

# Oracle Communications RODOD Reference Solution Getting Started Guide

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# Contents

Executive Summary.....	1
Document Audience .....	1
Purpose of the RODOD Reference Solution.....	1
When Do I Use the Unattended Install Scripts? .....	1
Understanding License Terms for the RODOD Reference Solution .....	2
Runtime Installation Steps .....	3
Prerequisites .....	3
Oracle Enterprise Linux.....	4
Target Hosts Minimum Hardware Requirements.....	4
Oracle Communications Applications Requirements .....	5
Technology Version Requirements .....	6
Versions, Patch Sets, and Certified Lineups.....	6
Application Patches.....	6
Upgrades .....	7
Acquiring the License Media and Third Party Components .....	7
Third Party Components .....	8
Download and Prepare Install Media .....	9
Optional Configuration .....	9
Example.....	9
Target Hosts .....	10
Installer Workstation .....	12
Media Server .....	12
Oracle AIA Hosts .....	12
OSM Host(s) .....	13

Siebel CRM Host.....	14
BRM Host .....	15
PDC Host .....	16
Appendix A: Setting Up the Target Hosts .....	17
Updating the Linux Kernel Parameters .....	17
Setting Process Limits .....	17
Setting Open File Limits .....	17
Setting Up Hosts File .....	18
Updating the Target Operating System .....	18
Setting Up the OS User .....	19
Add User to DBA Group .....	19
Granting Sudo Access to OS User.....	19
Setting Up the Host Name .....	20
Setting Up the File System .....	20
Installing the Prerequisite Linux Packages.....	21
Additional Configurations .....	22
Add JAR Link to /usr/bin/ Directory .....	22
Add Host Name to /etc/hosts .....	23

## Executive Summary

The Oracle Communications Rapid Offer Design and Order Delivery (RODOD) Reference Solution is a set of concept-to-cash reference and sample materials. The RODOD Reference Solution installs and configures the licensed applications and validates key concept-to-cash business processes. The RODOD Reference Solution is intended to speed first-time installation and time-to-market for new projects. By defining a standard solution, Oracle is reducing the up-front installation, configuration, cost, complexity, risk, and overall time-to-market.

## Document Audience

This document outlines the use of our reference materials when deploying applications for the RODOD Concept to Cash solution. The topics of this document are focused on:

- Installation and deployment considerations
- Initiating new projects using the RODOD reference materials

This document covers basic operational management of the RODOD solution stack, component applications, and the underlying technology stack. This document does not cover administrative activities, nor does it cover individual applications in any detail.

## Purpose of the RODOD Reference Solution

The reference materials are intended to speed the first-time installation and time-to-market for new projects based on the RODOD products. By defining a standard solution, Oracle is reducing the up-front installation, configuration, cost and complexity, risk and overall time-to-market.

**IMPORTANT: This installation of RODOD is NOT secure by default, and it should not be used for live customer data until it is configured to be secure. Before using RODOD in a production environment, you MUST configure each application according to its secure installation guidelines.**

## When Do I Use the Unattended Install Scripts?

The RODOD Reference Solution unattended installation scripts are used to deploy all the components of the RODOD Reference Solution. The unattended installation scripts are ideal for the following cases:

- New installations of RODOD Reference Solution in a clean environment (no legacy software)

- Any type of system integration, testing, development, demo, proof-of-concept environment that needs to be self-contained – the unattended installation scripts will give you a fully working system
- Starting a production environment or any integrated or live IT/network environment – the unattended installation scripts will require you to complete manual steps for these to be fully working

Any time you need to quickly establish a standard, working RODOD Concept to Cash solution, the unattended installation scripts should be your tool of choice.

## Understanding License Terms for the RODOD Reference Solution

Oracle applications are provided under commercial licenses but can be acquired under more restricted development and internal use licenses and for evaluating applications. Consult with your Oracle Communications license sales representative to understand the license terms for your Oracle applications.

Oracle Gold and Platinum Partners may be provided Oracle licenses for developing Value Added Packages. Refer to your Oracle Partner Network (OPN) Agreement.

At all times, existing customers are entitled to our most current Generally Available applications and may use their existing license terms to acquire the newer versions for internal evaluation. Consult with your license sales representative if you are evaluating an upgrade from your current license versions.

For customers, or partners, who have acquired our commercial license applications, the RODOD Reference Solution is provided as a set of non-commercial (not on the price list) references distributed under separate terms from the applications which you accepted when you download the materials from the Oracle Technology Network (OTN).

Understanding the RODOD Reference Solution Packages from OTN site

The RODOD Reference Solution contains the following packages on the Oracle Technology Network (<http://www.oracle.com/technetwork/apps-tech/communications/rodod/overview/index.html>):

- **RODOD Reference Solution Install Kit**  
This package contains the install scripts and Reference data required for the RODOD deployment.

## Runtime Installation Steps

To install the server runtime environment using the unattended installation scripts, use the following procedure. This process typically requires a day to download the software (after obtaining access to any necessary archived versions through service requests to Oracle Support), and to set up the media server. This is followed by one or two days to set up the target hosts, to set up the Installer Workstation, and to execute the unattended installation scripts.

1. Review the [Prerequisites](#) section of this document, including the required licenses.
2. Download the *RODOD Media Map software locations* spreadsheet, and collect the media on a local media server. (The *RODOD Media Map software locations* spreadsheet is a list of all the Oracle components you require and where to get them officially. The media map also includes a list of third party components that are needed. These third party components are not provided by Oracle.)
3. Before initiating your install, decide on your host environments. These details have to be configured in the **rodod\_poc** file prior to the installation. See the [Target Hosts Minimum Hardware Requirements](#) sections of this document if you do not know.
4. The *RODOD Reference Solution Installation Guide* includes instructions on extracting the unattended installation scripts on the Installer Workstation where they will be configured and executed. Adjust the **rodod\_poc** file with the topology configuration and the other host details, and adjust the **knobs** file for the install script for each component to reflect any other changes. In general, you should only need to adjust major knobs for each component. The **knobs** files are the configuration files within the unattended installation scripts.
5. After you have decided on your hardware, set up your target hosts. See [Appendix A: Setting Up the Target Hosts](#).
6. Install each component for your desired deployment configuration by following the steps in the *RODOD Reference Solution Installation Guide*.

The unattended installation scripts provide a minimal, automated install of the RODOD Reference Solution suitable for development, integration, testing, prototypes, and demonstrations. After installation, you can work with a self-contained Oracle fulfillment system that is pre-configured with the RODOD Reference Solution and samples. You will have working sample orders suitable for initiating new projects or for rapid demonstration and training.

## Prerequisites

- Hardware
- Licensed Applications
- Set of media for the unattended installation scripts.

## Oracle Enterprise Linux

The unattended installation scripts can be used to install on environments based on the Oracle Enterprise Linux (Linux) operating system.

The RODOD install scripts rely on command line utilities packaged within the Linux distributions including:

- **Bash**, version 4.1.2 or later, by the GNU project, licensed under GPL <https://www.gnu.org/software/bash/>
- **Curl**, version 7.19.7-46 or later, under <http://curl.haxx.se/download.html>
- **Perl**, version 5.24.0 or later by Larry Wall and Perl.org, licensed under the Artistic license or GPL <http://dev.perl.org/licenses/>
- **perl-xml-xpath-1.13** by 2000 AxKit.com Ltd. is licensed under the Artistic License <http://search.cpan.org/~msergeant/XML-XPath-1.13/XPath.pm>
- **Firefox version 60.0** or later licensed under Mozilla Public License 2

These packages are subject to separate license terms but are needed for the RODOD install scripts to run. Review [Appendix A](#), which outlines the full set of packages you need to acquire for your Linux Target Host(s) beyond those provided in the default Linux distributions.

If you are using an operating system that is not based on Linux, such as Solaris, you must *manually* install the applications by following their individual installation guides. You may manually install the RODOD reference data after you have installed the applications.

Review [Appendix A](#), which outlines the packages you need to acquire for your Linux Target Host(s).

## Target Hosts Minimum Hardware Requirements

The following table lists the target hosts minimum hardware requirements.

Purpose	Operating System	Arch	Memory	Deployments
Siebel CRM host	Oracle Linux 6.9+ or 7.4+ version	x86-64	16GB with 350GB storage 64 GB swap	Oracle Database, Siebel CRM
BRM and PDC host	Oracle Linux 6.9+ or 7.4+ version	x86-64	16GB with 200GB storage 32 GB swap	Oracle Database, BRM, Oracle Management Agent



Oracle AIA host	Oracle Linux 6.9+ or 7.4+ version	x86-64	16GB with 150GB storage 64 GB swap	Oracle Database, FMW, Oracle AIA, pre-built integrations, Oracle Data Integrator(ODI)
OSM host	Oracle Linux 6.9+ or 7.4+ version	x86-64	16GB with 150GB storage 64GB swap	Oracle Database, FMW, OSM, Oracle Management Agent
Installer Workstation and Media server	Oracle Linux 6.9+ or 7.4+ version	x86-64	10GB with 400GB storage 32 GB swap	Manageable Install Kit, Installation Media Files
Development desktop	Windows 10	x86-64	8GB	Oracle Database Client, FMW, OSM SDK, Design Studio, Siebel Tools, JDeveloper, SQL Developer

The minimum machine configuration is intended to support only a small scale deployment for solution development, integration test, and demonstration purposes. Larger machines with more memory, processors, and storage will need to be scaled for production deployments.

## Oracle Communications Applications Requirements

The RODOD Reference Solution installs the following application lineup by default:

SNO	Applications Required
1	<b>Siebel CRM (+ Database)</b>
2	<b>BRM (WebLogic Server + Database)</b>
3	<b>OSM (WebLogic Server + Database)</b>
4	<b>Oracle AIA Middleware (WebLogic Server + Oracle Service Oriented Architecture (SOA) Suite + Database)</b>
5	<b>PDC (WebLogic Server + Database)</b>
6	<b>Agent Assisted Billing Care pre-built integration (+ Oracle Data Integrator)</b>

7	Order to Cash pre-built integration
8	OSM Order to Activate CSO/Typical Cartridge

These commercial license applications are packaged separately from the RODOD Reference Solution documents and unattended installation scripts. You must acquire the applications with a valid license through Oracle Software Delivery Cloud (eDelivery). See the *RODOD Media Map software locations* spreadsheet for the most up-to-date application versions and where to get them.

## Technology Version Requirements

Be aware of the following technology versions used by the applications or scripts:

Component	Version	Depends On	Comment
Oracle Database	12cR2	Linux	Server
Java Development Kit (JDK)	1.8.0_181 or newer	Linux, Windows, Solaris	64-bit
Fusion Middleware (SOA/Fusion Middleware)	12.2.1.3.0	Linux, Oracle Database Server	WebLogic Server 12.2.1.3.0
JBoss Cache	1.4.1.SP13		Third party software required by OSM

## Versions, Patch Sets, and Certified Lineups

The single most critical factor for success is to deploy the Oracle Communications solutions using our approved and certified application lineups. We test, validate, and certify specific lineups to ensure the lowest risk path for our customers.

After a certified lineup is installed, customers must apply patch sets and patches as they become available.

## Application Patches

Often applications release critical patch updates (CPU) that are made available on My Oracle Support (MOS). This is true of the Oracle Communication applications as well as the underlying technology lineup. Be sure to acquire the most up-to-date CPU from MOS for all applications, including WLS and Database components.

To get the most up-to-date CPU from MOS:

1. In a Web browser, go to <https://support.oracle.com> and log in.
2. Click the **Patches & Updates** tab.

3. In the Patch Search section, click the **Product or Family (Advanced)** search link.
4. In the **Product** field, enter the first few characters of a product name and then select one from the propagated list. For example, Oracle WebLogic Server.
5. From the **Release** list, select the appropriate release. For example, WLS 12.2.1.3
6. From the **Platform** list, select the appropriate platform. For example, Linux x86-64.
7. Select the **Show recommended patches only** check box.
8. Select the **Exclude superseded patches** check box.
9. Click **Search**.

The search result with the highest patch number or most recently updated is likely the desired patch set update.

## Upgrades

The RODOD Reference Solution is for new installations in a clean environment (no legacy software). The RODOD Reference Solution install scripts are provided as an accelerator and, unlike the applications, with no intended upgrade path from prior versions. **The install scripts do not upgrade your applications or an existing RODOD installation.**

- If you are using an earlier version of the RODOD Reference Solution, you are encouraged to reinstall and upgrade using the latest commercial application versions.
- If you have not installed the RODOD Reference Solution and if you are upgrading your applications to the supported, prerequisite lineups for the current release, you may manually install the RODOD Reference Solution, without the use of the unattended installation scripts. Consult with Oracle Communications Consulting.
- Previously installed applications not on the current release lineup must be upgraded.
  - See the application upgrade guidelines.

## Acquiring the License Media and Third Party Components

The RODOD Reference Solution unattended installation scripts are a set of Perl and Bash scripts. This does not provide the license applications or any third party components. Users of the RODOD Reference Solution are required to acquire and stage their media before using the unattended installation scripts. The *RODOD Media Map software locations* spreadsheet provides a list of all necessary media and how to stage them.

Oracle license applications are available through eDelivery and all export compliance and license terms must be respected. Customers must be licensed for the applications they are installing.

Follow all Oracle policies for distributing Oracle intellectual property, including the unattended installation scripts and RODOD Reference Solution materials as well as the materials of Oracle Communication Consulting.

## Third Party Components

Oracle does not have the right to distribute certain third party components. These third party components must be acquired through their respective sites. A list of third party components that must be acquired separately is listed for each application in the *RODOD Media Map software locations* spreadsheet.

## Download and Prepare Install Media

To prepare the installation media for use with the unattended installation scripts, the media for every component must be downloaded to the local file system of a media server machine that is accessible by scp protocol as an authenticated OS user from every target host machine.

On the machine where the unattended installation scripts are extracted for use, perform the following steps by editing the `<INSTALLER_HOME>/common/media_map` file. Modify the value of every variable that begins with `CGBU_SCP_MEDIA` to reflect the download location where the installation media can be found on the media server machine.

Do not assume that you can download from the public internet to your target hosts and media server. Be prepared to download media according the *RODOD Media Map Software Locations* spreadsheet and then transfer to your media server and target hosts. The scp protocol is recommended for moving files between machines.

## Optional Configuration

This section describes the optional configuration of media for the situation when the media file name has been changed on Oracle Support or eDelivery, but the media version remains the same. If the media file name has been changed for the RODOD RS certified version, you can update the `<INSTALLER_HOME>/common/media_pack_config.properties` file to reflect the new name.

### Example

OSM package name was **V47703-01.zip**, but due to a recent update the current package name of this same media is now **V860968-01.zip**. Configure this as shown below:

Existing media: **V47703-01.zip**

New Media: **V860968-01.zip**

Change the new media name in `<INSTALLER_HOME>/common/media_pack_config.properties` file from:

```
# MEDIA_NAME_OSM= V47703-01.zip
```

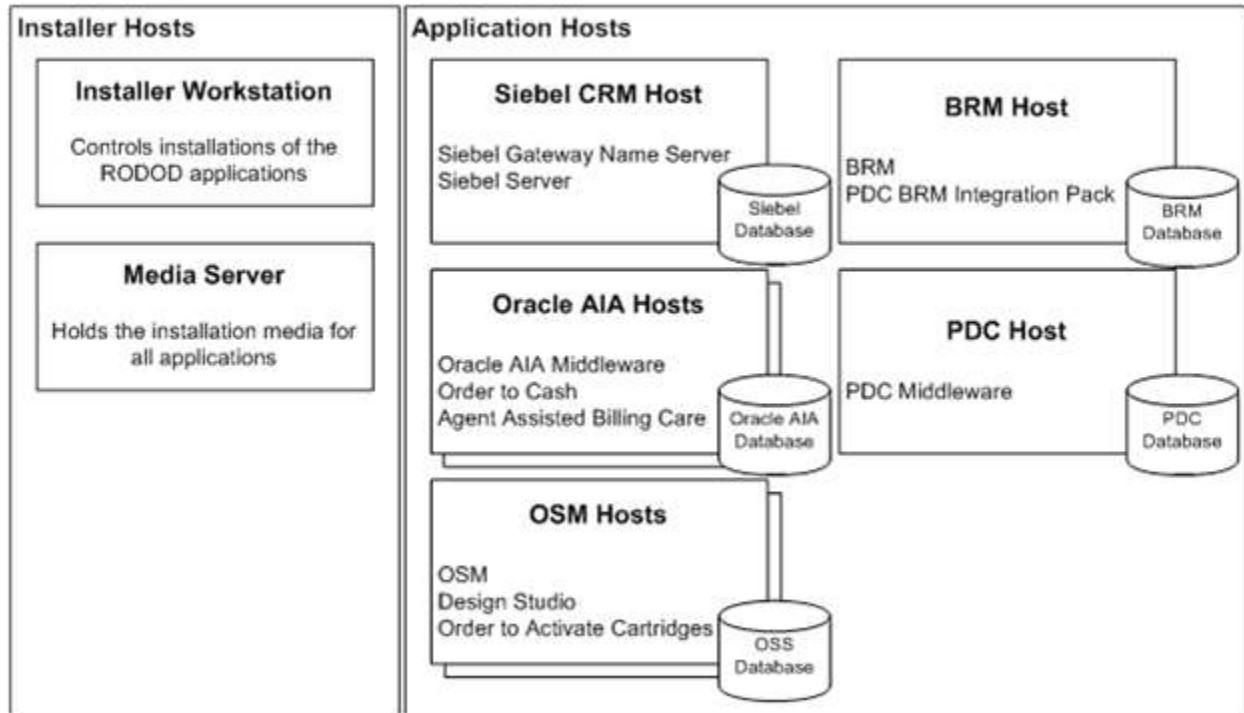
to:

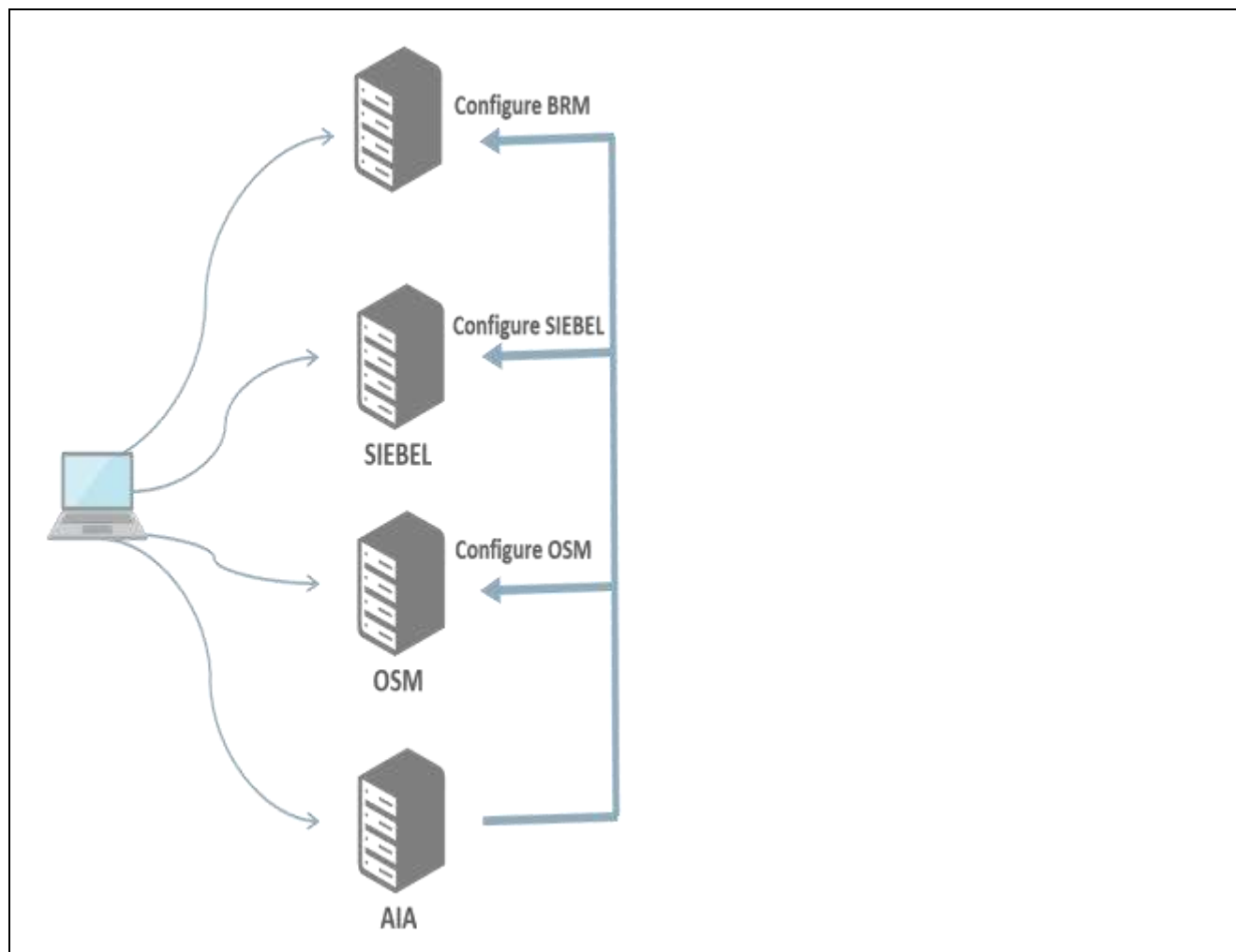
```
# MEDIA_NAME_OSM=V860968-01.zip
```

## Target Hosts

This section describes the target hosts, which are utilized for hosting the installation of RODOD applications using the unattended installation scripts.

- RODOD Reference Solution using individual edge applications





The RODOD application hosts are expected to have the following prerequisites:

- See [Target Hosts Minimum Hardware Requirements](#)
- Super user (for example, **root**) access (through **sudo**) to execute only the specific installation steps that require privileged access to files or operating system packages
- Command-line terminal (through ssh) with bash shell (for example, **bash**)
- Target host names must be less than 12 alphanumeric characters

See [Appendix A: Target Host Setup](#) for detailed information regarding setting up the target host.

## Installer Workstation

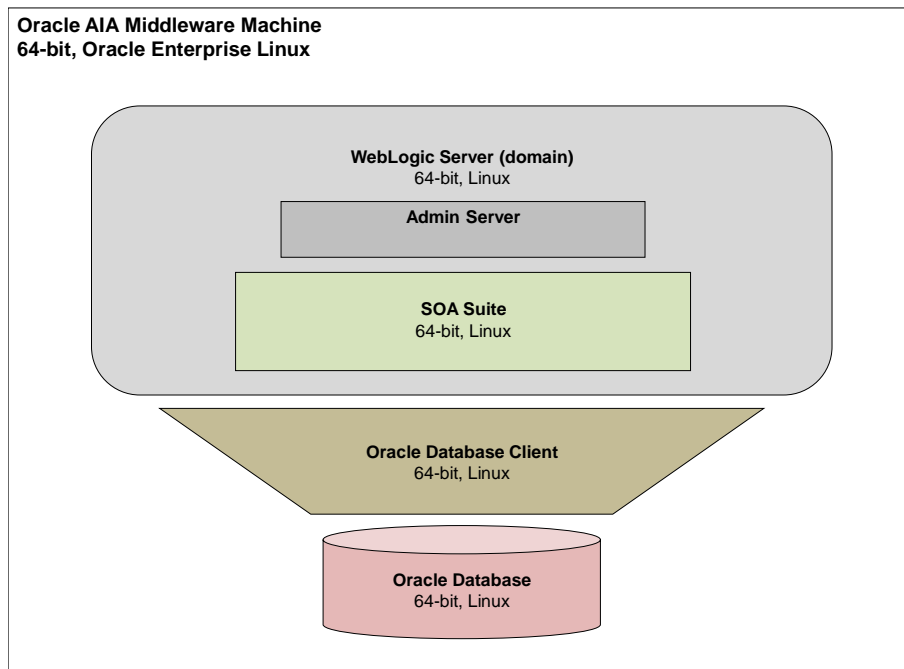
Installer Workstation is the host machine where the installation user will manually download the RODOD install kit and make use of it. Before launching the installation of any application using unattended installation scripts, the install parameterization has to be done by manually editing the **knobs** file for each application.

## Media Server

The media server is the host machine where the installation user will manually download all the installation media from Oracle and lay them out in a directory structure according to the *RODOD Media Map Software Locations* spreadsheet. The unattended installation scripts will later transfer these downloaded installation media files to the target hosts, where the RODOD applications will be installed.

## Oracle AIA Hosts

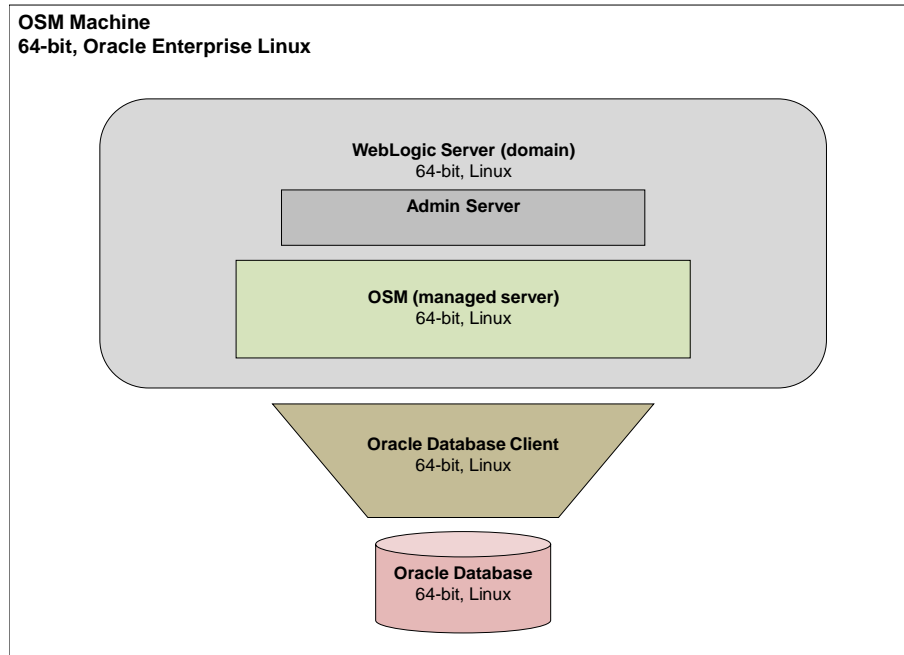
The unattended installation scripts will install Oracle AIA by default to include the Oracle Database, one WebLogic Admin Server, one WebLogic Node Manager, ODI, and Oracle AIA pre-built integrations on a single SOA managed server on the same host.





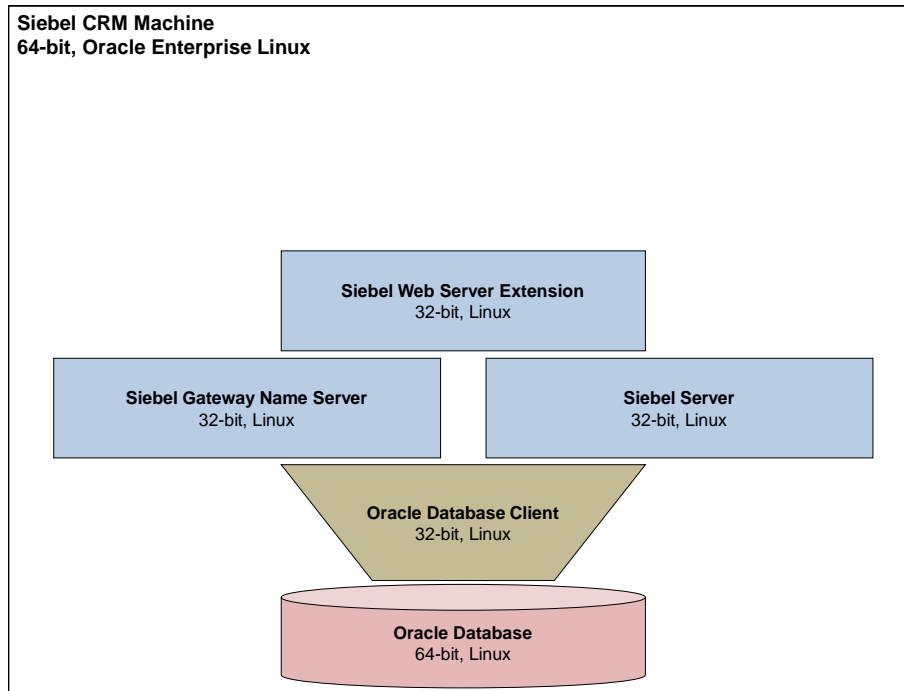
## OSM Host(s)

The unattended installation scripts will install OSM by default to include the Oracle Database, one WebLogic Admin Server, and an OSM managed server on the same host.



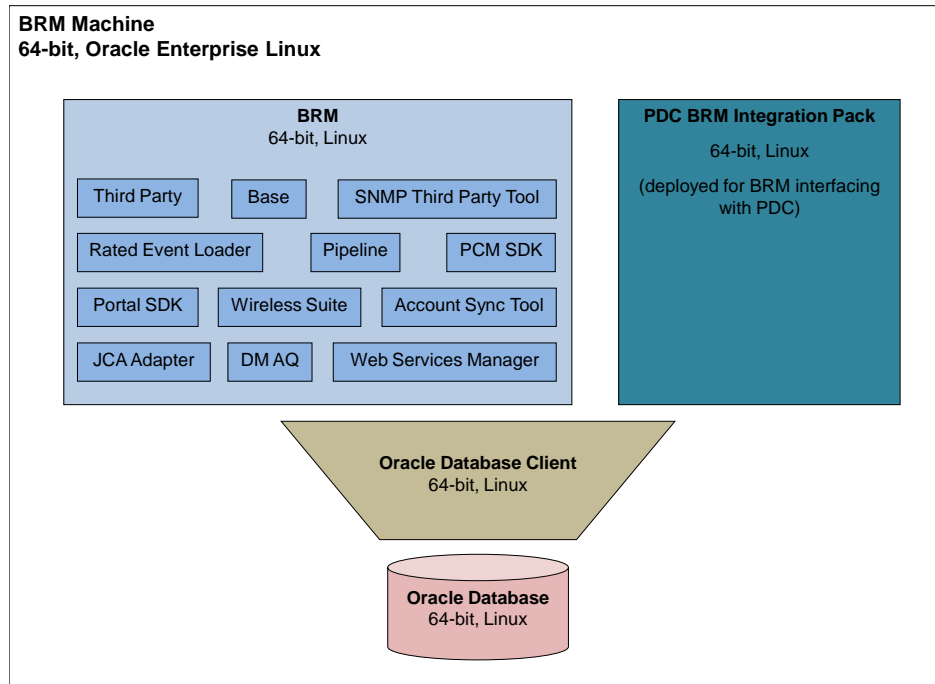
## Siebel CRM Host

The unattended installation scripts will install Siebel CRM by default to include the Oracle Database, one Siebel Gateway Name server, one Siebel server, and an Oracle HTTP server on the same host.



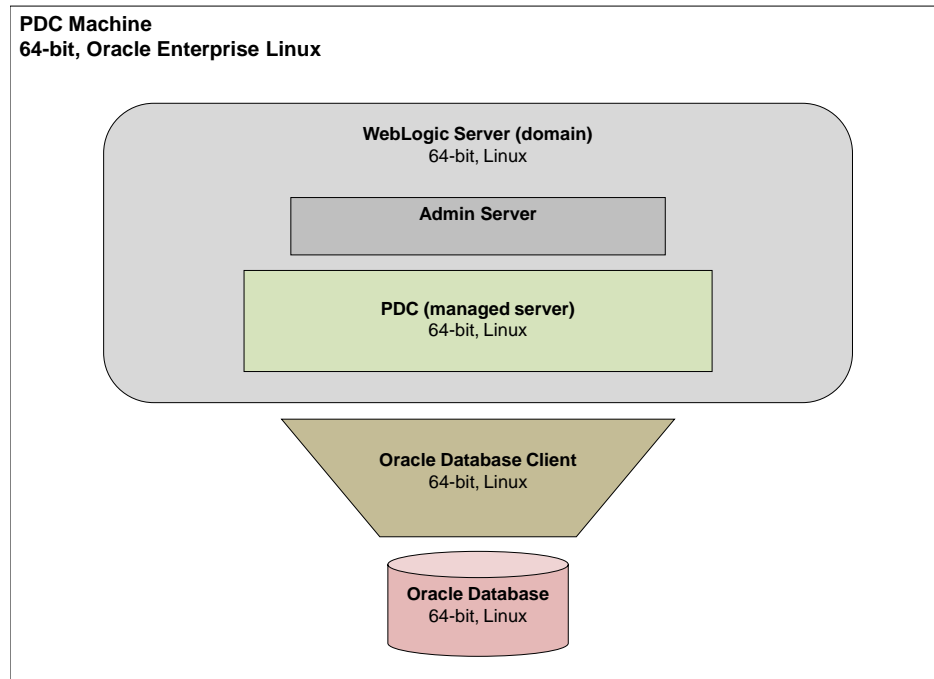
## BRM Host

The unattended installation scripts will install BRM by default to include the Oracle Database and BRM Components on the same host. The PDC BRM Integration Pack is also installed on the BRM Host.



## PDC Host

The unattended installation scripts will install by default Oracle Database, one WebLogic Admin Server, one WebLogic Node Manager, and one PDC Managed server on the same host. You can preconfigure the PDC install to use an existing Oracle database (on a remote host or the local host) instead of installing a new database instance. The PDC BRM Integration Pack gets installed on the BRM Host.



## Appendix A: Setting Up the Target Hosts

This section provides information regarding setting up the target hosts. You must execute this for each target host, which is at least four Linux Virtual Machines.

### Updating the Linux Kernel Parameters

To update the Linux kernel parameters, execute the following commands:

```
# sudo /sbin/sysctl kernel.msgmax=65536
# sudo /sbin/sysctl kernel.msgmnb=65536
# sudo /sbin/sysctl kernel.msgmni=2878
```

Make the kernel parameters permanent by editing this configuration file:

```
# sudo vi /etc/sysctl.conf
```

Append the following lines to the file:

```
kernel.msgmax=65536
kernel.msgmnb=65536
kernel.msgmni=2878
```

### Setting Process Limits

If the `/etc/security/limits.d/90-nproc.conf` file exists, edit the file to set the `nproc` limit to 249664.

```
sudo vi /etc/security/limits.d/90-nproc.conf
```

Change the right-most value of the following line:

```
*      soft      nproc      249664
```

Otherwise:

```
sudo vi /etc/security/limits.conf
```

Add the following line:

```
* soft nproc 249664
```

### Setting Open File Limits

Edit the following file:

```
sudo vi /etc/security/limits.conf
```

Find the following lines within that file:

```
* soft nofile 8192
* hard nofile 8192
```

Change those lines to the following:

```
* soft nofile 100000
* hard nofile 100000
```

## Setting Up Hosts File

Ensure the loopback address is set to localhost in **/etc/hosts** as shown below:

```
127.0.0.1 localhost
```

## Updating the Target Operating System

It is generally good practice to ensure that the target host operating software is up-to-date (to have the latest bug fixes and security fixes). Linux can be updated from the Oracle Unbreakable Linux Network (Oracle ULN) at <https://linux.oracle.com/>.

The yum tool that comes with Linux needs to be configured and operational. The repositories are configured in **/etc/yum.conf** and **/etc/yum.repos.d/\*.repo**. Ensure that the configured repositories are accessible through the network. The *http\_proxy* and *ftp\_proxy* environment variables may need to be set (such as <http://www-proxy.mydomain.com:80/>) to access the network. If the cached repository on the target host gets corrupted or otherwise broken, it can be reset using the command `/usr/bin/yum clean all`.

```
# sudo /bin/bash
(You may have to provide your Unix user password as prompted.)

# rpm -ivh /private/downloads/uln-internal-setup-
<version>.el6.noarch.rpm
```

The rpm can be downloaded as shown below :

For Example:

wget <http://kernel.us.oracle.com/uln/uln-internal-setup-3.0.1-0.el6.noarch.rpm>

Note: Update the appropriate version in above example.

Set the *http\_proxy* and *ftp\_proxy* environment variables to access the yum repositories on the public Internet.

```
# export http_proxy=www-proxy.mydomain.com:80
# export ftp_proxy=www-proxy.mydomain.com:80
```

Install any prerequisite operating system packages that are missing.

```
# yum -y install elfutils-libelf-devel-static
```

Update the Linux operating system to the latest packages available.

```
# yum update
```

## Setting Up the OS User

Select or create an OS user, who will own the application installs. This user will become the owner of the files that will be installed and the application processes. This user should be configured to use the bash shell (/bin/bash) by default. This user should be accessible through ssh from remote hosts, such as the Installer Workstation.

```
# sudo /bin/bash
```

(You may have to provide your Unix user password as prompted.)

```
# /usr/sbin/useradd -c "Imaginary Friend" -d /private -m friend
```

```
# echo friend | /usr/bin/passwd --stdin friend
```

## Add User to DBA Group

Create the **dba** group on all target hosts using the following command:

```
#sudo groupadd dba
```

Add existing friend user to the **dba** group on all target hosts using the following command:

```
#sudo /usr/sbin/usermod -a -G dba friend
```

## Granting Sudo Access to OS User

Unattended install scripts perform remote execution of scripts through ssh to various target hosts from the Installer Workstation using the OS user who is designated to be the owner of the applications. Sudo privileges for this OS user are required to perform certain steps of the installation, so the chosen OS user must be granted sudo privileges (for example, by editing /etc/sudoers):

```
vi /etc/sudoers
```

For an OS user named **friend**, this file should have a line that looks like the following:

```
friend ALL=(root) ALL
```

Sudo privileges are needed to perform the following install scripts.

1. The Oracle Database client install scripts perform a post-install step (called `root.sh`) to configure the `/etc/oratab` file.
2. The Oracle Database server install scripts perform a post-install step (called **`root.sh`**) to configure the database server (for example, writes to the `/etc/oratab` file to maintain an inventory of database instances).
3. The Siebel CRM installations scripts perform a temporary swap of `gcc` to enable the install of the 32-bit Oracle HTTP server, and the original `gcc` is restored afterward.
4. The Siebel CRM installations scripts perform some file maintenance of **`var/adm/Siebel`**.
5. The Order to Activate install scripts rely on Design Studio operating in a headless mode. However, Design Studio still requires an X-Window server, so it relies on X-Virtual-Frame-Buffer (`xvfb`). Root access is needed to run `xvfb`.

## Setting Up the Host Name

The following command returns a fully qualified domain name (for example, `slc02pad.us.oracle.com`):

```
# hostname -f
```

The following command returns a short host name (e.g., `slc02pad`). For compatibility with Siebel CRM, the short host name must be 12 characters in length or shorter. It must be at least one character in length. It must contain only alphabetic, numeric, or underscore characters.

```
# hostname
```

## Setting Up the File System

Login to the target host as the OS user (with sudo privileges), who will own the application installs. Run the following command to create a directory under which the application installs will be stored:

```
# mkdir /private
```

Alternatively, a different directory can be chosen, and a symbolic link can be created from `/private` to the preferred storage location:

```
# ln -s /storage/big_fs_01 /private
```



Ensure that the storage location at /private is accessible for reads and writes by the OS user, who will own the application installs.

```
# cd /private  
  
# chown <user> .  
  
# chmod a+rx .  
  
# chmod u+w .
```

## Installing the Prerequisite Linux Packages

Ensure the following Linux packages are installed on the target host (note that some are 32-bit):

Package Name	Version (or above)	Architecture
Binutils	2.20.51.0.2	64-bit
compat-libcap1	1.10	64-bit
compat-db	4.6.21	64-bit
compat-libstdc++-33	3.2.3	64-bit
compat-libstdc++-33	3.2.3	32-bit
elfutils-libelf	0.125	64-bit
elfutils-libelf-devel	0.125	64-bit
elfutils-libelf-devel-static	0.125	64-bit
expect	5.44.1.15	64-bit
Gcc	4.4.4	64-bit
gcc-c++	4.4.4	64-bit
Glibc	2.5-24	64-bit
Glibc	2.12	32-bit
glibc-common	2.5	64-bit
glibc-devel	2.5	64-bit
glibc-devel	2.12	32-bit
glibc-headers	2.12	64-bit
Ksh	20100621	64-bit
Libaio	0.3.107	64-bit
Libaio	0.3.107	32-bit
libaio-devel	0.3.107	64-bit
libaio-devel	0.3.107	32-bit
Libgcc	4.4.4	64-bit
Libgcc	4.4.4	32-bit
Libgomp	4.1.2	64-bit
libstdc++	4.4.4	64-bit
libstdc++	4.4.4	32-bit

libstdc++-devel	4.4.4	64-bit
libstdc++-devel	4.4.4	32-bit
libXext	1.3.2	32-bit
libXi	1.7.2	64-bit
libxml2	2.7.6	64-bit
Libxslt	1.1.26	64-bit
libXtst	1.0.1	32-bit
Libuuid		32-bit
Make	3.81	64-bit
ocfs2-tools	1.2.7	64-bit
Perl	5.10.1	64-bit
perl-XML-XPath	1.13	64-bit
Sysstat	9.0.4	64-bit
unixODBC	2.2.11	64-bit
unixODBC-devel	2.2.11	64-bit
Wget	1.12-5	64-bit
Xorg-x11-server-Xvfb	1.15.0	64-bit
Zip	3.0-1	64-bit
Jar		64-bit
Curl	7.19.46	64-bit

## Additional Configurations

The following sections describe additional configurations that are needed.

### Add JAR Link to /usr/bin/ Directory

On all hosts if the **.jar** and **.java** files or links are missing from **/usr/bin** directory then create these links to the RODOD JDK location like below:

```
# sudo /bin/bash

# cd /usr/bin

# ln -s
/private/downloads/aiacom_manageable_install/jdk17/bin/jar jar

# ln -s
/private/downloads/aiacom_manageable_install/jdk17/bin/java java
```

## Add Host Name to /etc/hosts

Add the entry in /etc/hosts file for communication between different hosts, which are being used in RODOD RI installation process. Add the entry for each host in /etc/hosts file of each host.

For example:

10.0.0.245	sbksrv.us.oracle.com	sbksrv
10.0.0.246	brmsrv.us.oracle.com	brmsrv
10.0.0.247	osmsrv.us.oracle.com	osmsrv
10.0.0.248	aiasrv.us.oracle.com	aiasrv