An Oracle White Paper
April 2010

Deploying Oracle® Siebel CRM on Oracle's Sun Storage 7000 Unified Storage Systems

ORACLE

Executive Overview

For Oracle® Siebel CRM (Customer Relationship Management) applications, Oracle's Sun Storage 7000 Unified Storage Systems meet a range of functional requirements for availability, capacity, and performance. Sun Storage 7000 Unified Storage Systems are especially well suited for deployment with Oracle Siebel CRM 8 software because these applications typically impose significant I/O demands. This article acts as a guide for installing Oracle Siebel CRM 8 software in conjunction with these scalable open storage systems. It can be used to help customers and technical support engineers create proof-of-concept environments for application testing or benchmarking.

Introduction

As data volumes continue to grow at unprecedented rates, organizations struggle to deliver fast and reliable information access. Data-intensive applications — such as Web 2.0, database, and high-performance computing (HPC) applications — are driving new challenges for scaling and managing the storage infrastructure. Based on high-performance proprietary controllers and storage devices, many storage solutions available today are complex and expensive. In addition they often introduce high operational costs because of requirements for power, cooling, space, and administration. As energy and personnel costs continue to rise, companies are becoming more focused on reducing the energy footprint and administrative burden associated with datacenter storage solutions.

Recognizing the need for easy-to-manage, eco-friendly, and scalable storage solutions that deliver exceptional business value, Oracle offers Sun Storage 7000 Unified Storage Systems. These systems incorporate an open-systems approach that selects the best general-purpose servers and storage components, combines them with innovative game-changing technologies, and unifies them with storage software. As a result, these systems offer significant cost savings while providing enterprise-class data services, good scalability, and superior performance.

Sun Storage 7000 Unified Storage Systems

Sun Storage 7000 Unified Storage Systems from Oracle incorporate an open-source operating system, commodity hardware, and industry-standard technologies. They are low-cost, fully functional network attached storage (NAS) devices designed around these core technologies:

- General-purpose x64-based servers (which function as the NAS head) and Sun storage products — proven high-performance commodity hardware solutions with compelling price-performance points
- The general-purpose OpenSolaris Operating System, including these technologies:
  - Oracle Solaris Zetabyte File System (Oracle Solaris ZFS), the world's first 128-bit file system with unprecedented availability and reliability features
  - The high-performance Oracle Solaris networking stack using IPv4 or IPv6
  - Analytics (based on Oracle Solaris DTrace), which provides dynamic instrumentation for real-time performance analysis and debugging
- FMA (Fault Management Architecture) for built-in fault detection, diagnosis, and self-healing for common hardware problems
- A large and adaptive two-tiered caching model, based on DRAM and enterprise-quality solid state devices (SSDs)

The Oracle Solaris ZFS file system enables a new approach to data management called Hybrid Storage Pools, which automatically provide data placement, data protection, and data services such as RAID, error correction, and system management. By placing data on the most appropriate storage media, Hybrid Storage Pools help to optimize performance and contain costs.

Sun Storage 7000 Unified Storage Systems feature a common, easy-to-use management interface, along with a comprehensive analytics environment to help isolate and resolve issues. The systems support NFS, CIFS, and iSCSI data access protocols, mirrored and parity-based data protection, local point-in-time (PIT) copy, remote replication, data checksum, data compression, and data reconstruction.

To meet varied needs for capacity, reliability, performance, and price, the product family includes four different models — the Sun Storage 7110, 7210, 7310, and 7410 systems (Figure 1). Configured with appropriate data processing and storage resources, these systems can support a wide range of requirements. Table 1 compares general characteristics of models in the product family.

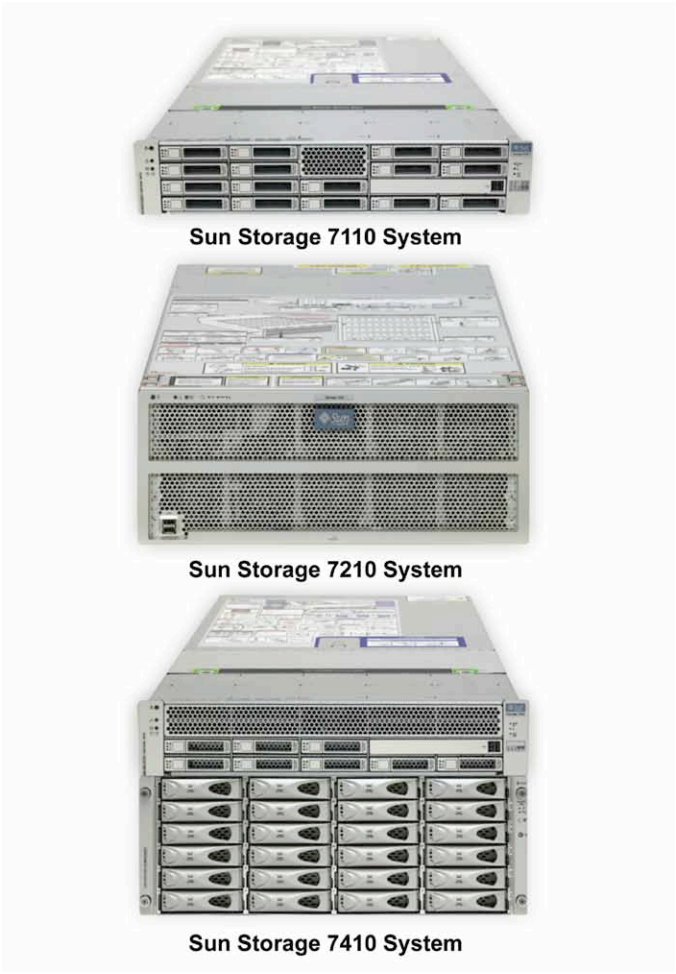

Figure 1. Sun Storage 7000 Unified Storage System family enables scalable, eco-friendly, and easy-to-manage storage solutions.

TABLE 1. SUN STORAGE 7000 SERIES FAMILY CONFIGURATIONS

SYSTEM MODEL	MAXIMUM CAPACITY	RACK UNITS	FEATURES
Sun Storage 7110 system	2 TB (16 x 2.5" SAS disks)	2U	• Standalone appliance • Single AMD Opteron™ processor in NAS head
Sun Storage 7210 system	44 TB (48 x 3.5" SATA II disks)	4U	• Standalone appliance • Dual AMD Opteron processors in NAS head • Enterprise SSDs for enhanced write performance
Sun Storage 7310 system	96 TB (48 x 3.5" SATA II disks)	4U	• Standalone appliance or cluster for high availability • Dual AMD Opteron processors in NAS head • Enterprise SSDs for enhanced write performance
Sun Storage 7410	576 TB (576 x 3.5"	6U	• Standalone appliance or cluster for high availability

system	SATA II disks)	• Enterprise SSDs for enhanced read and write performance • Support for multiple Sun Storage J4400 expansion arrays

Ideal for fast-growing storage build-outs, Sun Storage 7000 Unified Storage Systems exploit the power of today's multicore, multithreaded processors to increase application performance. In addition, advanced solid state device (SSD) technology fundamentally changes the appliance memory and bandwidth equation. In the Sun Storage 7210 and 7410 Systems, write-optimized SSDs are used in place of NVRAM to host the ZFS Intent Log (ZIL). In the SSDs, writes to flash memory devices are buffered by DRAM backed by supercapacitors. In the Sun Storage 7410 System, read-optimized SSDs are placed in the server node so that cache hits have the shortest possible return route to the network adapter. Read-based SSDs are used to extend the Oracle Solaris ZFS Level 2 adaptive resource cache (the "L2ARC") for reads and writes.

Together with other advanced features such as DTrace Analytics and Hybrid Storage Pools, these appliances provide unprecedented real-time performance, debugging tools, computational scalability, strong security, and end-to-end data integrity. For this reason, Sun Storage 7000 Unified Storage Systems are ideal solutions to host the back-end database for Oracle Siebel CRM 8 applications. For the most performance-intensive applications, the Sun Storage 7410 System can be configured with both read- and write-optimized SSDs to maximize throughput and response times. In addition, this storage system can be deployed in a clustered configuration to meet exacting requirements for mission-critical business continuity.

Oracle Siebel CRM 8 Application Architecture

Oracle Siebel CRM 8 is a comprehensive suite of Customer Relationship Management (CRM) software specifically designed to help businesses build scalable, standards-based applications that can attract new business and increase customer loyalty. The Siebel suite contains a comprehensive business analytics solution that gives business executives and managers the ability to monitor, analyze, and act upon intelligence in real time, at the same time providing end-to-end visibility into company operations and financial performance. Oracle Siebel CRM 8 supports a variety of industry-specific applications (e.g., Pharmaceutical, Finance, Communications, Consumer Goods, Public Sector, Insurance, Hospitality, etc.). Typical applications address functional areas such as call center, sales and marketing, field service, campaign management, and customer management.

Founded on a service-oriented architecture, the software includes a large number of architectural modules:

- Workflow
- Work assignment
- Integration capabilities (at the presentation, business logic, and data layers of the application)
- Siebel Enterprise Integration Management (EIM), a data loading utility
- Siebel Server Sync for Microsoft Exchange Server (SSSE), a solution for synchronizing data between the Siebel database and Microsoft Exchange

Software Elements

Table 2 lists commonly deployed Oracle Siebel CRM 8 software elements, many of which are depicted in Figure 2.

TABLE 2. ORACLE SIEBEL CRM 8 ELEMENTS.

SYSTEM	CONFIGURATION
Siebel Web Clients	These include a variety of client types (e.g., Siebel Web Client, Siebel Mobile Web Client, Siebel Wireless Client, Siebel Handheld Client)
Siebel Web Server Extension (SWSE)	SWSE is installed on third-party Web servers. It identifies requests for Siebel data, forwards requests to the Siebel Servers, receives data from Siebel Servers, and helps to format it into Web pages for Siebel clients.
Siebel Load Balancing	Two options for Siebel Server load balancing are Siebel Load Balancing and third-party HTTP load balancers. Siebel Load Balancing is part of Siebel Web Server Extension (SWSE). When you install SWSE, the installation wizard prompts you for information about configuring load balancing. Figure 2 depicts a third-party HTTP load balancer.
Siebel Enterprise Server	Siebel Enterprise Server is a logical grouping of Siebel Servers that connect to one database that allows Siebel Servers to be managed as a group.
Siebel Servers	Application servers or AOMs (Application Object Managers) provide both user services and batch mode services to Siebel clients.
Siebel Gateway Name Server	This server functions as a name server and stores Siebel Server configuration information.
Siebel database	The Siebel database stores database records. It includes third-party RDBMS software and Siebel tables, indexes, and seed data.
Siebel File System	This is a shared file system directory that stores data and physical files used by Siebel clients and the Siebel Enterprise Server.
Siebel Enterprise Integration Management (EIM) and Siebel Enterprise Application Integration (EAI)	These components allow importing and exporting of data from other databases to the Siebel database.
Siebel Tools	These tools provide an object-oriented, Windows-based environment for developing or modifying Siebel applications, business services, and other Siebel objects.

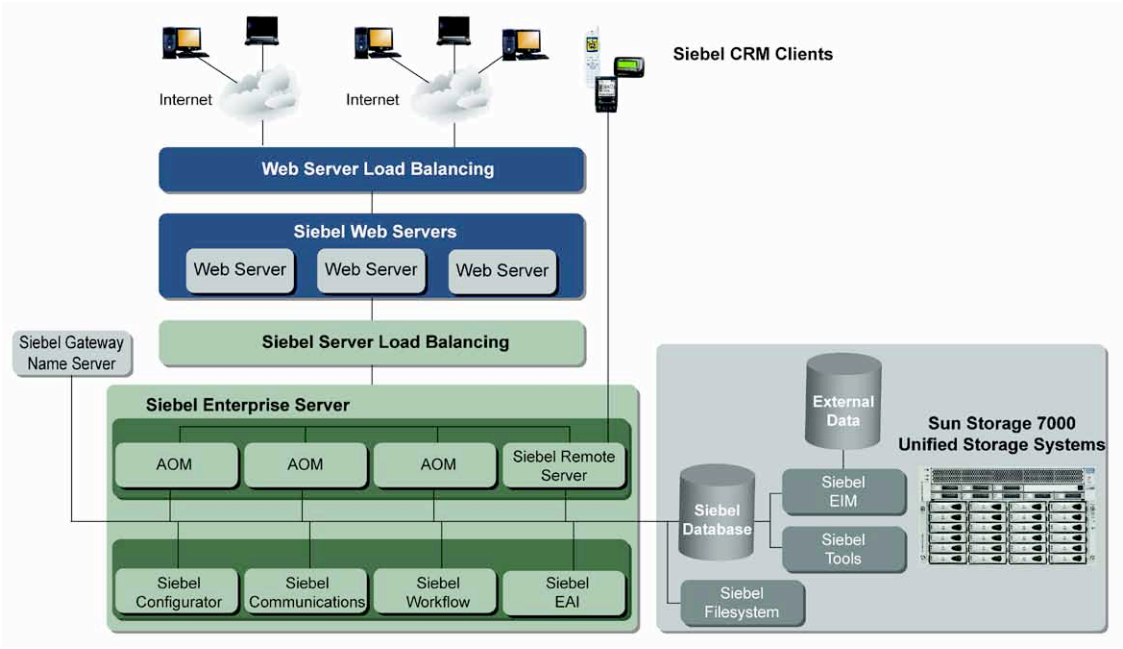

Figure 2. Oracle Siebel CRM 8 deployments use a tiered architecture.

A typical deployment of Oracle Siebel CRM 8 applications includes the following tiers (Figure 2):

- Web client tier. Web clients provide user interface functionality and can encompass a variety of types (Siebel Web Client, Siebel Wireless Client, Siebel Mobile Web Client, Siebel Handheld Client, etc.).
- Web server tier. The Web server tier services requests from Web clients and interfaces to the Gateway/Application layer. In the installation procedure in this article for creating a proof-of-concept environment, the Siebel Web Server Extension and the Oracle iPlanet Web Server (formerly Sun Java™ System Web Server) software components are installed at this tier.
- Gateway/application server tier. The gateway/application server tier provides services on behalf of Siebel clients. This tier consists of two sub-layers: the Siebel Enterprise Server and the Siebel Gateway Server.
- Database server tier. While the Siebel File System stores data and physical files used by Siebel Clients and Siebel Enterprise Server, the Siebel Database Server stores Siebel CRM 8 database tables, indexes, and seed data.

In a multiple server deployment, the Siebel Enterprise Server includes a logical grouping of Siebel Servers (in a small configuration, it might contain a single Siebel Server). The Siebel Gateway coordinates the Siebel Enterprise Server and its set of Siebel Servers. It also provides a persistent backing store of Siebel Enterprise Server configuration information.

Each Siebel Server is a flexible and scalable application server that supports a variety of services such as data integration, workflow, data replication, and synchronization services for mobile clients. The Siebel Server also includes logic and infrastructure for running different CRM modules, as well as providing

connectivity to the Siebel Database Server. The Siebel Server consists of several multithreaded processes that are commonly known as Siebel Application Object Managers (AOMs).

In a typical deployment, the external data, Siebel database, and Siebel file system can all be stored on the Sun Storage 7000 Unified Storage System, as shown in Figure 2. To provide high availability to all three tiers of Oracle Siebel CRM 8, Oracle Solaris Cluster software can be optionally deployed to deliver mission-critical applications. For more information about Oracle Siebel CRM 8 software, visit the Oracle Web site http://www.oracle.com/applications/crm/siebel/index.html.

Installing the Oracle Siebel CRM 8 Infrastructure with the Sun Storage 7000 Unified Storage System

The following components are needed for an Oracle Siebel CRM 8.0 installation and are used to create the proof-of-concept environment described in this paper:

- Oracle Siebel CRM 8.0
- Oracle Siebel Enterprise Server
- Oracle Siebel Web Server Extension
- Oracle iPlanet Web Server (formerly Sun Java System Web Server) 6.1 SP10 or later
- Oracle RDBMS 10gR2, 10.2.0.4
- Oracle 11gR1 Client

The procedure for building an Oracle Siebel CRM 8 proof-of-concept environment consists of these core processes — establishing a share on the Sun Storage 7000 Unified Storage System, installing the Oracle database tier, installing the application tier, and installing the Web tier.

Potential Configurations

For the implementation described in this article, the database, Web, and application tiers can be consolidated on the same server, or they can be located on multiple servers. In either case, the physical servers are configured with the Oracle Solaris Operating System (OS). Although the Sun Storage 7000 Unified Storage System can be deployed in conjunction with a number of operating environments, Oracle Solaris is frequently used in mission-critical deployments for Oracle Siebel CRM applications. For this reason, Oracle Solaris is used to support the proof-of-concept environment described here.

Figure 3 shows a traditional "single-box" Oracle Siebel deployment with the database, application, and Web server tiers deployed on a single compute server. Because of its robust I/O capabilities, the Sun Storage 7000 Unified Storage System is used to store the RDBMS. Mid-range datacenter-class systems like Oracle's Sun SPARC Enterprise M4000 or M5000 servers are ideal for rapid out-of-the-box deployment for the proof-of-concept scenario described here or for actual production deployment.

Although it is possible to place the Web server's $DOCUMENT_ROOT on a share on the Sun Storage 7000 Unified Storage System via a traditional NFS share, doing so can sometimes have performance implications. Network latency (depending on the configuration of the storage appliance) can potentially introduce Web server performance issues. For this reason, it is typically recommended that Web server components be installed on a local file system as shown in Figure 3.

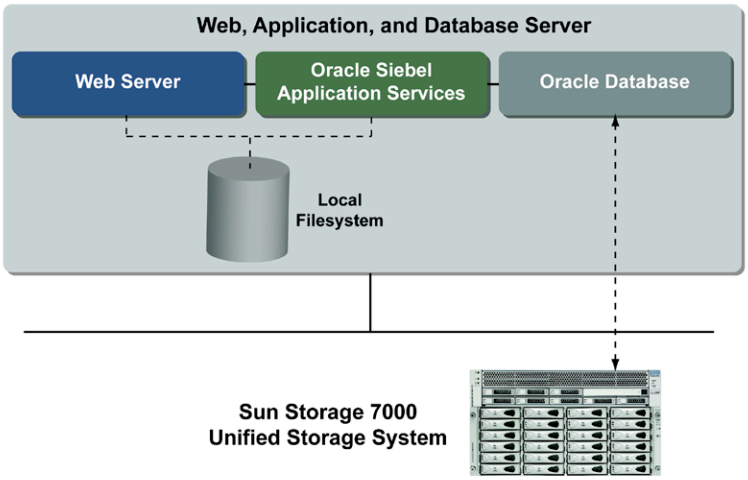

Figure 3. A single server deployment uses the Sun Storage 7000 Unified Storage System to store the database.

In some cases, it is desirable to split out database services and deploy the RDBMS on a separate compute server node for performance and scalability reasons. As shown in Figure 4, components in the Web and application tier execute on one server node, while database services run independently on a second server node. Again, the Sun Storage 7000 Unified Storage System is used to store the database because of its fast I/O.

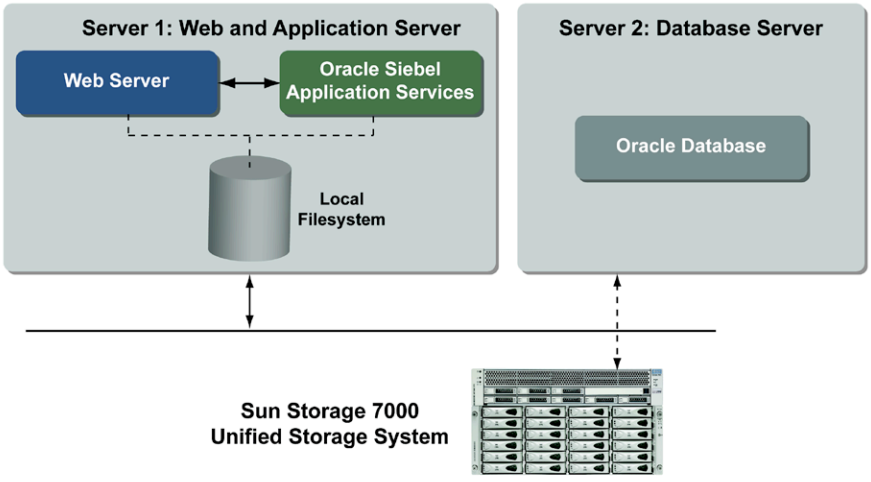

Figure 4. A dual-server implementation uses a second server as the database server and the Sun Storage 7000 Unified Storage System for database storage.

Configuring an NFS Share on the Sun Storage 7000 Unified Storage System

The Sun Storage 7000 Unified Storage System is easily configured to provide data services for Oracle Siebel CRM 8 software components. Although these storage appliances support several types of data services (including NFS, CIFS, and iSCSI data services), NFS is the most suitable, thoroughly tested, and typically implemented for Oracle Siebel CRM applications. One of the most common network-accessible data services, NFS is supported in Oracle Solaris, Linux, and other UNIX operating environments. Sun Storage 7000 Unified Storage Systems support both NFS v3 and v4.

The following procedure creates a 50GB NFS share on the Sun Storage 7000 Unified Storage System, initializing it under `/export/SiebelData`.

1. Log into the Sun Storage 7000 Unified Storage System using a Web browser and a URL of the format:

   ```
   https://<hostname / IP Address > :215
   ```

2. Create a new project by clicking on the "Share" -> "Projects" -> "+" tab. Supply the name "SiebelData", and click "Apply".

3. On the list of projects, highlight the SiebelData entry, and click on the "Edit" icon at the end of the entry.

4. Click on the "+" icon for "Filesystem", and supply the name "SiebelData". The system mounts the share locally under `/export/SiebelData`.

5. Edit the newly created entry, and supply a quota size of 50GB. Click "Apply". The list now shows the recently added entry "SiebelData" mounted locally on the Sun Storage 7000 Unified Storage System under the mount point `/export/SiebelData`.

6. Optionally, double-click the cursor on the "SiebelData" entry to display filesystem details.

Oracle Database Server Installation

This section describes the installation of Oracle RDBMS 10gR2, 10.2.0.4. To configure the Sun Storage 7000 Unified Storage System to optimize database performance, refer to the paper "Configuring Sun Storage 7000 Unified Storage Systems for ORACLE® Databases," which contains information on how to select a system model and how to optimally configure it to support various database workloads.

1. To begin, create a mount point and mount the NFS share for the database on the database server node:

   ```
   # mkdir /SiebelData
   # mount -F nfs -o
   hard,rw,noac,rsize=32768,wsize=32768,suid,proto=tcp,vers=3
   nfsservername:/export/SiebelData /SiebelData
   ```

Here a share on the Sun Storage 7000 Unified Storage System (`/export/SiebelData`) is mounted on the database server node as `/SiebelData`. The appliance host in the Sun Storage 7000 Unified Storage System is `nfsservername`.

2. Set the appropriate initialization parameter file and ORACLE_SID. Edit `tnsnames.ora` to make sure that the server name correctly points to the database server node name.

3. Create the user `pspp` and the user's default `.profile` file.

    a. Create the Oracle user `pspp` and set the password:

```
# mkdir /export/pspp
# groupadd -g 10001 dba
# useradd -u 10001 -g dba -d /export/pspp -s /bin/ksh pspp
# cd /export
# chown -R pspp:dba pspp
# passwd pspp (set it to 'pspp')
```

    b. Create the `.profile` file for the Oracle user `pspp`:

```
set -o vi
stty erase ^H
export PATH=.:/export/pspp/oracle/bin:$PATH
export NLS_LANG=american_america.UTF8
export ORACLE_SID=siamst
export LD_LIBRARY_PATH=/export/pspp/oracle/lib
export ORACLE_HOME=/export/pspp/oracle
export TNS_ADMIN=/export/pspp/oracle/network/admin
umask 022
```

4. Install Oracle RDBMS 10gR2 (10.2.0.4) Enterprise/Standard Edition for Oracle Solaris (SPARC) 64-bit under the directory `/export/pspp/oracle`.

5. To install the sample Oracle database under UNIX:

    a. Navigate to the Siebel image location for the current software version, then navigate to the directory where the Siebel Enterprise Server 8 software is located, and open a new shell.

    b. Verify that you have write and execute permission to the directories into which you want to install the sample database for Siebel.

    c. Unset any Siebel-specific environment variables. To view current environment variable settings, enter `env` in a shell window.

    d. To start the Siebel sample database installation, enter the following command:

```
# ./setupsol
```

    e. The "Welcome to InstallShield Wizard for the Siebel Enterprise Server" screen appears. Read the welcome screen, and click "Next".

f. A screen displaying license information is displayed. Accept the license terms, and then click "Next" to continue.

g. If you have an existing Sample Database installation, you can choose to add Language Packs to this installation. If you do not have an existing installation, go to the next step.

- If you are installing a new instance of the Siebel Sample Database (into a Siebel client installation that does not already have the Sample Database), click "Next", and then go to Step "h".
- If you are adding languages to an existing Siebel Sample Database installation:

i. Select the check box next to the line identifying the existing Sample Database installation to which you are adding languages, then click "Next".

ii. Select the check box next to each language you are installing, then click "Next".

iii. Proceed to Step "l".

h. In the Welcome screen, click "Next".

i. In the Setup Type screen, verify that the Sample Database installation directory listed is correct.

NOTE: You must install the Siebel Database Server in the directory in which you installed the Siebel Server. To install into a different installation directory, use Browse to select the directory you want. The directory name must not contain spaces, apostrophes, hyphens, or other special characters. Underscores are allowed.

j. While still in the Setup Type screen, select the type of installation to perform:

- Typical. Installs the Sample Database plus optional components. This option is recommended for most users. Proceed to Step "l" below.
- Compact. Installs the Sample Database plus optional components. Proceed to Step "l" below.
- Custom. Installs the Sample Database and lets you specify whether to install the following optional components: Sample Files and Sample Search Index. These options are selected by default. Proceed to Step "k" below.

NOTE: For the standard installer for the Siebel Sample Database, the Setup Type options currently install the same components. In a customized installation, these options may install different elements.

k. For a custom installation, select from the Select Components screen the optional components you want to install. This screen appears only if you chose Custom installation in Step "j".

l. In the Choose Languages screen, select the languages (that is, Language Packs) to install. Verify that your destination machine has sufficient disk space for the installation, and then click "Next".

NOTE: After you install the sample database, you may need to import repository data and seed data for a specified non-ENU language, depending on your requirements. For details, see "Importing Non-ENU Repository and Seed Data into the Siebel Sample Database" in the Oracle Siebel documentation set.

m. In the Select Program Folder screen, enter the name of the program folder that will contain the Siebel shortcuts, and then click "Next". Clicking "Next" in this step initiates file transfer. The setup program copies files to the installation directory. A status bar in the "Setup Status" dialog box indicates the progress of the installation.

If you have installed all specified language packs, proceed to the next step. Alternatively, if you have installed language packs for an existing sample database installation, the installer exits (and you can skip the rest of this procedure).

At this stage, the Siebel Sample Database is now installed. If the installation is not successful, the Event Log appears, displaying the status of the installation. This log can also be accessed under `logs` directory. When the "InstallShield Wizard Complete" screen appears to indicate that software installation has completed successfully, click "Finish".

6. Create `tnsnames.ora`, start the listener process, and verify database connectivity.

a. Create `tnsnames.ora`. The example below assumes that `t2000-a1` is the database server host name, and `siamst` is the name of the Oracle service instance ID (SID).

```
% cat /export/pspp/oracle/network/admin/tnsnames.ora
siamst =
(DESCRIPTION =
(ADDRESS_LIST =
(ADDRESS = (PROTOCOL = TCP)(HOST = t2000-a1)(PORT = 1521))
)
(CONNECT_DATA =
(SERVER = DEDICATED)
(SERVICE_NAME = siamst)
)
)
```

b. Start the database.

c. Start the listener.

```
% lsnrctl start siamst
```

d. Check database connectivity using the server name `siamst`, and then check the database schema version.

```
% sqlplus oraperf/oraperf@siamst
SQL*Plus: Release 10.2.0.4.0 - Production on Fri Sep 7 13:25:55
2007
Copyright (c) 1982, 2005, Oracle. All rights reserved.
```

```
Connected to:
Oracle Database 10g Enterprise Edition Release 10.2.0.4.0 -
64bit Production
With the Partitioning, OLAP and Data Mining options
SQL> set head off
SQL> select APP_VER, COMMENTS from s_app_ver;
V8.0
Database Schema for Siebel 2005 43r88_HEM17_06_SIA
```

Note that the schema owner is `oraperf`.

7. Update the Oracle Siebel Server license keys. Ignoring this important step may lead to a "License key expired" error and users may not be able to log into the application(s). If this occurs, the Oracle Siebel enterprise log will contain an error message similar to:

```
FINSObjMgr_enu_0016_16777226.log:ObjMgrLicense Error 1
0000000746e643ad:0 2007-

09-10 22:19:28 (dmlicmgr.cpp (133)) SBL-DAT-00171: A license key
for this software has expired.
```

To resolve a licensing error, obtain the latest license keys for Oracle Siebel Industry Applications (SIA / Verticals) 8.0 from the Oracle Web site (see `http://licensecodes.oracle.com/siebel_master.html`). Update the license keys in the database as shown below.

```
% sqlplus oraperf/oraperf@siamst
SQL*Plus: Release 10.2.0.4.0 - Production on Fri Sep 7 13:25:55
2007
Copyright (c) 1982, 2005, Oracle. All rights reserved.
Connected to:
Oracle Database 10g Enterprise Edition Release 10.2.0.4.0 -
64bit Production
With the Partitioning, OLAP and Data Mining options
SQL> delete from s_app_key;
7 rows deleted.
SQL> INSERT INTO S_APP_KEY
(ROW_ID,APP_KEY,CREATED_BY,LAST_UPD_BY) VALUES
2 ('ROW1','6356 2171 3923 8165 7432 3760 2425 8945 1323 7670
3960 0006 0000 6059 5600 0069
5956 0045 6003 6665 9560 0006 0000 0186 6602 4613 2361 3237 1722
1',sysdate,sysdate);
1 row created.
.
.
.
SQL> INSERT INTO S_APP_KEY
(ROW_ID,APP_KEY,CREATED_BY,LAST_UPD_BY) VALUES
2 ('ROW6','3823 6789 2134 4899 8226 3260 0116 0022 8548 3600
6085 483',sysdate,sysdate);
1 row created.
SQL> commit;
Commit complete.
```

8. Find zero row tables and delete them. This step helps to improve performance of the Siebel database.

9. Start using the database.

Application Server Installation

1. If the application server is on a separate physical machine from the database server and name services are not configured, create the user pspp, the user's home directory, and the user's default .profile file on that node.

   a. Create the user pspp, the user home directory, and set the user password:

```
% mkdir /export/pspp
% groupadd -g 10001 dba
% useradd -u 10001 -g dba -d /export/pspp -s /bin/ksh pspp
% cd /export
% chown -R pspp:dba pspp
% passwd pspp (set it to 'pspp')
```

   b. Create the `.profile` file for the user `pspp` on the application server:

```
set -o vi
stty erase ^H
export PS1="`uname -n`@`pwd`> "
export ORACLE_HOME=/export/pspp/oracle
export ORACLE_SID=siamst
export PATH=.:/export/pspp/oracle//bin:$PATH
export LD_LIBRARY_PATH=$ORACLE_HOME/lib32:$ORACLE_HOME/lib
alias rm="rm -i"
export SIEBEL_ASSERT_MODE=0
```

2. Install the `en_US.UTF-8` locale, the Java Development Kit (JDK) 6 Update 2, and the Oracle 10gR2 client.

   a. Make sure the `en_US.UTF-8` locale is installed on the system. Check the locales installed on the system by running the following command:

```
% locale -a
C
POSIX
en_CA
en_CA.ISO8859-1
en_US
en_US.ISO8859-1
en_US.ISO8859-15
en_US.ISO8859-15@euro
en_US.UTF-8
es
es_MX
es_MX.ISO8859-1
fr
fr_CA
fr_CA.ISO8859-1
iso_8859_1
```

   Set the locale to `en_US.UTF-8` by running the following two export commands:

```
% export LC_ALL=en_US.UTF-8
% export LANG=en_US.UTF-8
```

Finally run the `locale` command again to see whether the `en_US.UTF-8` locale is set properly:

```
% locale
LANG=en_US.UTF-8
LC_CTYPE="en_US.UTF-8"
LC_NUMERIC="en_US.UTF-8"
LC_TIME="en_US.UTF-8"
LC_COLLATE="en_US.UTF-8"
LC_MONETARY="en_US.UTF-8"
LC_MESSAGES="en_US.UTF-8"
LC_ALL= en_US.UTF-8
```

If the export command above ('`export LANG=en_US.UTF-8`') returns an error message that the locale couldn't be set correctly, it means that the `en_US.UTF-8` locale was not actually installed on the system. To install the `en_US.UTF-8` locale:

```
% cat /etc/release
```

Note down the version of the Oracle Solaris OS in use. Go to Oracle's Sun download Web site (`www.sun.com/downloads`) and search for the corresponding version of Oracle Solaris. Download the first CD image for that version, and extract the files with:

```
% cpio -imdv < cpioimage
```

From the CD image's root directory, the following command installs the locale on the system:

```
% localeadm -a en_US.UTF-8 -d Product
```

Then set the locale to `en_US.UTF-8` by running the following two export commands.

```
% export LC_ALL=en_US.UTF-8
% export LANG=en_US.UTF-8
```

b. Install JDK 6 Update 2 under the directory `/export/pspp/jdk6u11`.

c. Install the Oracle 11gR1 client (11.1.0.6.0) under the directory `/export/pspp/oracle`. After installation, perform these additional steps:

```
% cd /export/pspp/oracle/product/10.2.0/client
% mv * /export/pspp/oracle
```

3. Create `tnsnames.ora`, `listener.ora,` and check client connectivity

   a. Create `tnsnames.ora`. The example below assumes that `t2000-a1` is the application server host name, and `siamst` is the name of the Oracle service instance ID (SID).

```
% cat /export/pspp/oracle/network/admin/tnsnames.ora
siamst =
(DESCRIPTION =
(ADDRESS_LIST =
(ADDRESS = (PROTOCOL = TCP)(HOST = t2000-a1)(PORT = 1521))
)
(CONNECT_DATA =
(SERVICE_NAME = siamst)
)
)
```

   b. Add the following line to the file `/etc/hosts` :

```
192.168.109.55 t2000-a1 t2000-a1.test.xyz.com siamst
```

   c. Exit the current shell, start a fresh one and test the Oracle 10gR2 client connectivity:

```
% sqlplus oraperf/oraperf@siamst
SQL*Plus: Release 11.1.0.6.0 - Production on Sat Sep 8 21:39:44
2007
Copyright (c) 1982, 2007, Oracle. All rights reserved.
Connected to:
Oracle Database 10g Enterprise Edition Release 10.2.0.4.0 -
64bit Production
With the Partitioning, OLAP and Data Mining options
SQL> select count(*) from tab;
COUNT(*)
----------
4391
SQL> quit
```

4. Install the Oracle Siebel Enterprise Gateway Name Server and Application Server. The following commands assume that `v490-a2.test.xyz.com` is the host name of the Gateway Name Server and Application Server. (For simplicity, both the Gateway and the Application Servers are installed on the same host in the following procedure, but they could be installed on different hosts if desired.)

   a. Login as the root user and execute the following commands:

```
% cd /var/adm
% mkdir siebel
% chmod 777 siebel [or 'chown pspp:dba siebel']
% cd Siebel_Enterprise_Server
```

   b. Run the installation program:

```
% ./setupsol
```

   Use the following installation parameters:

Siebel Enterprise Server installation directory: **/export/pspp/**
Products to install: **Gateway Name Server, Siebel Server**
'Typical' installation (default)
language: enu - English (American) – (default)
Gateway Name Server TCPIP port: 2320 (default)
Uncheck 'Configure the Gateway Name Server service to automatically start'
Check 'Start the Gateway Name Server now'
Gateway Name Server Hostname: **v490-a2.test.xyz.com**
Gateway Name Server Listening Port: **2320**
Siebel Enterprise Name: **siebel**
Siebel File System: **/export/pspp/siebel/siebsrvr/fs**
Database platform of the Siebel application database: **Oracle Database 9i or 10g Enterprise Edition (CBO)**
Database user account for Siebel server login:
Database user account: **sadmin**
Database user account password: **sadmin**
Schema qualifier/Table owner: **oraperf**
SQLNet Connect String: **siamst**
Select "None" in the screen where the other options are "Siebel Data Quality Matching", "Siebel Data Quality Connector"
Chat server connect string: **v490-a2.test.xyz.com** (accept the default value)
GIF, JPEG, PNG? Select the default ie., **PNG**
Siebel connector for Oracle Applications or Siebel connector for PeopleSoft ... : Unselect"Register External Oracle DB ODBC Driver"
Siebel Connection Broker:
Enterprise Description: Siebel Enterprise (default)
Port Number: 2321 (default)
Compression type: **None**
Guest session timeout value: **300 seconds**
Session timeout value: **900 seconds**
HTTP port number: **8000**
HTTPS port number: **443**
Anonymous connections from employees:
Employee's Anonymous Login Name: **sadmin**
Employee's Anonymous Login Password: **sadmin**
Anonymous connections from contacts:
Contact login user name: **sadmin** (PSPP2/PRM uses this login which must be sadmin)
Contact login user password: **sadmin**
Siebel Enterprise Security Token: **test**
Uncheck "Configure Siebel Enterprise SSL"
Encryption type to be used for messages exchanged with the Siebel Server: **None**
Load balancing: Single Siebel Server in the Enterprise if only one Siebel server is going to be configured; Use Siebel Load Balancing in case of multiple Siebel servers in the enterprise
TCP port number on which the Siebel Connection Broker will receive inbound traffic into the Siebel Server.
AppServerHostName: **v490-a2.test.xyz.com**
Port number assigned to Siebel SCBroker component: **2321**
Siebel Server/Web Server profile name: **siebelpspp**
Network port that the Gateway Name Server is listening on
NameServerHostName: **v490-a2.test.xyz.com**
Gateway Name Server Listening Port: **2320**
Name for the Siebel Enterprise: **siebel** (default)
Uncheck "configure as Search Server"
Remote Search Server Host Name: leave it blank (default)
Remote Search Server Port Number: **2048** (default)
Siebel Server profile name: **siebelpspp**
Select a name for this Siebel Server.
Siebel Server Name: **v490-a2.test.xyz.com**
Siebel Server Description: accept the default

```
Select the component groups for functionality that will be
deployed in this enterprise.
Select:
Enterprise Application Integration
Workflow Management
Siebel Financial Services
Uncheck "Override synchronization Manager Port"
Uncheck "Set Siebel Server service to start automatically"
Check "Start the Siebel service now"
Uncheck "Configure Siebel Server SSL"
The name of the Siebel account under which the Siebel Management
Agent should run. Accept the defaults for:
Siebel User Account
Siebel User Account Password
JRE home location: /export/home/jdk6u11/jre
Uncheck "RC2 encryption for Siebel User Account Password"
(default)
RMI registry port: 1199 (default)
Select "None" in the screen that says "The Management Agents and
the Management Server must use the same authentication type".
Uncheck "SSL" in the screen that says "Use SSL for the Agent?"
_____________End of Siebel Server Installation_______________
```

c. Make a copy of the `siebelpspp` profile directory under the directory `/export/pspp/siebel/siebsrvr/fs`:

```
% cd /export/pspp/siebel/siebsrvr/fs
% tar cf siebelpspp.tar siebelpspp
```

d. Transfer the `siebelpspp.tar` file to the Web server node. This profile is needed while installing Oracle Siebel Web Server Extension (SWSE) with Oracle iPlanet Web Server (formerly Sun Java System Web Server) 6.1 SP10.

5. Start the Siebel Gateway Name Server and verify its operation.

a. Start the Siebel Gateway Name Server. On the Siebel Gateway host:

```
% cd /export/pspp/siebel/gtwysrvr
% . siebenv.sh
% start_ns
```

b. Check whether Siebel Gateway Name Server is running on port 2320:

```
% netstat -a | grep 2320
*.2320 *.* 0 0 400000 0 LISTEN
```

6. Start the Siebel Enterprise Application Server and verify its operation.

a. Start the Siebel Enterprise Server on the Siebel Enterprise Application Server host:

```
% cd siebsrvr
% . siebenv.sh
% start_server all
Siebel Server "v490-a2" (Enterprise "siebel")
```

```
started at Mon Sep 10 12:17:49 2007, pid: 15462
```

If `siebmtshmw` processes are not running after starting the Siebel Enterprise Server, check the enterprise logs at `$SIEBEL_HOME/enterprises/siebel/v490-a2/log`.

Web Server Installation

1. If the application server is on a separate physical machine from the database server and name services are not configured, create the user `pspp` the user's home directory, and the user's default `.profile` file on that node.

    a. Create the user `pspp`, the user home directory, and set the user password:

```
% mkdir /export/pspp
% groupadd -g 10001 dba
% useradd -u 10001 -g dba -d /export/pspp -s /bin/ksh pspp
% cd /export
% chown -R pspp:dba pspp
% passwd pspp (set it to 'pspp')
```

    b. Create the `.profile` file for the user `pspp` on the Web server:

```
set -o vi
stty erase ^H
export PATH=.:$PATH
umask 022
```

    c. If not done previously, tar up the `jdk6u11` directory on the application server node, transfer it over to the Web server node, and untar it under the directory `/export/pspp`.

2. Install Oracle iPlanet Web Server (formerly Sun Java System Web Server) 6.1 SP10.

    a. Oracle iPlanet Web Server Version 7 and earlier versions are not supported. Therefore, install only the 32-bit version of Oracle iPlanet Web Server 6.1 Service Pack 10 or later. Note that the SWSE installation fails with the 64-bit version of the Web server because SWSE is 32-bit.

    b. Run the installation program using the following parameters:

```
Choose an installation type: 2. Typical installation
Install location: /export/pspp/iws61sp10
Sun ONE Web Server components: ALL
Sun ONE Web Server, Enterprise Edition components:
1. Server Core
2. Java Development Kit
Specify the components you wish to install [1, 2]: accept the
default 1,2
Computer name [v490-a3.test.xyz.com]: Accept the default
System User [pspp]: Accept the default
System Group [dba]: Accept the default
Run Web Server Administration Server as [root]: pspp
Web Server Admin Server User Name [admin]: admin
Web Server Admin Server Password: admin
Web Server Admin Server Port [8888]: 8080
Web Server Port [80]: 8000
Web Server Content Root [/export/pspp/iws61sp10/docs]: Accept
the default
```

```
Extracting Server Core...
Extracting Java Development Kit...
Extracting Upgrade Files...
Server Core installed successfully.
Java Support installed successfully.
```

c. Make sure the Web server is accessible on port 8000:

```
% cd /export/pspp/iws61sp10/https-v490-a3.test.xyz.com
% ./start
Sun ONE Web Server 6.1SP10 B09/04/2008 10:03
info: CORE5076: Using [Java HotSpot(TM) Server VM, Version
1.4.2_13] from [Sun Microsystems
Inc.]
info: WEB0100: Loading web module in virtual server [https-v490-
a3.test.xyz.com] at
[/search]
info: HTTP3072: [LS ls1] http://v490-a3.test.xyz.com:8000 ready
to accept requests
startup: server started successfully
% netstat -a | grep 8000
*.8000 *.* 0 0 49152 0 LISTEN
```

d. Open up a Web browser and access the Web server home page by typing `http://v490-a3.test.xyz.com:8000` in the URL address bar.

e. Stop the Web server instance on port 8000:

```
% ./stop
server has been shutdown
```

3. Install Siebel Web Server Extension (SWSE) for Oracle iPlanet Web Server 6.1 SP10.

a. Enter the following commands as the root user:

```
% cd /var/adm
% mkdir siebel
% chown pspp:dba Siebel
```

b. Enter the following commands as the user `pspp`:

```
% mkdir /export/pspp/siebel-eapps
% cd Siebel_Web_Server_Extension
% ./setupsol
Siebel Web Server installation directory: /export/pspp/siebel-
eapps
Language: enu - English (American)
Profile location: <location of siebelpspp directory that you
downloaded from app server node>
Web server instance: /export/pspp/iws61sp8/https-v490-
a3.test.xyz.com
Check "Restart Web Server" (default)
```

c. Make sure that execution is successful. Otherwise read the log saved under the directory `/export/pspp/siebel-eapps` and fix the issues until execution is successful. In case of failed executions, uninstall `eapps` before running the installer again. To uninstall:

```
% cd /export/pspp/siebel-eapps/_uninst
% ./uninstall.sh eappweb
```

After the Siebel Web Server Extension (SWSE) is installed, the Oracle iPlanet Web Server (formerly Sun Java Web Server) must be restarted. Once the Web server is restarted and running, clients can access Siebel applications using the Microsoft Internet Explorer browser (no other browsers are supported). For example, to access the Siebel Financial Services application, type in the URL `http://<webserver_host>:<port>/fins_enu`.

Conclusion

Sun Storage 7000 Unified Storage Systems offer a flexible and scalable solution that can deliver fast I/O for Oracle Siebel CRM 8 applications. While providing high throughput, these storage systems feature simplified management and low power consumption, allowing datacenters to reduce administrative overhead and the required energy footprint and helping to improve ROI. Sun Storage 7000 Unified Storage Systems from Oracle facilitate a range of agile solutions that scale to meet requirements for performance, capacity, availability, and cost. This paper outlines procedures to build a proof-of-concept environment in which application developers and system managers can run sizing workloads in conjunction with these storage solutions.

About the Author

Abhishek Gupta works in the ISV Engineering group in Oracle's Sun System Organization. His group's charter is to continuously improve the competitive standing of Oracle's Sun products for key independent software vendor (ISV) applications and to work with ISV engineers to optimize ISV applications on Sun platforms. In addition to helping ISV engineers resolve technical issues, Abhishek performs benchmarking and sizing studies, and helps with performance tuning activities on Sun hardware and in conjunction with Sun technologies (such as virtualization). Prior to joining Sun and Oracle, Abhishek's early career experiences were in network and system administration, helping to manage corporate LAN/WAN networks, servers, storage, and other infrastructure resources.

Acknowledgments

The author would like to recognize the following individuals for their contributions to this article:

- Giri Mandalika, ISV Engineering (for help with Siebel installation and configuration)
- Devika Gollapudi, IPG SW Infrastructure (for help with Siebel software and installation)
- Sridhar Ranganathan, ISV Engineering (for help with the Sun Storage 7000 Series Unified Storage System)

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Deploying Oracle® Siebel CRM on Oracle's
Sun Storage 7000 Unified Storage Systems
April 2010
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