing and storage needs, then click **Next: Configure Instance Details**.
6. Select among options that are related to the operation of the SharePlex instance.
7. Click **Next: Add Storage**.
8. Keep the default storage settings (these are adequate in most cases) or make any changes as necessary.
9. Click **Next: Add Tags**.

10. Click **Add Tag** then provide the following:
  - **Key column:** Enter your user name or some other value on which you can search and sort to find this SharePlex instance. Example: MyUserName
  - **Value column:** Enter the SharePlex instance name. Example: MySharePlexInstance
11. Click **Next: Configure Security Group**.
12. Select or create a security group that satisfies the SharePlex requirements. To create a rule, see the [Prerequisites](#) in these instructions.
13. Click **Next: Review and Launch**.
14. Review your instance specifications, and make any changes if needed.
15. Click **Launch**. The key pair dialog is displayed. Specify how you want to associate a key pair with the SharePlex instance:
  - If a key pair exists already, select **Choose an existing key pair**, then select the name.
  - To specify a new key pair, select **Create a new key pair**, type a name for the key pair file, then click **Download Key Pair**. The private key is downloaded to your computer in the form of a file with the extension of **.pem** (typically the **Downloads** folder on Windows).
16. Change the permissions on the **.pem** file to read-only. This is an Amazon requirement. Store the file in a safe place where you have access to it later
17. Click **Launch Instance**.
18. Click **View Instance**, then wait for the instance initialization to be completed.
19. Select the SharePlex instance by its assigned name tag, then wait until the **Status Checks** column shows a **Checks Passed** status.

## Log in to the SharePlex instance

1. If you do not have an SSH client on your system, download and install one.
2. Run the SSH client.
3. Always log on to the SharePlex AMI instance as the **ec2-user**. This user is the SharePlex Administrator. Use the following command:

```
ssh -i ~/ssh/pem_file_name.pem ec2-user@IP_address/hostname
```

where:

- *pem\_file\_name* is the name of the **.pem** file that you downloaded, which contains the private key of the security key pair.
- *IP\_address/hostname* is either the IPv4 public IP address or, if present, the host name that is mapped to this IP address in your domain name server or **/etc/hosts** file.

# Add a license key to the SharePlex instance

1. Log on to the SharePlex instance.
2. Run the SharePlex license key utility with the following command at the Linux command prompt:  
**/home/ec2-user/shareplex/proddir/install/splex\_add\_key**

3. Choose option 2:

```
SharePlex License Utility
1) Read license key from file
2) Enter license key manually
3) Add license key for alternate host
q) Quit License Utility
Enter option:
```

4. Type the license key exactly as you received it from Quest, including the **SPLEXKEY=** string if one prepends the key, any spaces, and any capitalization. Press **Enter** when finished typing the key.
5. Enter the **SiteMessage** text string provided by Quest with the license key.
6. Enter **q** to exit the utility.

## Setup for on-premises source, RDS target

SharePlex supports the following SharePlex configurations when the source database is on-premises and the target is an RDS database.

- SharePlex installed on-premises
- SharePlex AMI instance on EC2 cloud

### SharePlex installed on-premises



In this scenario, Capture, running on premises, connects to the source database through a **bequeath** connection and the Post process connects to the RDS database through **TNS**.

To set up this configuration, install SharePlex on-premises in one of these ways:

- You can use your **production source server** to run all of the SharePlex replication components. In this setup, both source *and* target replication processes (and their queues) are installed on one server, the production server.

**NOTE:** In a high-volume transactional environment, the buildup of data in the post queues and the presence of multiple Post processes may generate unacceptable overhead for a production system. In that case, you should use an intermediary server.

- You can use an **on-premises intermediary server** to run the Import and Post components (and the post queues). This method removes most of the replication overhead from the source server. For more information, see [Post to PaaS cloud from an intermediary server](#) on page 1.

**NOTE:** To view SharePlex system requirements when installed on premises, see the SharePlex [Release Notes](#).

### ***Install SharePlex***

Install SharePlex on the **source** (and on the **intermediary** server, if using one for the Post process).

1. Log in to the system as the user that will be named as the SharePlex Administrator during this installation. This user will own the installation files and binaries.
2. If **sp\_cop** is running, shut it down.  

```
sp_ctrl> shutdown
```
3. Copy the installation file to a temporary directory where you have write permissions.
4. Grant executable permissions to the file.  

```
#chmod 555installation_file
```
5. Run the **.tpm** file. If installing SharePlex in a cluster, run the installer from the primary node (the one to which the shared disk is mounted)  

```
# .installation_file
```
6. Verify that the information shown on the first screen corresponds to the Oracle version and platform you are upgrading.

- You are prompted for the following:

**NOTE:** These are basic installation instructions. For complete pre-installation and installation instructions for on-premises deployment, see the SharePlex [Installation and Setup Guide for an Oracle Source](#).

Prompt	Input
Installation type	Select <b>&lt;New Installation&gt;</b> .
Product directory location (path)	Enter the path to the SharePlex installation directory. If the specified directory does not exist, the installer creates it. If the directory exists, it must be empty.
Variable data directory location	Specify an empty directory. The installer creates the specified directory if it does not exist. <b>IMPORTANT!</b> Do not install this directory into the SharePlex product directory.
SharePlex Admin group	Enter the DBA-privileged group to which the SharePlex Administrator user belongs, which will own the SharePlex binaries. If the default group of the SharePlex Administrator is <b>oinstall</b> , select any option, and make certain this user is listed under <b>oinstall</b> in the <b>etc/group</b> file.
TCP/IP port for SharePlex	Enter the port number to use for SharePlex TCP/IP communications. The default is 2100.
License key (do you have?)	Press <b>Enter</b> to accept the default of <b>Y</b> (yes). If you do not have a license, enter <b>N</b> (no).
License key	Enter the license key you received from Quest.
Customer name	Enter the SiteMessage text string provided by Quest with the license key.

### Create the *tnsnames.ora* file

- On the source **or** the intermediary system (if using one) create a *tnsnames.ora* file with connection information for the **target** RDS database.

**IMPORTANT!** The TNS alias cannot contain any dashes (-).

The following is an example:

```
target =
  (DESCRIPTION =
    (ADDRESS = (PROTOCOL = TCP)(HOST = yourtarget.amazonaws.com) (PORT =
1521))
    (CONNECT_DATA =
      (SERVICE_NAME=orcl)
    )
  )
```

## Run Oracle Setup

1. On the source, run **ora\_setup** for the **source** database. See the directions for running Oracle Setup in [Database Setup for Oracle](#) on page 27.
  - Reply **YES** to "Will SharePlex install be using a BEQUEATH connection?"
  - Reply **NO** to "Are you setting up SharePlex for an RDS database?"
  - Reply **YES** to "Will the current setup for sid: *SID* be used as a source (including cases as source for failover or primary-primary setups)?"
2. On the source **or** intermediary (if using one) run **ora\_setup** again, this time for the **target** database.
  - Reply **NO** to "Will SharePlex install be using a BEQUEATH connection?"
  - Reply **YES** to "Are you setting up SharePlex for an RDS database?" When you answer YES, it automatically configures Post to use a TNS connection and prompts for the RDS primary user, which has the required privileges to install SharePlex replication objects in the RDS database.
  - Reply **NO** to "Will the current setup for sid: *SID* be used as a source (including cases as source for failover or primary-primary setups)?"

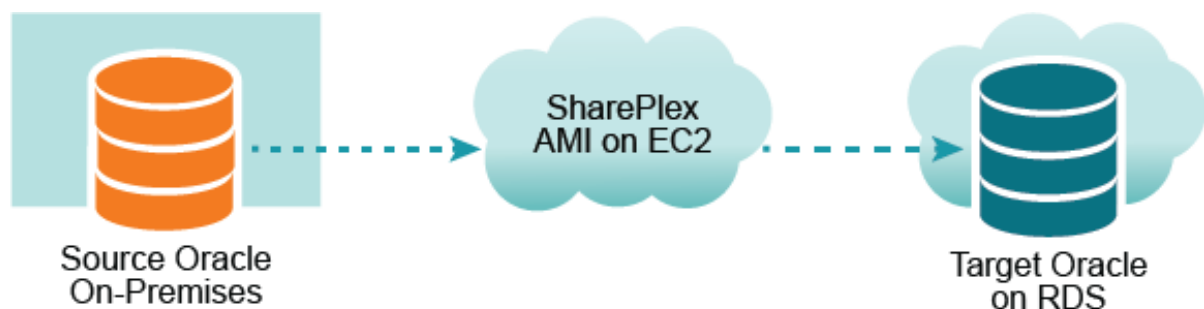
### Set up routing in the configuration file

When you create your configuration file, use the name of the *local host* (where SharePlex is installed) in the routing map so that Post runs locally. The following is an example:

```
datasource:o.source
```

```
splex.demo_src splex.demo_dest sphost@o.target
```

## SharePlex as an AMI instance on EC2 cloud



In this scenario, SharePlex runs as an Amazon Machine Image instance on the EC2 service. Capture connects to the source database through **TNS** and the Post process connects to the RDS database through **TNS**.

### Obtain a SharePlex AMI image

To launch a SharePlex AMI instance, see [Configure a SharePlex AMI instance](#) on page 8.

### Log on to the SharePlex AMI instance

Always log on to the SharePlex AMI instance as the **ec2-user**. This user is the SharePlex Administrator. Use the following command:

```
ssh -i ~/.ssh/pem_file_name.pem ec2-user@IP_address/hostname
```

where:

- *pem\_file\_name* is the name of the **.pem** file that you downloaded, which contains the private key of the security key pair.
- *IP\_address/hostname* is either the IPv4 public IP address or, if present, the host name that is mapped to this IP address in your domain name server or **/etc/hosts** file.

### Create a tnsnames.ora file

On the SharePlex AMI instance, create a tnsnames.ora file with entries for the **source and target databases**.

---

#### IMPORTANT!

The **tnsnames.ora** file must be created in this directory: **/usr/lib/oracle/11.2/client64/network/admin**.

**The TNS alias cannot contain any dashes (-).**

---

The following are examples:

```
source =
  (DESCRIPTION =
    (ADDRESS = (PROTOCOL = TCP) (HOST = yoursource.amazonaws.com) (PORT =
1521))
    (CONNECT_DATA =
      (SERVICE_NAME=orcl)
    )
  )
target =
  (DESCRIPTION =
    (ADDRESS = (PROTOCOL = TCP) (HOST = yourtarget.amazonaws.com) (PORT =
1521))
    (CONNECT_DATA =
      (SERVICE_NAME=orcl)
    )
  )
```

### Run ora\_setup

1. On the SharePlex AMI instance, run **ora\_setup** for the **source** database. See the directions for running Oracle Setup in [Database Setup for Oracle](#) on page 27.
  - Reply **NO** to "Will SharePlex install be using a BEQUEATH connection?"
  - Reply **NO** to "Are you setting up SharePlex for an RDS database?"
  - Reply **YES** to "Will the current setup for sid: *SID* be used as a source (including cases as source for failover or primary-primary setups)?"



2. On the SharePlex AMI instance, run **ora\_setup** again for the **target** database.
  - Reply **NO** to "Will SharePlex install be using a BEQUEATH connection?"
  - Reply **YES** to "Are you setting up SharePlex for an RDS database?"
  - Reply **NO** to "Will the current setup for sid: *SID* be used as a source (including cases as source for failover or primary-primary setups)?"

### **Configure remote capture**

1. On the SharePlex AMI instance, start **sp\_cop**.
2. Start **sp\_ctrl**.
3. Set the SP\_OCT\_OLOG\_USE\_OCI parameter to 1, which enables Capture to read the redo records through OCI, rather than directly from the redo files.

**NOTE:** Enabling the SP\_OCT\_OLOG\_RDS\_MINER parameter is deprecated and no longer supported for Oracle 19c.

### **Set up routing in the configuration file**

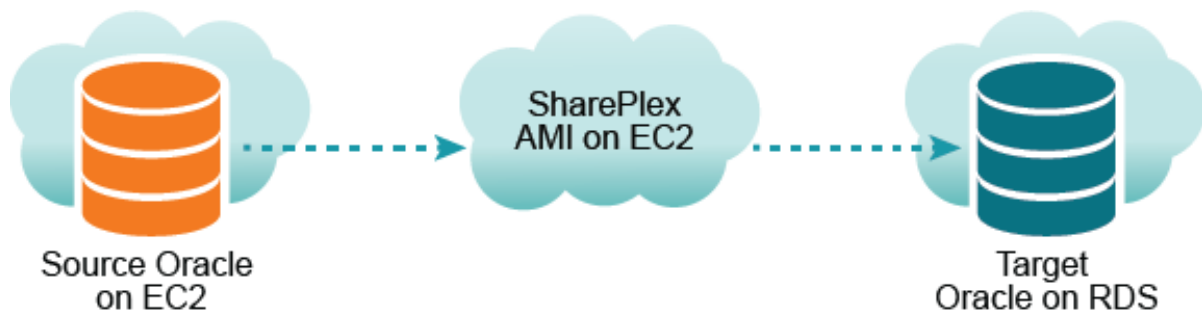
When you create the SharePlex configuration file, use the name of the EC2 host of the SharePlex AMI instance in the routing map so that Post runs on that host. The following is an example:

**datasource:o.source**

**splex.demo\_src splex.demo\_dest shareplex\_ec2\_host.amazonaws.com@o.target**

## Setup for EC2 source, RDS target

In this scenario, SharePlex runs as an Amazon Machine Image instance on the EC2 service. Capture connects to the source database through **TNS** and the Post process connects to the RDS database through **TNS**.



### **Obtain a SharePlex instance**

To obtain a SharePlex AMI instance, see [Configure a SharePlex AMI instance](#) on page 8

### **Log on to the SharePlex AMI instance**

Always log on to the SharePlex AMI instance as the **ec2-user**. This user is the SharePlex Administrator. Use the following command:

```
ssh -i ~/ssh/pem_file_name.pem ec2-user@IP_address/hostname
```

where:

- *pem\_file\_name* is the name of the **.pem** file that you downloaded, which contains the private key of the security key pair.
- *IP\_address/hostname* is either the IPv4 public IP address or, if present, the host name that is mapped to this IP address in your domain name server or **/etc/hosts** file.

### **Create a tnsnames.ora file**

On the host of the SharePlex AMI instance, create a **tnsnames.ora** file with entries for the **source and target databases**.

---

## IMPORTANT!

The `tnsnames.ora` file must be created in this directory: `/usr/lib/oracle/11.2/client64/network/admin`.  
The TNS alias cannot contain any dashes (-).

---

The following are examples:

```
source =
  (DESCRIPTION =
    (ADDRESS = (PROTOCOL = TCP) (HOST = yoursource.amazonaws.com) (PORT =
1521))
    (CONNECT_DATA =
      (SERVICE_NAME=orcl)
    )
  )
target =
  (DESCRIPTION =
    (ADDRESS = (PROTOCOL = TCP) (HOST = yourtarget.amazonaws.com) (PORT =
1521))
    (CONNECT_DATA =
      (SERVICE_NAME=orcl)
    )
  )
```

### Run ora\_setup

1. On the SharePlex AMI instance, run `ora_setup` for the **source** database. See the directions for running Oracle Setup in [Database Setup for Oracle](#) on page 27.
  - Reply **NO** to "Will SharePlex install be using a BEQUEATH connection?"
  - Reply **YES** to "Will the current setup for sid: *SID* be used as a source (including cases as source for failover or primary-primary setups)?"
  - Reply **NO** to "Are you setting up SharePlex for an RDS database?"
2. On the SharePlex AMI instance, run `ora_setup` for the **target** database.
  - Reply **NO** to "Will SharePlex install be using a BEQUEATH connection?"
  - Reply **YES** to "Are you setting up SharePlex for an RDS database?"
  - Reply **NO** to "Will the current setup for sid: *SID* be used as a source (including cases as source for failover or primary-primary setups)?"

### Set up remote capture

1. On the SharePlex AMI instance, start `sp_cop`.
2. Start `sp_ctrl`.
3. Set the `SP_OCT_OLOG_USE_OCI` parameter to 1, which enables Capture to read the redo records through OCI, rather than directly from the redo files.

**NOTE:** Enabling the `SP_OCT_OLOG_RDS_MINER` parameter is deprecated and no longer supported starting with Oracle 19c.

### ***Set up routing in the configuration file***

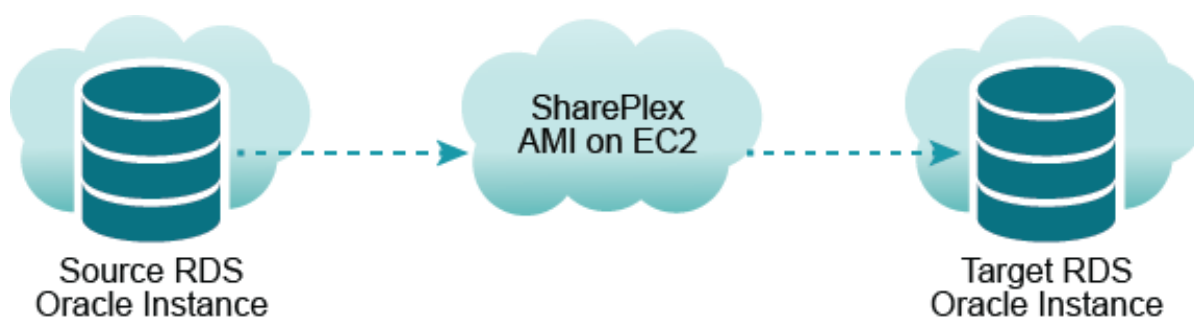
When you create the SharePlex configuration file, use the name of the EC2 host of the SharePlex AMI instance in the routing map so that Post runs locally. The following is an example:

```
datasource:o.source
```

```
splex.demo_src splex.demo_dest shareplex_ec2_host.amazonaws.com@o.target
```

## Setup for source RDS, Target RDS

In this scenario, SharePlex runs as an Amazon Machine Image instance on the EC2 service. Capture connects to the source database through **TNS**, and the Post process connects to the RDS database through **TNS**.



### **Obtain a SharePlex instance**

Obtain a SharePlex AMI instance. See [Configure a SharePlex AMI instance](#) on page 8

### **Log on to the SharePlex AMI instance**

Always log on to the SharePlex AMI instance as the **ec2-user**. This user is the SharePlex Administrator. Use the following command:

```
ssh -i ~/ssh/pem_file_name.pem ec2-user@IP_address/hostname
```

where:

- *pem\_file\_name* is the name of the **.pem** file that you downloaded, which contains the private key of the security key pair.
- *IP\_address/hostname* is either the IPv4 public IP address or, if present, the host name that is mapped to this IP address in your domain name server or **/etc/hosts** file.

## Create a tnsnames.ora file

1. On the SharePlex AMI instance, create a tnsnames.ora file with entries for the **source and target databases**.

### IMPORTANT!

The **tnsnames.ora** file must be created in this directory: **/usr/lib/oracle/11.2/client64/network/admin**.  
The **TNS alias cannot contain any dashes (-)**.

The following are examples:

```
source =
  (DESCRIPTION =
    (ADDRESS = (PROTOCOL = TCP)(HOST = yoursource.amazonaws.com) (PORT =
1521))
    (CONNECT_DATA =
      (SERVICE_NAME=orcl)
    )
  )
target =
  (DESCRIPTION =
    (ADDRESS = (PROTOCOL = TCP)(HOST = yourtarget.amazonaws.com) (PORT =
1521))
    (CONNECT_DATA =
      (SERVICE_NAME=orcl)
    )
  )
```

## Run ora\_setup

1. On the SharePlex AMI instance, run **ora\_setup** for the **source** database. See the directions for running Oracle Setup in [Database Setup for Oracle](#) on page 27.
  - Reply **NO** to "Will SharePlex install be using a BEQUEATH connection?"
  - Reply **YES** to "Are you setting up SharePlex for an RDS database?"
  - Reply **YES** to "Will the current setup for sid: *SID* be used as a source (including cases as source for failover or primary-primary setups)?"
2. On the SharePlex AMI instance, run **ora\_setup** for the **target** database.
  - Reply **NO** to "Will SharePlex install be using a BEQUEATH connection?"
  - Reply **YES** to "Are you setting up SharePlex for an RDS database?"
  - Reply **NO** to "Will the current setup for sid: *SID* be used as a source (including cases as source for failover or primary-primary setups)?"

## Configure capture from RDS

1. On the SharePlex AMI instance, start **sp\_cop**.
2. Start **sp\_ctrl**.

3. On the SharePlex AMI instance, set the SP\_OCT\_OLOG\_RDS\_MINER parameter to 1.

```
sp_ctrl>set param SP_OCT_OLOG_RDS_MINER 1
```

**NOTE:** Enabling the SP\_OCT\_OLOG\_RDS\_MINER parameter is deprecated and no longer supported starting with Oracle 19c.

### ***Set up routing in the configuration file***

When you create the SharePlex configuration file, use the name of the EC2 host of the SharePlex AMI instance in the routing map so that Post runs locally. The following is an example:

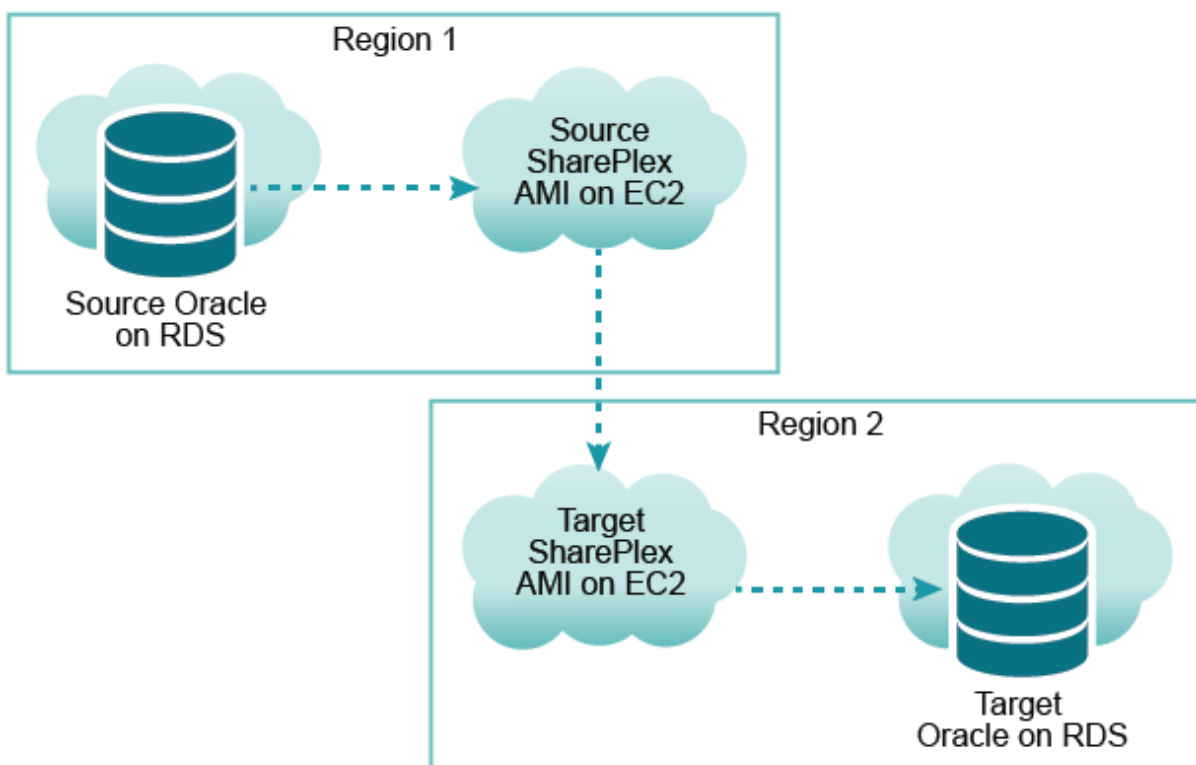
```
datasource:o.source
```

```
splex.demo_src splex.demo_dest shareplex_ec2_host.amazonaws.com@o.target
```

## Setup for RDS source, RDS target in different regions

In this scenario, SharePlex runs as an EC2 Amazon Machine Image instance in two different AWS regions: one for the source database in region 1 and the other for the target database in region 2.

- Capture (in region 1) connects through TNS only to the **source** database to capture redo records through a remote connection.
- Post (in region 2) connects through TNS only to the **target** database to post the replicated operations through a remote connection.





### Obtain SharePlex instances

Obtain two SharePlex AMI instances, one in region 1 to use as the source and the other in region 2 to use as the target. See [Configure a SharePlex AMI instance](#) on page 8.

### Log on to the SharePlex AMI instances

Always log on to the SharePlex AMI instance as the **ec2-user**. This user is the SharePlex Administrator. Use the following command:

```
ssh -i ~/ssh/pem_file_name.pem ec2-user@IP_address/hostname
```

where:

- *pem\_file\_name* is the name of the **.pem** file that you downloaded, which contains the private key of the security key pair.
- *IP\_address/hostname* is either the IPv4 public IP address or, if present, the host name that is mapped to this IP address in your domain name server or **/etc/hosts** file.

### Create the tnsnames.ora files

#### IMPORTANT!

The **tnsnames.ora** file must be created in this directory: **/usr/lib/oracle/11.2/client64/network/admin**.

The TNS alias cannot contain any dashes (-).

1. On the **source** SharePlex AMI instance, create a **tnsnames.ora** file with an entry for the **source database**.

The following is an example:

```
source =
  (DESCRIPTION =
    (ADDRESS = (PROTOCOL = TCP)(HOST = yoursource.amazonaws.com) (PORT =
1521))
    (CONNECT_DATA =
      (SERVICE_NAME=orcl)
    )
  )
```

2. On the **target** SharePlex AMI instance, create a **tnsnames.ora** file with an entry for the **target database**. The **tnsnames.ora** file must be created in this directory: **/usr/lib/oracle/11.2/client64/network/admin**.

The following is an example:

```
target =
  (DESCRIPTION =
    (ADDRESS = (PROTOCOL = TCP)(HOST = yourtarget.amazonaws.com) (PORT =
1521))
    (CONNECT_DATA =
      (SERVICE_NAME=orcl)
    )
  )
```

### Run ora\_setup

1. On the **source** SharePlex AMI instance, run **ora\_setup** for the **source database**. See the directions for running Oracle Setup in [Database Setup for Oracle](#) on page 27.

- Reply **NO** to "Will SharePlex install be using a BEQUEATH connection?"
  - Reply **YES** to "Are you setting up SharePlex for an RDS database?"
  - Reply **YES** to "Will the current setup for sid: *SID* be used as a source (including cases as source for failover or primary-primary setups)?"
2. On the **target** SharePlex AMI instance, run **ora\_setup** for the **target** database.
    - Reply **NO** to "Will SharePlex install be using a BEQUEATH connection?"
    - Reply **YES** to "Are you setting up SharePlex for an RDS database?"
    - Reply **NO** to "Will the current setup for sid: *SID* be used as a source (including cases as source for failover or primary-primary setups)?"

### **Configure capture from RDS**

1. On the **source** SharePlex AMI instance, start **sp\_cop**.
2. Start **sp\_ctrl**.
3. Set the SP\_OCT\_OLOG\_RDS\_MINER parameter to **1** to enable it.

```
sp_ctrl>set param SP_OCT_OLOG_RDS_MINER 1
```

**NOTE:** Enabling the SP\_OCT\_OLOG\_RDS\_MINER parameter is deprecated and no longer supported starting with Oracle 19c.

### **Set up routing in the configuration file**

When you create the SharePlex configuration file, create it on the **source** SharePlex AMI instance. Use the name of the EC2 host of the **target** SharePlex AMI instance in the routing map, so that Post runs on that AMI. The following is an example:

**datasource:o.source**

**splex.demo\_src splex.demo\_dest shareplex\_ec2\_host.amazonaws.com@o.target**

---

# Database Setup for Oracle

## Overview

Use the Database Setup utility for Oracle (**ora\_setup**) to establish SharePlex as an Oracle user and create the required SharePlex database objects. This setup utility creates the following:

- A SharePlex account
- Tables and other objects for use by SharePlex and owned by the SharePlex account
- Default connection for the SharePlex user

It is recommended that you review all of the content in this topic before running the setup utility.

## Supported databases

Oracle source or target on supported platforms

## When to run Oracle Setup

Whether or not to run this utility at the time of SharePlex installation depends on whether the database is a source, intermediary, or target database, and on how you intend to synchronize the data. To view the initial synchronization procedures, see the SharePlex [Administration Guide](#).

System Type	When to run Oracle Setup
Source system	During installation of SharePlex
Intermediary system	An intermediary system is used in a cascading configuration, where SharePlex replicates data to a remote system (or systems) and then sends that data from the intermediary system to the final target. If you intend to configure SharePlex to post data to a database on an

System Type	When to run Oracle Setup
	intermediary system, and you intend to use a hot backup to establish the data on that system and the target, do not run the Database Setup utility on the intermediary or target systems. You will run it when you perform the initial synchronization procedure.
Target system	<p>Depends on the method that you will use to synchronize the source and target data when you are ready to activate replication:</p> <ul style="list-style-type: none"> <li>◦ If you intend to use transportable tablespaces or a cold copy (such as export/import, store/restore from tape, FTP), run the Database Setup utility during SharePlex installation.</li> <li>◦ If you intend to use a hot backup to establish the target data, <i>do not</i> run the Database Setup utility. You will run it when you perform the initial synchronization procedure.</li> </ul> <p><b>NOTE:</b> If you run the Database Setup utility before the backup and recovery, the setup gets overwritten, and you will need to re-run it again after the backup and recovery.</p>

## Supported Oracle Connections

The setup utility can configure any of the following connections for the SharePlex user to use when connecting to the database.

Database type	Connection
Database with or without ASM	Bequeath
Database with or without ASM	TNS alias (A TNS login is specified for both the database and the ASM instance.)
PDB with ASM	TNS alias for the PDB and either TNS or bequeath for the ASM instance.
Amazon RDS	TNS alias

## Required run privileges

The user who runs the Database Setup utility must have the following privileges:

### **Amazon RDS source or target**

The user who runs the setup utility must be the primary user that was created when the Oracle RDS instance was created. You are prompted for this user during the setup.

### **Non-multitenant (standard) database**

The user who runs the setup utility must have DBA privileges.

### Multitenant database

The user who runs the setup utility should have SYSDBA privileges (recommended), but at minimum the user should be a DBA user with privileges for **sys.users\$** and **sys.enc\$**. The minimum following grants are required for the SharePlex user:

```
create user c##sp_admin identified by sp_admin;  
grant dba to c##sp_admin container=ALL;  
grant select on sys.user$ to c##sp_admin with grant option container=ALL;
```

## Privileges granted to SharePlex

The Database Setup utility grants to the SharePlex database user the following privileges.

Privilege granted	Description
DBA role	The Database Setup utility grants DBA role and unlimited resource privileges, tablespace privileges, and read privileges to the redo logs.
Default Oracle profile	By default this profile has the unlimited resource privileges originally assigned by Oracle.
Grants	The following grants are issued to SharePlex: <ul style="list-style-type: none"><li>To access the data dictionary (outside the DBA roles) if O7_DICTIONARY_ACCESSIBILITY is set to FALSE: <b>grant select any dictionary toSharePlexUser;</b></li><li>To replicate DDL: <b>grant select any table toSharePlexUserwith admin option;</b> <b>grant create any view toSharePlexUserwith admin option;</b></li></ul>

## Privileges Required by SharePlex to Perform Replication

The following is a list of privileges required by SharePlex to perform replication. If you revoke the DBA role for the SharePlex database user, ensure these privileges are granted.

Privilege	Details
CREATE SESSION	
ALTER SESSION	
ALTER SYSTEM	
RESOURCE role	RESOURCE role privileges required by SharePlex: <ul style="list-style-type: none"><li>CREATE TRIGGER</li></ul>

Privilege	Details
	<ul style="list-style-type: none"> <li>• CREATE SEQUENCE</li> <li>• CREATE TYPE</li> <li>• CREATE PROCEDURE</li> <li>• CREATE CLUSTER</li> <li>• CREATE OPERATOR</li> <li>• CREATE INDEXTYPE</li> <li>• CREATE TABLE</li> </ul>
SELECT ANY DICTIONARY	
SELECT ANY TABLE	
INSERT ANY TABLE	
UPDATE ANY TABLE	
DELETE ANY TABLE	
UNLIMITED TABLESPACE	
CREATE ANY TABLE	
DROP ANY TABLE	
LOCK ANY TABLE	
EXECUTE ON DBMS_FLASHBACK	
SELECT ANY TRANSACTION	
CREATE ANY INDEX	
DROP ANY INDEX	
ALTER ANY TABLE	
ALTER ANY INDEX	
CREATE ANY VIEW	
ALTER ANY SEQUENCE	
EXP_FULL_DATABASE role	
IMP_FULL_DATABASE role	
SELECT ON SYS.ENC\$	
SELECT ON SYS.USER\$	

## Requirements

- Install the database client on the system where you are running Oracle Setup. Consult the Oracle documentation for the appropriate client version to use with the database.

- Run the Database Setup utility for all source and target Oracle instances in the SharePlex replication configuration.
- Within a cluster, run the Database Setup utility on all nodes of the cluster. This ensures that the SharePlex settings in the Windows Registry include the correct ORACLE\_SID.
- For a consolidated replication topography, or other topology with multiple variable-data directories, run the Database Setup utility for each variable-data directory.
- SharePlex supports local BEQUEATH connections or remote connections using a TNS alias. Be prepared to supply Oracle Setup the needed connection values for whichever connection you want to use. If using TNS, the **tnsnames.ora** file must be configured prior to running setup.
- If the Oracle database is a multitenant container database, run the Database Setup utility for each pluggable database involved in a replication scenario. A SharePlex user and schema objects must exist in each PDB.
- If you run the Database Setup utility when there is an active configuration, the DDL that the setup performs to install or update the SharePlex internal tables will be replicated to the target. To work around this issue, set the **SP\_OCT\_REPLICATE\_ALL\_DDL** parameter to **0** before running the utility, then return the parameter to its previous setting after the setup is complete. This parameter takes effect immediately.

## SharePlex schema storage requirements

The Database Setup utility for Oracle installs some database objects for use by SharePlex. The storage requirements for these objects should be satisfied before running Oracle Setup. See the following table.

Storage	Description
SharePlex objects tablespace	<p>The Database Setup utility installs some tables into a tablespace of your choosing. All but the SHAREPLEX_LOBMAP table use the default storage settings of the tablespace.</p> <p>The SHAREPLEX_LOBMAP table contains entries for LOBs stored out-of-row. It is created with a 1 MB INITIAL extent, 1 MB NEXT extent, and PCTINCREASE of 10. The MAXEXTENTS is 120, allowing the table to grow to 120 MB.</p> <p><b>Preferred action:</b> If you enable supplemental logging for primary and unique keys, you can set the SP_OCT_ENABLE_LOBMAP parameter to 0, and nothing will be stored in the SHAREPLEX_LOBMAP table. In this case, you do not have to consider its size growth. It is recommended that you enable supplemental logging for primary and unique keys to maximize the performance of the Read process.</p> <p><b>Alternate action:</b> The default storage usually is sufficient for SHAREPLEX_LOBMAP, permitting more than 4 million LOB entries. If the Oracle tables to be replicated have numerous LOB columns that are inserted or updated frequently, consider increasing the size the SharePlex tablespace accordingly. Take into account that this table shares the tablespace with other SharePlex tables.</p> <p>If the database uses the cost-based optimizer (CBO) and the tables that SharePlex processes include numerous LOBs, incorporate the SHAREPLEX_LOBMAP table into the analysis schedule.</p> <p><b>NOTE:</b> A new installation of SharePlex does not change storage parameters from a previous installation.</p>

Storage	Description
SharePlex temporary tablespace	The Database Setup utility prompts for a temporary tablespace for SharePlex to use for sorts and other operations, including sorts performed by the <b>compare</b> commands. The default temporary tablespace is the one where the SharePlex objects are installed. If you plan to use the <b>compare</b> commands to compare large tables, especially those without a primary or unique key, specify a dedicated temporary tablespace for SharePlex.
SharePlex index tablespace	The Database Setup utility prompts for a tablespace to store the indexes for the SharePlex tables. The default index tablespace is the one where the SharePlex objects are installed. To minimize I/O contention, specify a different index tablespace from the one where the tables are installed. <b>NOTE:</b> If indexes from a previous version of SharePlex are installed in the SharePlex objects tablespace, you can move them to a different tablespace and then specify that tablespace when you run the setup utility.

## Run Database Setup for Oracle

**IMPORTANT!** The Oracle instance must be open before this procedure is performed.

1. (Unix and Linux only) If you are using multiple variable-data directories, export the environment variable that points to the variable-data directory for the SharePlex instance for which you are running Database Setup.

**ksh** shell:

```
export SP_SYS_VARDIR=full_path_of_variable-data_directory
```

**csh** shell:

```
setenv SP_SYS_VARDIR=full_path_of_variable-data_directory
```

2. Shut down any SharePlex processes that are running, including **sp\_cop**.
3. Run the Database Setup program from the command prompt of the operating system, using the full path from the SharePlex **bin** subdirectory.

**IMPORTANT!** On Windows, if you installed SharePlex on any port other than the default of 2100, use the **-p** option to specify the port number. For example, in the following command the port number is 9400:

```
C:\users\splex\bin>ora_setup -p9400
```

4. Specify whether the system is a source system, a target system, or both a source and target system in the SharePlex configuration.

**NOTE:** This prompt only appears the first time that you run setup for this database.

5. For connection type, select **Oracle**.
6. Refer to the following table for the prompts and responses to configure SharePlex correctly for the desired connection type.



**Table 1: Setup prompts and response**

Prompt	Response
Will SharePlex install be using a BEQUEATH connection? (Entering 'n' implies a SQL*net connection):	Press <b>Y</b> to use a local BEQUEATH connection, or press <b>N</b> to use a TNS alias connection. <b>NOTE:</b> Press <b>N</b> to use a <b>TNS alias</b> if: <ul style="list-style-type: none"><li>the database is a multitenant database</li><li>SharePlex is capturing from, or posting to, a remote database, such as one on Amazon RDS.</li><li>the database is in a cluster (such as Oracle RAC)</li></ul>
Are you configuring SharePlex for an AWS RDS database?	Press <b>N</b> if you are not configuring SharePlex for an Oracle database on RDS. Press <b>Y</b> if you are configuring SharePlex for an Amazon AWS RDS database.
One of the following prompts is shown: <ul style="list-style-type: none"><li>If you selected BEQUEATH= Y: Enter the Oracle SID for which SharePlex should be installed:</li><li>If you selected BEQUEATH = N: Enter the TNS alias for which SharePlex should be installed:</li></ul>	<b>Non-multitenant database:</b> Accept the default or type the correct SID or TNS alias. On RAC, the TNS alias must be a global alias. <b>Multitenant database:</b> Type the TNS alias of the PDB. <b>Amazon RDS:</b> Type the TNS alias of the RDS database.
One of the following prompts is shown: <ul style="list-style-type: none"><li>If the database is not on RDS: Enter a DBA user for <i>SID</i>:</li><li>If the database is on RDS: In order to create the SharePlex tables and user account, we must connect to the RDS database using the RDS primary user.</li></ul>	<b>Non-multitenant database:</b> Type the name of a database user that has DBA privileges. <b>Multitenant database:</b> Type the name of a common user who has the required privileges to install the account and objects. <b>Amazon RDS database:</b> Type the name of the RDS primary user.
One of the following prompts is shown:	<b>Non-multitenant database:</b> Type the password of the DBA user.

Prompt	Response
<ul style="list-style-type: none"> <li>If the database is not on RDS: Enter password for the DBA account, which will not echo:</li> <li>If the database is on RDS: Enter the password for the RDS primary user, which will not echo.</li> </ul>	<p><b>Multitenant database:</b> Type the password of the common user. Omit the @ and the rest of the connect string. SharePlex constructs the connect string in the proper format.</p> <p><b>Amazon RDS database:</b> Type the password of the RDS primary user.</p>
<p>Current SharePlex user is <i>user</i>. Would you like to create a new SharePlex user?</p>	<p>Press <b>N</b> to update an existing SharePlex account or <b>Y</b> to create a new SharePlex account. Type the credentials when prompted.</p> <p>You are allowed five attempts to type a valid password for an existing SharePlex user. Passwords are obfuscated.</p> <p><b>IMPORTANT!</b> If there is an active configuration and you changed the SharePlex schema, copy the SharePlex objects from the old schema to the new one to preserve the replication environment.</p>
<p>Do you want to enable replication of tables with TDE?</p>	<p>Press <b>N</b> since TDE is not supported for RDS.</p>
<p>Enter the default tablespace for use by SharePlex:</p>	<p>Press <b>Enter</b> to accept the default or type the name of a different tablespace.</p>
<p>Enter the temporary tablespace for use by SharePlex:</p>	<p>Press <b>Enter</b> to accept the default or type the name of a different tablespace.</p>
<p>Enter the index tablespace for use by SharePlex:</p>	<p>Press <b>Enter</b> to accept the default or type the name of a different tablespace.</p>
<p>Will the current setup for sid: <i>SID</i> be used as a source (including cases as source for failover or primary-primary setups)?</p>	<p>Press <b>Y</b> if this is a source system or press <b>N</b> if this is a target system. <b>IMPORTANT:</b> All systems in a primary-primary configuration (peer-to-peer) and in a high-availability configuration are considered to be source systems due to the bidirectional nature of the replication.</p>

**NOTE:**

**Prompt****Response**

- The following prompts are only shown if the database is a source on ASM.
- If this is an Oracle target, the setup is now complete.

ASM detected. Do you wish to connect to ASM using BEQUEATH connection?

Press **Y** for SharePlex to use a BEQUEATH connection to connect to the ASM instance, or press **N** to use a TNS alias.

**IMPORTANT!** If the database uses ASM *and* the database TNS alias is configured with a SCAN IP, then you must specify connection through an ASM TNS alias in order for SharePlex to connect to the ASM instance.

The following prompt is displayed if you did not select a BEQUEATH connection:

Do you wish to keep connecting using the same user/password?

Press **Y** to use the same user and password as the login user, or press **N** to be prompted for a different user and password.

Normally the user running SharePlex must be a member of the OSASM group. This does not apply if SP\_OCT\_OLOG\_USE\_OCI is set to the non-default value of 1.

Also if you are using a BEQUEATH connection, the user running SharePlex must be a member of the OSDBA group.

**NOTE:** If you selected to use a BEQUEATH connection to connect to ASM, the database setup is complete. Continue to [Note about the tnsnames file](#).

If you selected **N**, you need to supply a TNS alias, and the prompts continue.

Enter the ASM tns alias to be used by SharePlex:

Type the name of the TNS alias.

Enter an ASM admin (has both sysdba and sysasm privilege) username for alias:

Type the name of a user with sysasm and sysdba privileges to the ASM instance.

Enter user password for user:

Type the password of the user.

SharePlex installs internal objects that include a package to support the SDO\_GEOMETRY data type of the Oracle Spatial and Graph option. If this option is not installed in the database, the following prompt is

Press **Y** to continue the database setup without support for SDO\_GEOMETRY, or press **N** to terminate **ora\_setup**.

**Prompt****Response**

---

shown:

```
The SharePlex object that supports
replication of SDO_GEOMETRY cannot be
installed because the Oracle Spatial and
Graph feature is not installed. Do you
want to continue with the setup without
support for SDO_GEOMETRY? [n]:
```

**Note about the tnsnames file**

When you set up SharePlex for database connection through a TNS alias and ASM connection locally through a BEQUEATH connection (through OS authentication), it is important to set up the **tnsnames.ora** file correctly on each node. Assuming a SharePlex database account exists on the primary node, SharePlex will always connect to the primary ASM\_SID automatically because it was provided when SharePlex was installed. However, upon failover, SharePlex must query the local **v\$asm\_client** view to get the correct ASM\_SID of the failover instance. Therefore, ensure that the IP address of a given node is always listed first in the local **tnsnames.ora** file on that node.

---

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