

Solution-in-a-Box: Deploying Siebel CRM 8.1.1.11 or above on Oracle Database Appliance Virtualized Platform

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Table of Contents

Executive Overview	2
Scope	2
Introduction	3
Overview of Oracle Database Appliance	3
Overview of a Simple Siebel CRM Architecture	4
Benefits of Deploying Siebel CRM on ODA Virtualized Platform	5
ODA Virtualized Platform Deployment Architecture	6
Installing Siebel CRM 8.1.1.11 on ODA Virtualized Platform	9
STEP 1: Deploy Oracle Database Appliance Virtualized Platform	9
STEP 2: Create an OEL VM for the Siebel Application Server	9
STEP 3: Install Siebel CRM in the Application Server VM	11
STEP 4: Siebel Schema Configuration on ODA	13
STEP 5: Schema Configuration on the Application Server VM	14
STEP 6: Siebel Mid-Tier Configuration and Client Connection	15
Conclusion	16
Appendix	17



Executive Overview

The Oracle Database Appliance (ODA) is an engineered database system that can be used to quickly and easily, deploy and consolidate Oracle databases. Siebel CRM is a complete customer relationship management (CRM) solution that delivers a combination of transactional, analytical and engagement features to manage all customer-facing operations. With solutions tailored to more than 20 industries, Siebel CRM delivers comprehensive on premise and on demand CRM solutions that are tailored industry solutions with ole-based customer intelligence and pre-built integration.

The objective of this whitepaper is to validate installation and configuration of the Siebel CRM 8.1.1.11 (Innovation Pack 2013) CRM Application including the database, application, and gateway server, within Oracle Database Appliance X6-2 HA system using the virtualized platform implementation. This configuration is also referred to as a “Solution-in-a-Box” configuration because the entire multi-tier application architecture is consolidated on a single system. The proposed solution architecture includes an sizing details from a demonstration point of view. For optimal use of system resources, including CPU, memory, local and shared storage, and bandwidth available within the platform for a given workload, and to get correct sizing for the Siebel and Database Servers, please consult Siebel Expert Services.

Note: The specific versions mentioned here are the versions utilized when documenting this white paper. The information provided is not just restricted to these versions but should translate to any supported combination of both ODA and Siebel Innovation Packs.

Scope

This paper describes how to install Siebel CRM Release 8.1.1.11 database and application tiers on the Oracle Database Appliance Virtualized Platform 12.1.2.11 (and later) using Siebel Installation Image.

You need to be familiar with the Oracle Database Appliance documentation and, in particular, how it relates to the Oracle Database Appliance Virtualized Platform. Further information about the Oracle Database Appliance is available at: http://docs.oracle.com/cd/E83239_01/index.htm

Understanding Siebel CRM 8.1.1.11 architecture is essential. The documentation library is available at:

http://docs.oracle.com/cd/E14004_01/homepage.htm

Introduction

Overview of Oracle Database Appliance

Oracle Database Appliance (ODA) is a self-contained solution for standalone or clustered databases. It contains server, storage, and network hardware, combined with network, cluster, and database software and templates. The hardware and software are engineered together to be simple to configure and maintain, and to be preconfigured for database workloads. Oracle fully supports all hardware and software components. Oracle Database Appliance is designed to minimize cost, time, and risk in database deployment and maintenance.

In native configuration, Oracle Database Appliance serves as a highly available database server. However, when deployed as a virtualized platform, Oracle Database Appliance provides extended capabilities to host multiple application architecture tiers within a single Oracle Database Appliance system. Figure 1 shows a picture of the Oracle Database Appliance X6-2 HA.

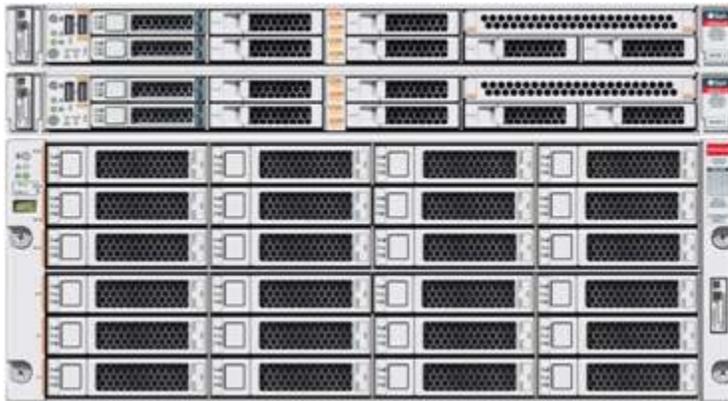


Figure 1. Oracle Database Appliance X6-2 HA

Overview of a Simple Siebel CRM Architecture

Siebel CRM is composed of the following main server elements: Siebel Gateway Server, Siebel Application Server and Siebel Web Server Extension (SWSE).

Both the Siebel Gateway Server and the Siebel Application Server run as services in the system. SWSE is a plug-in to the web server. Figure 2 below illustrates a high level description of the communication between the Siebel Gateway Server and Siebel Application Servers:

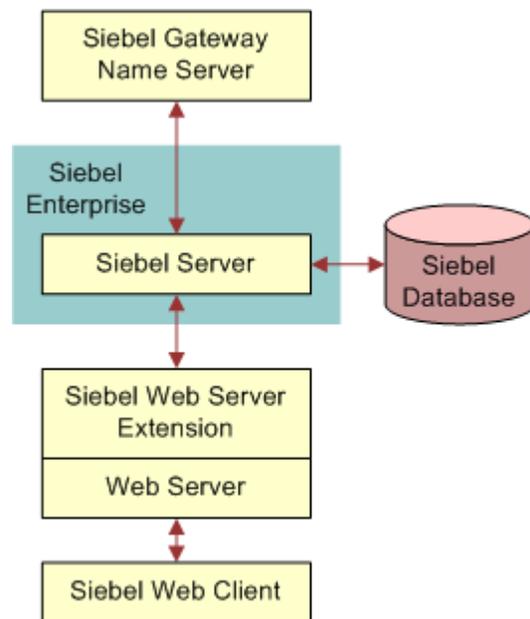


Figure 2. A Simple Siebel CRM Architecture

The Siebel Gateway Server is a persistent backing store for the Siebel Enterprise Server configuration information. It includes definitions of each of the physical servers and the components that are enabled within each server. The Siebel Application Server is the middle-tier platform that supports both back-end and interactive processes for every Siebel client. It supports single-threaded and multi-threaded processes, and can operate components in background, batch, and interactive modes.

Using the above figure, we will host the Siebel Database on the Oracle Database Appliance. This setup provides a fully functional 2-node RAC Database environment that the Siebel CRM can use to provide high-availability and superior database performance for its various modules.



Benefits of Deploying Siebel CRM on ODA Virtualized Platform

Using this approach can realize significant savings throughout the system lifecycle, from researching and benchmarking independent components, through simplifying maintenance and patching, to resolving complex problems across several vendors. Other benefits include the following:

- » **Solution in-a-box** - provides an integral Oracle Engineered System that saves you time and money by simplifying deployment, maintenance, and support of high availability database solutions.
- » **Pay as you grow** - The Capacity-On-Demand software licensing model allows you to quickly and incrementally scale from 2 to 20 processors without any hardware upgrades.
- » **Simple to implement** - Plug in the appliance and then use the integral Oracle Appliance Manager to provision the firmware, operating system, storage manager and virtualization software. The Appliance Manager also drastically simplifies maintenance by patching the entire appliance, including all firmware and software, in one operation, using an Oracle-tested patch bundle engineered specifically for the appliance.
- » **Simple to manage** - Oracle Database Appliance has been engineered with specific focus on simplicity and reliability. This reduces complexity, risk and costs in deploying a highly available solution.
- » **High Availability Hardware** - The configuration provides complete redundancy with no single points of failure. If hardware fails or is about to fail, the Automated Service Request capability (phone home) generates automatic requisitions for replacement components such as disks, power supplies, fans etc.
- » **Performance** - Oracle Database Appliance is preconfigured and pre-tuned for optimal performance, which reduces maintenance and operating costs. The Oracle Database runs in a special privileged user domain, which eliminates the virtualization overhead.
- » **Simple to support** - There is a single point of contact for support. All hardware and software components are supported by Oracle, and there is no need to contact multiple vendors if a problem occurs. When a problem occurs, the Appliance Manager performs the job of the DBA and automatically collates all the logs and system history thereby enabling issues to be logged, analysed and processed more quickly.
- » **Oracle Real Application Clusters (Oracle RAC)** - This is a clustered version of Oracle Database based on a comprehensive high-availability stack, ensuring high availability, scalability, and agility for any application.

ODA Virtualized Platform Deployment Architecture

This section summarizes some of the key architectural points that will make it easier to understand the installation procedure in this paper.

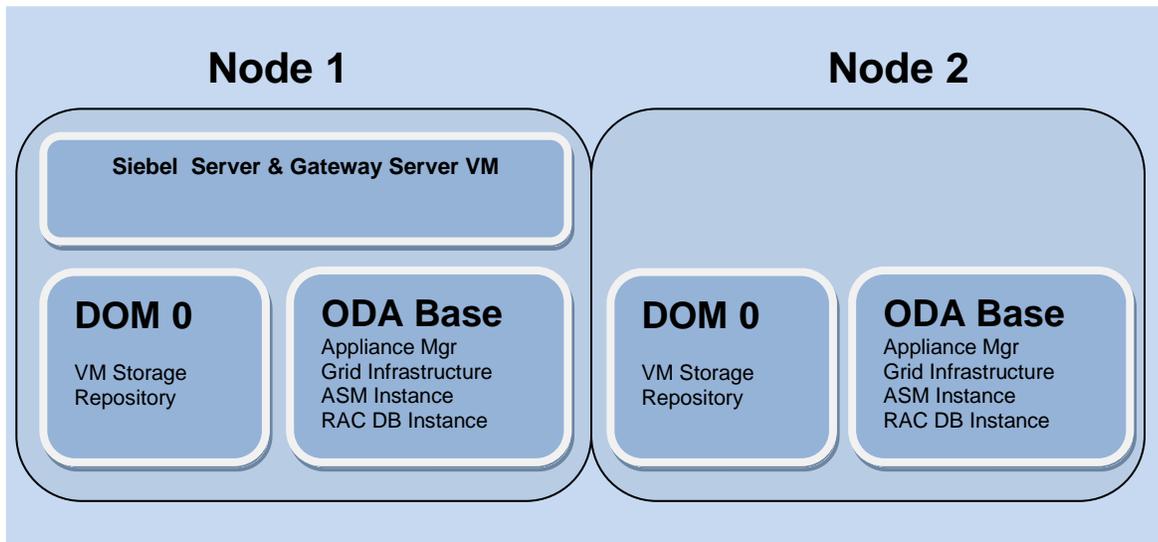
Deploying the Oracle Database Appliance Virtualized Platform creates an ODA_BASE privileged user domain. The Appliance Manager provisions and manages the Oracle Database within the ODA Base Domain. This domain is optimized to host database instances, and all the shared disks are directly attached to this domain eliminating any virtualization overhead and providing near native disk performance.

The Siebel CRM Enterprise and Gateway Servers can be installed in the same VM or in separate VMs. You can also have multiple Siebel Enterprise Servers running in separate VMs on the ODA. But, you can only have one Gateway Server for the entire Siebel Enterprise. On completion of the procedure in this paper, the Oracle Database Appliance will be configured with a two node RAC database, and Siebel Server and Gateway Server running in a VM, on one node.

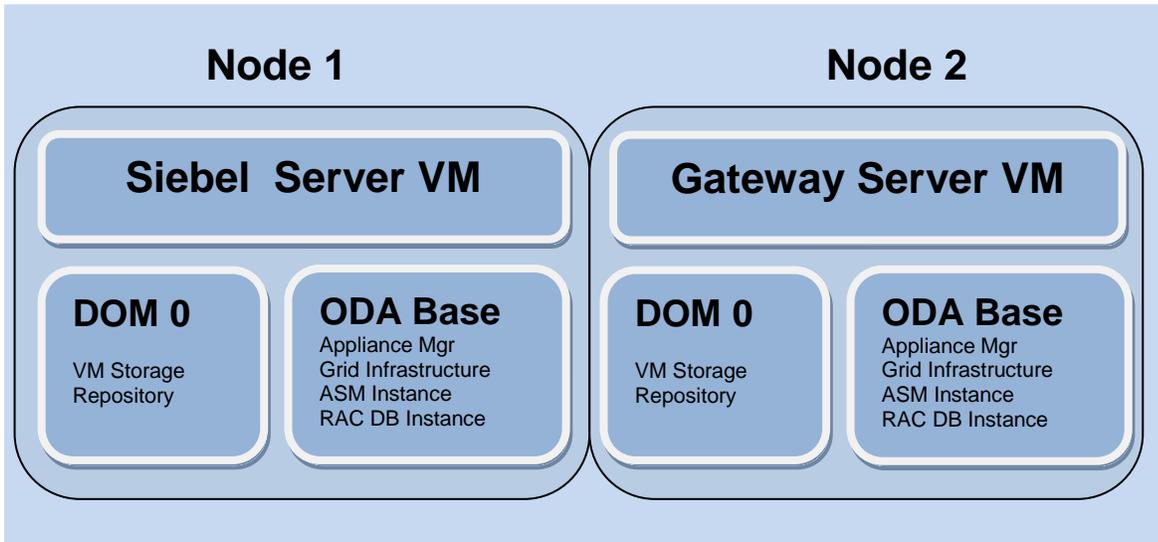
In this paper, half the physical CPU and memory resources will be allocated to ODA_BASE for database processing, and the other half will be allocated to the application tier VM. Dom0 uses very little resources and doesn't need separate allocation.

Below are a few deployment scenarios that can be used by the customer:

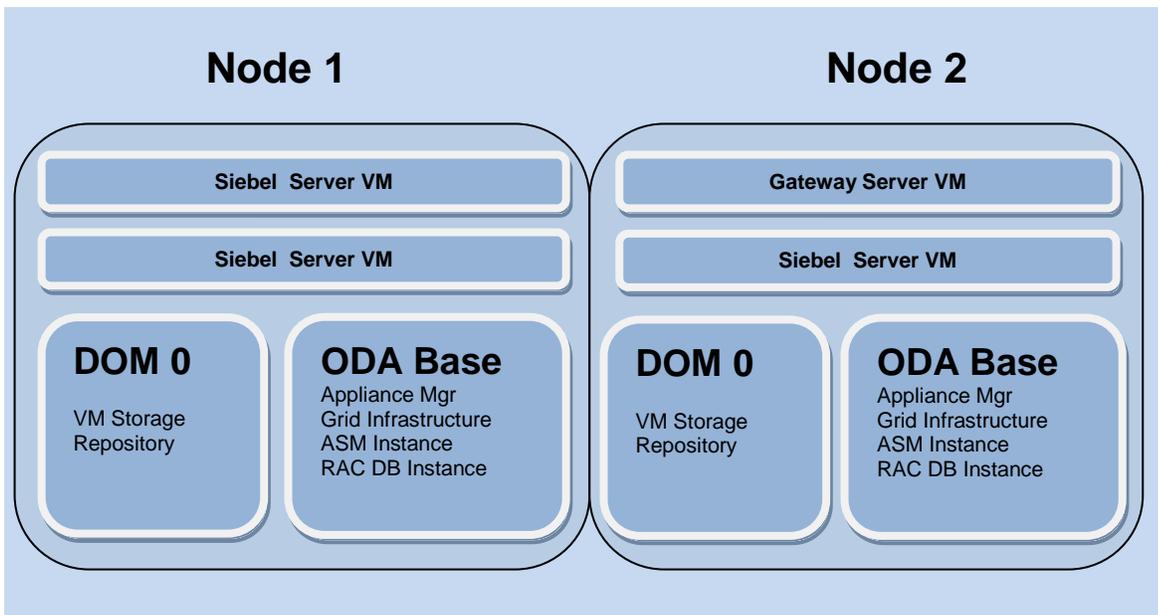
1. Siebel Server and Gateway Server in one VM



2. Siebel Server in one VM and Gateway Server in one VM



3. Multiple Siebel Servers in different VMs and Gateway Server in one VM





This paper describes deploying the solution on an Oracle Database Appliance X6-2 HA running ODA software release 12.1.2.11. The steps are applicable for later software and hardware releases, but some of the component versions may be different. The following lists the main components of the configuration:

Hardware:

Standard Oracle Database Appliance X6-2 HA hardware, including:

- » Two physical servers - Each with 10 cores and 256 GB main memory.
- » Shared storage - Ten 1.2 GB SSDs (12 TB total) for database files plus four 200 GB High Endurance SAS SSDs - for database redo logs.
- » Network cards - Four 10G Base-T Ethernet ports.

Software on each physical server:

Dom0 Management Domain

- » Oracle VM Server 3.4.3

ODA_BASE Virtual Machine

- » Special privileged user domain for database instances
- » Oracle Enterprise Linux 6.8
- » Oracle Database 11gR2 (11.2.0.4.170418)
- » Real Applications Cluster (RAC)
- » ACFS
- » Oracle Clusterware 12c (12.1.0.2.170418)
- » 128 GB RAM and 4 cores allocated. This allocation can easily be changed later based on performance analysis and software licensing requirements.

Siebel Application Virtual Machine

- » User domain
- » Oracle Enterprise Linux 5.10
- » Siebel CRM 8.1.1.11 (Innovation Pack 2013)
- » 96 GB RAM and 4 cores allocated. This allocation can be adjusted later.

Installing Siebel CRM 8.1.1.11 on ODA Virtualized Platform

This section lists the necessary steps to install Siebel CRM Release 8.1.1.11 with Oracle Database 11gR2 on Oracle Database Appliance 12.1.2.11 (or later). The following provides a quick reference to the environment details referred to in this document:

ENVIRONMENT DETAILS

Host	Server 1	Server 2
Dom 0	siebel1-d0	siebel2-d0
ODA_BASE	siebeldb1	siebeldb2
Application VM	siebsrvr	

In this document, all passwords are assumed to be *welcome1*. Please change these passwords as appropriate. This document requires access to both nodes of the Oracle Database Appliance as root, grid & oracle users.

STEP 1: Deploy Oracle Database Appliance Virtualized Platform

The Oracle Database Appliance has to be deployed in Virtualized Platform mode to support Siebel CRM application VM. Oracle Database Appliance Virtualized Platform Setup instructions are provided on the Setup Poster, which is available at: http://docs.oracle.com/cd/E83239_01/index.htm. Follow the instructions to setup the Oracle Database Appliance.

At the end of this step you would have accomplished the following items:

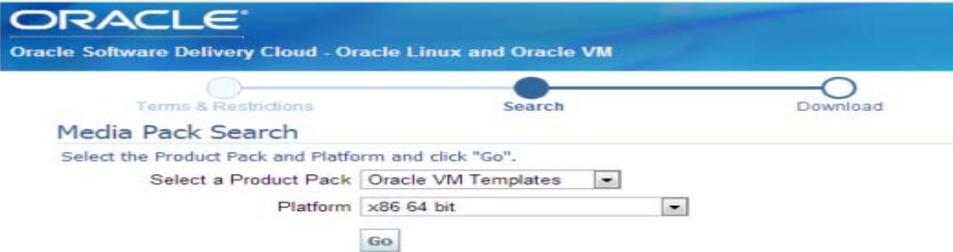
- » A 2-node RAC database is available for setting up the Siebel schema on the ODA.
- » The name of the database is "orcl".
- » Scan-name is siebel-scan.us.oracle.com.
- » ODA Node names are siebeldb1 and siebeldb2.
- » Root passwords on both the nodes are "welcome1".
- » ORACLE_SID is set to orcl1 on node siebeldb1 for user "oracle".

STEP 2: Create an OEL VM for the Siebel Application Server

1. Login as the root user on "siebeldb1" and create a 500 GB shared repository which will be used to host the VM using the following command:

```
$ oakcli create repo siebrepo -size 500G -dg DATA
$ oakcli show repo
      NAME                TYPE        NODENUM    STATE
siebrepo                 shared           0    ONLINE
siebrepo                 shared           1    ONLINE
```

2. Download OEL 5.10 from <http://edelivery.oracle.com/linux>. This will be the guest OS that will be used by the Siebel Application VM.



3. Copy the zip file to /OVS on dom-0 of node 1, i.e., "siebel1-d0" and unzip the file.

```
$ unzip V38319-01.zip
$ ls -lrt
-rw-r--r-- 1 root root 451594240 Mar 11 2013 OVM_OL5U9_x86_PVM.ova
```

4. Import the VM template into the shared repository.

```
$ oakcli import vmtemplate oel5_10 -assembly /OVS/OVM_OL5U10_x86_PVM.ova
repo siebrepo -node 0

$ oakcli show vmtemplate
```

NAME	MEMORY	VCPU	REPOSITORY
oel5_10	2048	2	siebrepo

5. Create the VM from the VM template.

```
$ oakcli clone vm siebsrvr -vmtemplate oel5_10 -repo siebrepo -node 0

$ oakcli show vm
```

NAME	NODENUM	MEMORY	VCPU	STATE	REPOSITORY
siebsrvr	0	2048	2	OFFLINE	siebrepo

6. Add network interface to this VM

```
$ oakcli configure vm siebsrvr -network "vif = ['bridge=net1']"
```

7. Start the Siebel Server VM

```
$ oakcli start vm siebsrvr
```

8. Connect to the VNC console of the VM

```
$ oakcli show vmconsole siebsrvr
```

9. Enter the hostname for the Siebel Server as well as the network information. Here, we assume that the hostname has been given as "siebsrvr". Give an appropriate root password as well at this point.



10. After the network information has been entered correctly, you should also be able to SSH into the VM.

11. Login to the VM as root.

STEP 3: Install Siebel CRM in the Application Server VM

Software

- » Siebel Installation Image. This can be created from the Siebel Installation Media files available for download from: <http://edelivery.us.oracle.com>. Exact steps for creating the installation image are beyond the scope of this document, but more information can be found in the Installation Guides.

Installation Guides

The Installation Guides for Siebel CRM (version 8.1) can be found here:

- » For Unix: [Siebel 8.1 Unix Installation Guide](#)
- » For Windows: [Siebel 8.1 Windows Installation Guide](#)

Installation guides for other versions can be found here: [Siebel Installation Guides](#)

Siebel CRM supports Oracle Real Application Clusters (RAC) failover configurations for Oracle Database. Both active-passive and active-active RAC configurations are supported.

For more information, see:

- » 473859.1 (Doc ID) on My Oracle Support. This document was previously published as Siebel Technical Note 635.
- » 478215.1 (Doc ID) on My Oracle Support. This document was previously published as Siebel FAQ 2220.

NOTE: Please see [Siebel System Requirements and Supported Platforms](#) for the supported versions and platforms.

Deployment Steps

- » Install Oracle Client software on the Siebel Application Server VM where you will install Siebel Application Server, or other modules that will connect to the Siebel Database.
- » Configure parameters for the database instance, storage settings, log space, and other elements for the Siebel Database pertaining to your deployment type as mentioned in the Installation Guides. Your final settings will vary based on the hardware configuration, the number of users, and the type of workload.

Some of the guidelines that are mentioned in the Installation Guide are as follows:

- » Guidelines for Selecting a Language for Oracle Database
- » Guidelines for Configuring Settings in the `init.ora` File
- » Guidelines for Sizing Redo Logs for an Oracle Database
- » Guidelines for Creating Oracle Table Spaces
- » Guidelines for Sizing the Oracle Database
- » Guidelines for Creating Temporary Oracle Table Spaces
- » Guidelines for Overriding Oracle Default Table Spaces for Database Objects
- » Guidelines for Creating Oracle Database Objects
- » Guidelines for Ongoing Oracle Database Administration
- » Guidelines for Using Real Application Clusters for an Oracle Database

Please go through the Installation Guide for more information on each of the Guidelines.

Siebel Enterprise Installation

Figure 3 below presents a simplified view of the installation and configuration tasks when there is no existing Siebel Database, as in a new deployment. A Siebel Database must exist before you can configure the Siebel Application Server, in order to provide authentication for access to the Siebel Gateway Server. You install Database Configuration Utilities and the first Siebel Application Server on the same computer where you installed the Siebel Gateway Server.

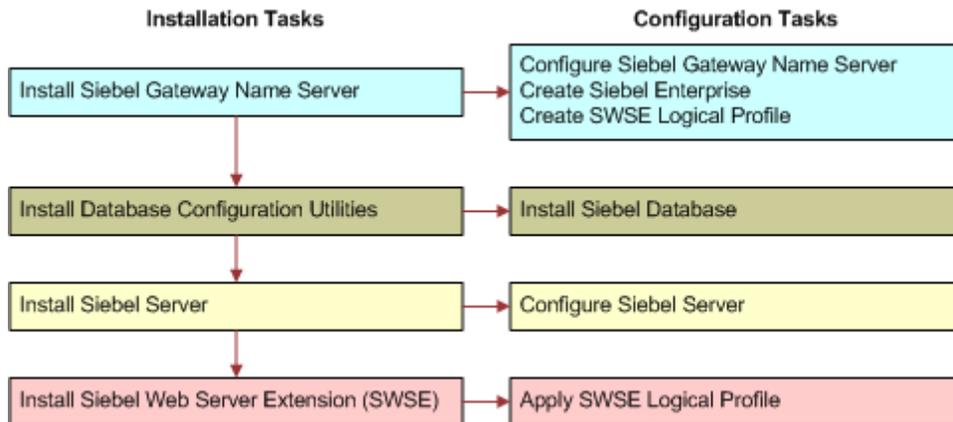


Figure 3. Installing and Configuring Servers in a Siebel Deployment (No Existing Database)

The major installation and configuration tasks are as follows:

- » Install Siebel Gateway Server. This is installed once for each Siebel Enterprise.
- » Configure Siebel Gateway Server.
- » Configure Siebel Enterprise on the Siebel Gateway server computer (includes configuring Gateway Name Server authentication).
- » Configure logical profile for Siebel Web Server Extension (SWSE) on the Siebel Gateway Name server computer.
- » Install Siebel Application Server.
- » Install Database Configuration Utilities (with the first Siebel Server only). This is installed only once, typically with the first Siebel Server installed.
- » Install the Siebel Database by running the Database Configuration Wizard.
- » Configure Siebel Application Server.
- » Install Siebel Web Server Extension (SWSE).
- » Configure SWSE (apply the SWSE logical profile).

Multiple instances of Siebel Application Server and Siebel Web Server Extension (SWSE) are typically installed for medium-sized or larger deployments.

The kind of deployment depends on your requirements. More information on this can be found in the "*Installation and Configuration Methods by Deployment Type*" section of the Installation Guide.

Siebel Gateway Server Installation and Configuration

Follow the instructions in the Installation Guide for installing and configuring the Siebel Gateway Server, Siebel Enterprise and the logical profile for SWSE.

Siebel Database Configuration Utilities Installation and Configuration

The Database Configuration Utilities refers to a set of files that you install on a Siebel Application Server computer using the Siebel Enterprise Server installer. These files are accessed when you run the Database Configuration Wizard and the Siebel Upgrade Wizard in order to configure the Siebel Database on the Oracle Database Appliance. The Siebel VM is now ready, and we move on to setting up the ODA for the Siebel schema.

STEP 4: Siebel Schema Configuration on ODA

Just to recap:

- » We have a 2-node RAC database available for setting up the Siebel schema on the ODA.
- » The name of the database is "orcl".
- » Scan-name is siebel-scan.us.oracle.com.
- » ODA Node names are siebdb1 and siebdb2.
- » Root passwords on both the nodes are "welcome1".
- » ORACLE_SID is set to orcl1 on node siebdb1 for user "oracle".
- » Siebel Server hostname is "siebsrvr".

Use the scan name and node names as it pertains to your configuration. First, connect to the ODA from the Siebel VM and copy the grantusr.sql script (Location: /u01/app/siebel/ses/dbsrvr/oracle) to /tmp folder on the ODA using scp or ftp.

From the Siebel Application Server VM, run this command from the console:

```
[root@siebsrvr]# cd /u01/app/siebel/ses/dbsrvr/oracle
[root@siebsrvr]#
scp grantusr.sql root@siebdb1.us.oracle.com:/tmp/grantusr.sql
```

We connect to the ODA as root, and perform the following configuration steps before we create the Siebel schema:

1. Create two table spaces for Siebel, one for data and one for indices:

```
[root@siebdb1]# su - oracle
[oracle@siebdb1]# sqlplus / as sysdba
SQL> create tablespace siebel datafile size 30G autoextend on;
SQL> create tablespace index01 datafile size 10G autoextend on;
```

The specific size requirements depend on the type of CRM application you are planning to use and the number of users. This data can be gathered with the help of Siebel Expert Services.

2. Run the grantusr.sql to create Siebel users and roles:

```
SQL> @/tmp/grantusr.sql
```

```
Enter the tablespace names created in step 1 on being asked for SIEBEL,
INDEX and TEMP tablespace names during the running of this sql script.
```

This script creates two users:

```
a. Database Table Owner: SIEBEL      Password: SIEBEL
b. Database Table User : SADMIN     Password: SADMIN
```

3. Alter the quota for the table spaces for user "siebel":

```
SQL> alter user siebel quota unlimited on siebel;
SQL> alter user siebel quota unlimited on index01;
```

The user "siebel" is also configured in the Siebel VM to access the Siebel database from the VM.

STEP 5: Schema Configuration on the Application Server VM

We need to test the connection to the ODA from the Siebel VM. We do this with sqlplus and odbc.

Add the scan-name to the tnsnames.ora file on the Siebel VM:

```
[root@siebsrvr]# cd
/u01/app/oracle/product/11.2.0/client_1/network/admin
```

Contents of tnsnames.ora should look like this:

```
ORCL =
  (DESCRIPTION =
    (ADDRESS = (PROTOCOL = TCP)(HOST = siebel-scan.us.oracle.com)(PORT =
      1521))
    (CONNECT_DATA =
      (SERVICE_NAME = orcl)
    )
  )
```

From /u01, run the setup_env.sh script to setup the environment variables. (See Appendix for contents of this file):

```
[root@siebsrvr]# cd /u01
[root@siebsrvr]# . ./setup_env.sh
```

Run sqlplus from /u01/app/oracle/product/11.2.0/client_1/bin:

```
[root@siebsrvr]# cd /u01/app/oracle/product/11.2.0/client_1/bin
[root@siebsrvr]# ./sqlplus SIEBEL/SIEBEL@orcl

SQL*Plus: Release 11.2.0.1.0 - Production on Sat Jun 27 03:15:29 2015

Copyright (c) 1982, 2009, Oracle. All rights reserved.

Connected to:
Oracle Database 11g Enterprise Edition Release 11.2.0.4.0 - 64bit
Production
```

```
With the Partitioning, Real Application Clusters, Automatic
Storage Management, OLAP, Data Mining and Real Application Testing
options
SQL>
```

We can see that sqlplus can connect to the ODA. Now, we have to test for ODBC connection too.

Run odbcsql from siebsrvr/bin folder:

```
[root@siebsrvr]# cd /u01/app/siebel/ses/siebsrvr/bin
[root@siebsrvr]# ./odbcsql /s siebel_DSN /u SIEBEL /p SIEBEL

Logging into "siebel_DSN" as "SADMIN" ...
SQL DBMS: Oracle version 11.02.0000 Oracle 11.2.0.4.0
ODBC driver: SEor825.so version 06.11.0086 (B0094, U0049)
(login time: 0.88s)

ODBC>
```

Both connection options were successfully verified. The next step is to run the DB configuration script to create the Siebel Schema on the ODA.

```
[root@siebsrvr]# cd /u01/app/siebel/ses/config
[root@siebsrvr]# ./config -mode dbsrvr
```

Once finished, the configuration script will create a master_install.ucf file. This file connects to the database on the ODA, and creates the schema.

```
[root@siebsrvr]# cd /u01/app/siebel/siebsrvr/bin
[root@siebsrvr]# ./srvrupgwiz /m master_install.ucf
```

Once the schema is created, we need to test to see if it has indeed been created.

Using sqlplus:

```
[root@siebsrvr]# cd /u01/app/oracle/product/11.2.0/client_1/bin
[root@siebsrvr]# ./sqlplus SIEBEL/SIEBEL@orcl
SQL> select * from cat;
```

This should give you a list of all the tables created as part of the Siebel Schema Creation step. If so, the schema has been created successfully.

STEP 6: Siebel Mid-Tier Configuration and Client Connection

Siebel Mid-Tier Configuration

Follow the instructions in the Installation Guide for installing Oracle HTTP Server (OHS) and configuring the Siebel Application Server and SWSE, and the rest of the Siebel CRM modules.

Siebel Client Connection

Finally, we test to see if we can connect to the database on the Oracle Database Appliance.

- 
- » Start a Web browser session.
 - » Access the Siebel application with either of the following URLs:

```
http://<host>:7780/sales_enu  
http://<host>:7780/marketing_enu  
http://<host>:7780/callcenter_enu
```

where

host is the name of the Siebel Application Server VM computer.

- » If everything is setup correctly, you should now see a login prompt in your browser.
- » Login with the following credentials:
 - username: sadmin
 - password: sadmin
- » Create a few records, retrieve them and edit them, and verify that the updated values are reflected on the screen.
- » You now have a working Siebel CRM installation.

Conclusion

Siebel CRM and Oracle Database Appliance create a powerful combination and produce an easy to manage, complete CRM system. Oracle Database Appliance Virtualized Platform provides native database performance while allowing workload segregation via CPU pools. The virtualized platform configuration offers the flexibility to adjust system configuration to match requirements without the need to go through expensive hardware upgrades.



Appendix

Contents of setup_env.sh:

```
#!/bin/sh

export ORACLE_HOME=/u01/app/oracle/product/11.2.0/client_1
export PATH=$ORACLE_HOME/bin:$PATH
export
LD_LIBRARY_PATH=/u01/app/siebel/ses/siebsrvr/lib:$ORACLE_HOME/lib:$LD_LIBRARY_P
ATH
export SIEBEL_UNIXUNICODE_DB=ORACLE
export ODBCINI=/u01/app/siebel/ses/gtwysrvr/sys/.odbc.ini
```



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