Creating and Configuring an Oracle Database

This chapter provides specific guidelines for configuring an Oracle database for use with Cisco Prime Network. For a full description of an Oracle installation and to be sure you have the most recent documentation, see the documentation that came with your Oracle software or see the Oracle Corporation website.

This chapter includes:

- **Before You Begin, page 4-1**
- **Creating an Oracle Database, page 4-2**
- **Changing XML DB Ports, page 4-12**
- **Configuring the Database Size, page 4-12**
- **Setting the open_cursors Parameter, page 4-13**
- **Configuring Oracle to Start Automatically When Cisco Prime Network Restarts, page 4-14**
- **Starting the Oracle Listener, page 4-15**
- **Maintaining the Database, page 4-15**
- **Using Chinese Characters with Cisco Prime Network, page 4-16**

### Before You Begin

Before starting the Cisco Prime Network installation, one of the Oracle versions shown in Table 4-1 must be installed with the Oracle JVM and partitioning options. (The partitioning option is required because Cisco Prime Network uses partitioning for event management.)

<table>
<thead>
<tr>
<th>Oracle Version</th>
<th>Required Solaris Patch(es)</th>
<th>Required Linux Patch(es)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle 10g Enterprise Edition Release 10.2.0.3.0 or later</td>
<td>p6025805_10203_SOLARIS64.zip</td>
<td>p6025805_10203_Linux-x86-64.zip</td>
</tr>
<tr>
<td>Oracle 11g Enterprise Edition Release 11.1.0.7.0</td>
<td>p8982191_11107_Solaris-64.zip</td>
<td>p8332021_111070_Linux-x86-64.zip</td>
</tr>
<tr>
<td></td>
<td>p8332021_11107_Solaris-64.zip</td>
<td></td>
</tr>
<tr>
<td>Oracle 11g Enterprise Edition Release 11.2.0.1.0 or later</td>
<td>p9259407_112010_SOLARIS64.zip</td>
<td>p9259407_112010_Linux-x86-64.zip</td>
</tr>
<tr>
<td></td>
<td>p8332021_112010_SOLARIS64.zip</td>
<td>p8332021_112010_Linux-x86-64.zip</td>
</tr>
</tbody>
</table>
Before you attempt to install Oracle, note the following:

- For deployment information and recommendations, such as supported configurations and system sizing, contact your Cisco account representative.
- The Oracle server can be installed on the Cisco Prime Network gateway or on any other remote workstation.
- Cisco Prime Network does not manage the starting and stopping of Oracle processes. Although the customer can back up and restore the Oracle database, the database administrator is responsible for automatically restarting Oracle processes in the event of a power failure.
- If an Oracle server is installed on the Cisco Prime Network gateway, no Oracle services can be installed on port 2100. If an Oracle listener is installed on port 2100, you must disable it or change the port number (see Disabling Database Features, page 4-5). By default, this port is used by the Oracle XML DB service.
- It is recommended that the Oracle user be called `oracle`, and that it be part of a group called `dba`.
- The database username and password that are related to the Cisco Prime Network application are created automatically during installation.
- In Cisco Prime Network, the clocks on the gateway and units must be synchronized. If Oracle is running on a separate workstation, that remote database workstation’s clock must be synchronized with the gateway and unit clocks.
- If you restart Oracle, you must also restart AVM 25 on both the gateway and unit.
- If your system is configured for gateway high availability, you should start and stop Cisco Prime Network and Oracle using the Veritas Cluster Manager application (or CLI commands). Stopping the applications using the regular application commands (without the awareness of the cluster software) can cause a failover. For more information, see the Cisco Prime Network 3.8 Administrator Guide.

### Download Location

Download the Oracle patches from [http://metalink.oracle.com](http://metalink.oracle.com).

---

**Note**

After installing an Oracle patch, you must change the permissions for the newly installed files to enable all OS users to use Oracle on the workstation. You can do this by running the script

```bash
ORACLE_HOME/install/changePerm.sh
```

---

### Creating an Oracle Database

The database instance installation can be performed as part of the Oracle installation or separately using the database configuration assistant (DBCA) utility. This section describes how to create an Oracle database instance using the DBCA utility. This utility is located in `ORACLE_HOME/bin` (where `ORACLE_HOME` is the Oracle installation directory).

The Cisco Prime Network database size is determined by the usage patterns and the expected load in your deployment. Contact your Cisco account representative to obtain the *Cisco Prime Network Capacity Planning Guide*, which helps you identify your database load profile and calculate your database memory and storage size requirements.
Cisco Prime Network provides sizing estimates for the following usage profiles, which vary according to the maximum expected rate of actionable events per second that your deployment can support:

- **Up to 200**—Represents a high-scale production environment with a maximum supported rate of database operations, including up to 200 actionable events per second, a maximum amount of services, and the highest rate of configuration archive and provisioning operations.

- **Up to 100**—Represents a high-scale production environment with a maximum supported rate of database operations, including up to 100 actionable events per second, a maximum amount of services, and the highest rate of configuration archive and provisioning operations.

- **Up to 50**—Represents a medium- to high-scale production environment with a medium rate of database operations, including up to 50 actionable events per second, a medium amount of services, and a medium rate of configuration archive and provisioning operations.

- **Up to 20**—Represents a medium- to small-scale production environment with a low rate of database operations, including up to 20 actionable events per second, a small amount of services, and a low rate of configuration archive and provisioning operations.

- **Up to 5**—Represents a small environment with a low rate of database operations, including up to 5 actionable events per second, a small amount of services, and a low rate of configuration archive and provisioning operations.

- **PoC/lab**—Represents a very small test or proof-of-concept environment with a single machine acting as a gateway, unit, and database (or with a separate unit), with no more than 50 VNEs and a low rate of events.

When installing a database instance, use the values in **Table 4-2** for the Oracle initialization parameters (for both Oracle 10g and Oracle 11g).

<table>
<thead>
<tr>
<th>Profile Name</th>
<th>Up to 5 Actionable Events per Second</th>
<th>Up to 20 Actionable Events per Second</th>
<th>Up to 50 Actionable Events per Second</th>
<th>Up to 100 Actionable Events per Second</th>
<th>Up to 200 Actionable Events per Second</th>
</tr>
</thead>
<tbody>
<tr>
<td>sga_max_size</td>
<td>4412407808</td>
<td>6509559808</td>
<td>6509559808</td>
<td>10301210624</td>
<td>10301210624</td>
</tr>
<tr>
<td>shared_pool_size</td>
<td>1258291200</td>
<td>2147483648</td>
<td>2147483648</td>
<td>2147483648</td>
<td>2147483648</td>
</tr>
<tr>
<td>large_pool_size</td>
<td>134217728</td>
<td>134217728</td>
<td>134217728</td>
<td>134217728</td>
<td>134217728</td>
</tr>
<tr>
<td>java_pool_size</td>
<td>218103808</td>
<td>335544320</td>
<td>335544320</td>
<td>335544320</td>
<td>335544320</td>
</tr>
<tr>
<td>pga_aggregate_target</td>
<td>1048576000</td>
<td>1887436800</td>
<td>1887436800</td>
<td>1887436800</td>
<td>1887436800</td>
</tr>
<tr>
<td>sga_target</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>memory_target</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>memory_max_target</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>db_cache_size</td>
<td>1048576000</td>
<td>2684354560</td>
<td>2684354560</td>
<td>2684354560</td>
<td>2684354560</td>
</tr>
<tr>
<td>db_keep_cache_size</td>
<td>318767104</td>
<td>872415232</td>
<td>872415232</td>
<td>3690987520</td>
<td>3690987520</td>
</tr>
<tr>
<td>db_recycle_cache_size</td>
<td>167772160</td>
<td>167772160</td>
<td>167772160</td>
<td>838860800</td>
<td>838860800</td>
</tr>
<tr>
<td>db_file_multiblock_read_count</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>16</td>
</tr>
</tbody>
</table>
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Creating an Oracle Database

**Note**

You can use two databases for the Cisco Prime Network system events and data and for the raw events. The Oracle SIDs used to store Cisco Prime Network system data and raw events can exist on separate Oracle instances.

For better performance, make sure you generate statistics for all tables in the database. Cisco Prime Network issues alerts if no statistics are generated, or if the current statistics are more than two weeks old.

**Note**

The network-user_admin user is a user with database administrator permissions who can run maintenance tasks—such as gathering statistics—on the other Cisco Prime Network database schemas. After the network-user_admin user is created, a cron job runs every 24 hours to gather statistics on network-user and network-user_EP tables. You no longer have to gather statistics manually.

If you expect a high scale in the first 24 hours, it might be necessary to manually force statistics gathering twice during the first day, 1 and 5 hours after noise start. To force statistics gathering, enter the following UNIX command as the network-user (where network-user is the UNIX user account for the Cisco Prime Network application, created when Cisco Prime Network is installed):

```bash
cd $ANAHOME/Main/scripts ; ./call_update_ana_stats.pl >& /dev/null
```

**Note**

$ANAHOME is the environment variable for the Cisco Prime Network home directory. It is set by the installation software.

Table 4-3 describes the steps involved in creating an Oracle 10g or Oracle 11g database using DBCA.

---

### Table 4-2  
**Database Initialization Parameters (continued)**

<table>
<thead>
<tr>
<th>Profile Name</th>
<th>Up to 5 Actionable Events per Second</th>
<th>Up to 20 Actionable Events per Second</th>
<th>Up to 50 Actionable Events per Second</th>
<th>Up to 100 Actionable Events per Second</th>
<th>Up to 200 Actionable Events per Second</th>
</tr>
</thead>
<tbody>
<tr>
<td>optimizer_index_cost_adj</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>optimizer_index_caching</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
</tr>
</tbody>
</table>

---

### Table 4-3  
**Creating an Oracle Database Using DBCA**

<table>
<thead>
<tr>
<th>DBCA Install UI</th>
<th>Recommended Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Database Configuration Assistant: Operations</td>
<td>Choose <a href="#">Create a Database</a></td>
</tr>
<tr>
<td>Database Configuration Assistant: Database Templates</td>
<td>Choose <a href="#">Custom Database</a></td>
</tr>
<tr>
<td>Database Configuration Assistant: Database Identification</td>
<td>• In the Global Database Name field, enter the database name.</td>
</tr>
<tr>
<td>Database Configuration Assistant: Database Identification</td>
<td>• In the SID field, enter the Oracle system identifier.</td>
</tr>
<tr>
<td>Database Configuration Assistant: Management Options</td>
<td>Retain the default selections.</td>
</tr>
<tr>
<td>Database Configuration Assistant: Database Credentials</td>
<td>Enter the passwords for the Oracle administrative accounts such as SYS and SYSTEM.</td>
</tr>
</tbody>
</table>
Disabling Database Features

The Database Configuration Assistant wizard guides you step-by-step through the Oracle database installation. When you are prompted to select the components to configure for use in the database, it is recommended that you disable all database components and remove the Oracle XML DB service.

Figure 4-1 shows the dialog box that lets you disable database components.

Table 4-3 Creating an Oracle Database Using DBCA (continued)

<table>
<thead>
<tr>
<th>DBCA Install UI</th>
<th>Recommended Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Database Configuration Assistant: Storage Options</td>
<td>Choose <strong>File System</strong>.</td>
</tr>
<tr>
<td>Database Configuration Assistant: Database File Locations</td>
<td>Retain the default selections.</td>
</tr>
<tr>
<td>Database Configuration Assistant: Recovery Configuration</td>
<td>See <strong>Archiving Logs for Oracle, page 4-8</strong>.</td>
</tr>
<tr>
<td>Database Configuration Assistant: Database Content</td>
<td>See <strong>Disabling Database Features, page 4-5</strong>.</td>
</tr>
<tr>
<td>Database Configuration Assistant: Initialization Parameters</td>
<td>See <strong>Configuring Memory Settings, page 4-8</strong>.</td>
</tr>
<tr>
<td>Database Configuration Assistant: Database Storage</td>
<td>See <strong>Configuring Database Storage (Redo Logs), page 4-10</strong>.</td>
</tr>
<tr>
<td>Database Configuration Assistant: Creation Options</td>
<td>Choose <strong>Create Database</strong>.</td>
</tr>
</tbody>
</table>
Disabling the Oracle XML DB Service for an Oracle 10g or Oracle 11g Installation

The following procedure describes how to disable the Oracle XML DB service during the database creation for Oracle 10g and Oracle 11g installations.

**Step 1**
In the Database Configuration Assistant wizard, click **Standard Database Components** (see Figure 4-1). The Standard Database Components dialog box (Figure 4-2) opens, asking you to select the standard database components to configure for use in your database.

![Figure 4-2 Disabling Oracle XML DB](image)

**Step 2**
Uncheck the **Oracle XML DB** check box, then click **OK**.

Configuring the cursor_sharing System Parameter

The cursor_sharing system parameter must be set to FORCE.

To configure the cursor_sharing system parameter:

**Step 1**
As the SYS user, enter the following command:

```
ALTER SYSTEM SET cursor_sharing='FORCE' SCOPE=BOTH;
```

**Step 2**
Enter the following SQL*PLUS command to verify that the parameter is set correctly:

```
SQL> show parameter cursor_sharing
```

In the command output, you should see:

```
NAME                  TYPE        VALUE
-----                 -----       -----
cursor_sharing        string      FORCE
```
Configuring the job_queue_processes System Parameter

The job_queue_processes system parameter must be set to 1000, which is the default on Oracle 11g. To configure the job_queue_processes parameter:

Step 1  As the SYS user, enter the following command:

```sql
alter system set job_queue_processes=1000 scope=both;
```

Step 2  Enter the following SQL*PLUS command to verify that the parameter is set correctly:

```sql
SQL> show parameter job_queue_processes
```

In the command output, you should see:

```
NAME                  TYPE        VALUE
-----                 -----       -----
job_queue_processes   integer     1000
```

Configuring the audit_trail System Parameter

You must disable Oracle auditing by setting the audit_trail system parameter to NONE. To configure the audit_trail system parameter:

Step 1  As the SYS user, enter the following command:

```sql
ALTER SYSTEM SET audit_trail=NONE SCOPE=spfile;
```

Step 2  As the SYS user, enter the following command to start the database:

```sql
Startup
```

Step 3  As the SYS user, enter the following SQL*PLUS command to verify that the parameter is set correctly:

```sql
SQL> show parameter audit_trail
```

In the command output, you should see:

```
NAME            TYPE         VALUE
-----           -----        -----
audit_trail     string       NONE
```

Disabling the Recycle Bin Option

If enabled, the Oracle recycle bin feature retains a version of each dropped object, which can lead to an accumulation of junk information in the Cisco Prime Network Manage DB Segments table.
Creating an Oracle Database

To disable the recycle bin option:

**Step 1** As the SYS user, enter one of the following commands, depending on your Oracle version:

- For Oracle 10g, enter:
  
  ```sql
  ALTER SYSTEM SET recyclebin = OFF scope=both;
  ```

- For Oracle 11g, enter:
  
  ```sql
  ALTER SYSTEM SET recyclebin = OFF DEFERRED scope=both;
  ```

**Step 2** Enter the following SQL*PLUS command to verify that the parameter has been disabled:

```sql
SQL> show parameter recyclebin
```

In the command output, you should see:

<table>
<thead>
<tr>
<th>NAME</th>
<th>TYPE</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>recyclebin</td>
<td>string</td>
<td>OFF DEFERRED</td>
</tr>
</tbody>
</table>

**Step 3** (Optional) As the network-user, enter the following command to see the objects that are currently saved in the recycle bin:

```sql
show recyclebin
```

**Step 4** (Optional) As the network-user, enter the following command to empty the recycle bin:

```sql
purge recyclebin;
```

### Configuring Memory Settings

Memory settings are configured in the Initialization Parameters panel of the Database Configuration Assistant wizard.

### Archiving the Database

The Database Configuration Assistant wizard lets you configure the settings required for archiving the database, including:

- Archiving Logs for Oracle, page 4-8
- Configuring Database Storage (Redo Logs), page 4-10

### Archiving Logs for Oracle

In the Recovery Configuration panel (Figure 4-3) in the Database Configuration Assistant wizard, you can configure the settings for recovering the database logs for an Oracle 10g or Oracle 11g installation.
Cisco Prime Network does not require you to enable archiving. This option is required only for backing up and restoring the database.

To configure the database recovery options:

**Step 1** Check **Enable Archiving** to enable the archiving feature, then click **Edit Archive Mode Parameters**. The Edit Archive Mode Parameters dialog box opens (Figure 4-4).
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Creating an Oracle Database

Step 2  Check Automatic Archiving.

Step 3  In the Archive Log File Format field, specify the archive log filename format.

Step 4  Specify the destination directories that are to contain the archive logs.

Step 5  Click OK.

Note  If a Flash Recovery Area was specified by the database administrator, the archive logs go there; otherwise, any other specified archive log destinations are used. It is recommended that archive log files be written to multiple locations spread across different disks.

---

Configuring Database Storage (Redo Logs)

In the Database Storage panel in the Database Configuration Assistant wizard, you can configure the Redo Log settings for an Oracle 10g or Oracle 11g installation, as shown in Figure 4-5.

Note  To support high event rates, redo log files must be six online 2-GB files on raw devices or on a dedicated disk partition mounted with the directio option. The redo log files must reside on a physical disk separate from the Oracle data files. In Oracle 11.2, the Oracle installer and DBCA do not support raw/block devices for database files (see Oracle note 754305.1).
Disabling Automatic Maintenance Jobs in Oracle 10g and Oracle 11g

If you deploy Cisco Prime Network to handle a high event rate, it is recommended that you disable Oracle’s automatic maintenance jobs. Automatic maintenance significantly affects Oracle performance and increases event processing time.

⚠️ Caution

The following procedure disables all scheduler maintenance activities. Complete the following procedure after implementing an alternative method of gathering database statistics. Some of the commands will fail in some versions of Oracle; you can ignore any failures.

**Step 1**

Connect to the Oracle database as the SYS user and enter the following commands:

```sql
execute DBMS_SCHEDULER.disable (name => 'GATHER_STATS_PROG',force => TRUE);
execute DBMS_SCHEDULER.disable (name => 'AUTO_SPACE_ADVISOR_PROG',force => TRUE);
execute dbms_scheduler.disable(name =>'GATHER_STATS_JOB',force => TRUE);
execute dbms_scheduler.disable(name =>'BSLN_MAINTAIN_STATS_JOB',force => TRUE);
execute DBMS_SCHEDULER.disable(name => 'SYS.ORA$AT_WGRP_SA', force => TRUE);
execute DBMS_SCHEDULER.disable(name => 'SYS.ORA$AT_WGRP_SQ', force => TRUE);
execute DBMS_SCHEDULER.disable(name => 'SYS.ORA$AT_WGRP_OS', force => TRUE);
EXECUTE DBMS_SCHEDULER.disable (name =>'SYS.MONDAY_WINDOW', force => TRUE);
EXECUTE DBMS_SCHEDULER.disable (name =>'SYS.TUESDAY_WINDOW', force => TRUE);
EXECUTE DBMS_SCHEDULER.disable (name =>'SYS.WEDNESDAY_WINDOW', force => TRUE);
EXECUTE DBMS_SCHEDULER.disable (name =>'SYS.THURSDAY_WINDOW', force => TRUE);
EXECUTE DBMS_SCHEDULER.disable (name =>'SYS.FRIDAY_WINDOW', force => TRUE);
EXECUTE DBMS_SCHEDULER.disable (name =>'SYS.SATURDAY_WINDOW', force => TRUE);
EXECUTE DBMS_SCHEDULER.disable (name =>'SYS.SUNDAY_WINDOW', force => TRUE);
EXECUTE DBMS_SCHEDULER.disable (name =>'SYS.WEEKNIGHT_WINDOW', force => TRUE);
EXECUTE DBMS_SCHEDULER.disable (name =>'SYS.WEEKEND_WINDOW', force => TRUE);
```
Changing XML DB Ports

If Oracle is installed on the Cisco Prime Network gateway, no Oracle services can be installed on port 2100. If an Oracle listener was installed on port 2100, you must disable it or change the port number. By default, this port is used by the Oracle XML DB service.

**Note**
You must change the FTP port number if an Oracle listener was installed by default on port 2100.

Use this procedure to change the port numbers of the XML DB listeners, if required.

This procedure applies only if you installed the Oracle XML DB service. If you disabled the Oracle XML DB service as shown in Figure 4-2, skip this section.

**Step 1** To log into Oracle SQL, enter:

```
sqlplus user/password
```

**Step 2** To change the HTTP port from 8080 to 8083, enter:

```
sql> call dbms_xdb.cfg_update(updateXML(dbms_xdb.cfg_get(), '/xdbconfig/sysconfig/protocolconfig/httpconfig/http-port/text()', 8083));
```

**Step 3** To change the FTP port from 2100 to 2111, enter:

```
sql> call dbms_xdb.cfg_update(updateXML(dbms_xdb.cfg_get(), '/xdbconfig/sysconfig/protocolconfig/ftpconfig/ftp-port/text()', 2111));
```

**Step 4** To commit the update, enter:

```
sql> COMMIT;
```

**Step 5** To refresh the settings, enter:

```
sql> exec dbms_xdb.cfg_refresh
```

**Step 6** To exit SQL Command Line, enter:

```
sql> exit
```

Configuring the Database Size

This section explains how to determine the size of the database and the amount of data files to use. Topics include:

- Defining the Data Files in the Database, page 4-13
- Recommended Disk Structure, page 4-13
Defining the Data Files in the Database

The size of the stored data is determined mainly by the number of stored events. By default, Cisco Prime Network is configured to archive events for up to 14 days. The archive size, the supported event rates, and the average event size dictate the expected database growth on a daily basis. Contact your Cisco account representative to obtain the Cisco Prime Network Capacity Planning Guide, which helps you make your sizing calculations.

Events that are archived for a long time cause a significant load on the database and require additional disk space. Cisco Prime Network 3.8 uses database schemas based on the username configured during installation (network-user and network-user_ep), which are each partitioned with a separate process. You can configure the partitions for the network-user scheme from the Cisco Prime Network GUI, but you should consult the Cisco Technical Assistance Center (TAC) first. You cannot configure the partitions for the network-user_ep scheme from the GUI. For information on using registry commands to configure the partitions for the network-user_ep scheme, consult the Cisco TAC and see the Cisco Prime Network 3.8 Administrator Guide.

Recommended Disk Structure

The recommended disk structure for an Oracle server based on the number of disks that the server holds:

- Oracle data files—The optimal location is an external disk array (preferably RAID 10).
- Online redo log files—The optimal location is an internal disk partition mounted with the directio option. The redo log files should not reside on the same disk as the data files.
- Archive files—Should not reside on the same disk as the data files.
- Backup files—Should not reside on the same disk as the data files.

Setting the open_cursors Parameter

Open cursors enable the reading and writing of data between the Oracle database and Cisco Prime Network. The open_cursors parameter defines the maximum number of cursors that can be opened concurrently, per session. The recommended maximum number of open cursors for use with Cisco Prime Network is 2000. An error is generated if the number of open cursors in a session exceeds the specified number.

To set the open_cursors parameter:

<table>
<thead>
<tr>
<th>Step 1</th>
<th>To check the value of the open_cursors parameter, enter:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SQL&gt; show parameter open_cursors</td>
</tr>
<tr>
<td></td>
<td>In the command output, you should see:</td>
</tr>
<tr>
<td></td>
<td>open_cursors integer 2000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 2</th>
<th>If the integer value is less than 2000, enter:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SQL&gt; ALTER SYSTEM SET open_cursors = 2000 SCOPE=BOTH;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 3</th>
<th>To verify that the value has changed, enter:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SQL&gt; show parameter open_cursors</td>
</tr>
</tbody>
</table>
Configuring Oracle to Start Automatically When Cisco Prime Network Restarts

By default, the Oracle application does not start automatically when Cisco Prime Network is rebooted. This is because the best practice is for the system database administrator to manually start the database in a controlled environment. However, if you want Oracle to start when the system is rebooted, there are multiple ways to accomplish this task. The following is one example; see the Oracle documentation for other implementations.

As the Oracle UNIX root user, create a file in the /etc/rc2.d directory named S99OracleDB, with the following contents:

```
ORA_OWNER=oracle
DBLOG=${INSTALL_DIR}/log/dbop.log
TZ=GMT
if [ -f /var/opt/oracle/oratab ]; then
  orahome="grep -v ":*" /var/opt/oracle/oratab | grep । sed -ne '1p' । awk -F: '{print $2}'"
else
  echo "/var/opt/oracle/oratab file doesn't exist. Please check if Oracle is installed "
  exit
fi
ORA_HOME=$orahome
TNS_ADMIN=$ORA_HOME/network/admin
if [ ! -f $ORA_HOME/bin/dbstart -o ! -d $ORA_HOME ]
then
  echo "Oracle startup cannot start"
  exit
fi
if [ ! -d ${INSTALL_DIR}/log ]; then
  mkdir ${INSTALL_DIR}/log
  chmod 777 ${INSTALL_DIR}/log
fi
if [ ! -f $DBLOG ]; then
  touch $DBLOG
fi
#start the Oracle databases
echo "Invoking dbstart at `date`" >> $DBLOG
echo >> $DBLOG
su - $ORA_OWNER -c $ORA_HOME/bin/dbstart
echo "Invoking Listener start at `date`" >> $DBLOG
echo >> $DBLOG
su - $ORA_OWNER -c lsnrctl start
echo "Listener started." >> $DBLOG
```

Note

If the open Cursors integer value is still less than 2000, contact your local database administrator.
Starting the Oracle Listener

After the database has been created, the Oracle listener should be started to enable the network-conf.pl configuration script to connect to the database.

To start the Oracle listener:

Step 1  To determine if the Oracle listener is up, enter:

    ps -ef | grep ora

    The following output should be displayed (if the ORACLE_HOME UNIX environment variable is set to /export/home/oracle):
    oracle 17327    1   0   Aug 02 ?    0:00 /export/home/oracle/product/10.2.0/bin/tnslsnr LISTENER -inherit

Step 2  If the Oracle listener is down, complete the following steps:
    a. Log in as user oracle.
    b. Enter lsnrctl start.

Password Settings in the Default Profile

When you create a database in Oracle Database 11g, passwords of users belonging to the default profile expire after 180 days. Because Cisco Prime Network database users receive the default profile, their database password will expire after 180 days. To prevent this from occurring, complete the following steps:

Step 1  Log into the Oracle SQL as the sysdba.

Step 2  Enter:

    alter profile default limit PASSWORD_LIFE_TIME unlimited;

Maintaining the Database

After database installation, maintaining the database can involve:

- **Maintaining Archive Log File Disk Space**—Ensure that there is sufficient space on a disk to store a large volume of archive logs caused by the large number of Cisco Prime Network updates to the database.

- **Adding Data Files to the Tablespace**—Add data files to enable the storage of event history logs for a longer period of time.

Note  Refer to your Oracle documentation for instructions on how to back up the Oracle software.
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Maintaining Archive Log File Disk Space

The large number of Cisco Prime Network updates to the database causes the size of the archive log to expand rapidly and consume a large amount of space on the disk partition. To maintain space on the disk partition, an Oracle database administrator should delete the archive log files periodically.

Adding Data Files to the Tablespace

After you install Cisco Prime Network and its database, you might need to add more data files, depending on the event rate per second. Here is an example showing how to add a data file to the existing tablespace for Oracle 10g or Oracle 11g:

```
alter tablespace tablespace-name add datafile 'new-data-file-full-path' size 32G autoextend off;
```

where `tablespace-name` is NETWORK_TABLESPACE, DWE_TABLESPACE, or EP_TABLESPACE. The size can be changed and is subject to actual needs and availability.

Note

With the exception of NETWORK ADMIN, Cisco Prime Network tablespace data files are generated in 1-GB sizes with autoextend set to 256 MB and no size limit. (The data file can grow to 32 GB.) It is recommended that you preallocate the database storage by creating all required data files to their full sizes in advance.

Understanding Cisco Prime Network Database Schemas

A Cisco Prime Network application UNIX account is created when Cisco Prime Network is installed. When the database is created, it uses this UNIX account name as the basis for naming the schemas. The following are the database schemas that Cisco Prime Network creates. In the following table, the Cisco Prime Network UNIX account is named network38.

<table>
<thead>
<tr>
<th>Schema Name</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>network-user</td>
<td>Cisco Prime Network general data</td>
<td>network38</td>
</tr>
<tr>
<td>network-user_ep</td>
<td>Cisco Prime Network event persistence and archiving data</td>
<td>network38_ep</td>
</tr>
<tr>
<td>network-user_dwe</td>
<td>Cisco Prime Network Workflow Engine data</td>
<td>network38_dwe</td>
</tr>
<tr>
<td>network-user_xmp</td>
<td>Optional Change and Configuration Management component</td>
<td>network38_xmp</td>
</tr>
<tr>
<td>network-user_admin</td>
<td>User with database administrator permissions who can run maintenance tasks—such as gathering statistics—on the other Cisco Prime Network database schemas</td>
<td>network38_admin</td>
</tr>
</tbody>
</table>

Using Chinese Characters with Cisco Prime Network

Cisco Prime Network Vision lets you attach business tags to the following network objects to support traditional and simplified Chinese characters:

- Location
- Node name
Chapter 4  Creating and Configuring an Oracle Database

Using Chinese Characters with Cisco Prime Network

- Router name
- Map aggregation

The following business tag functions support Chinese characters:
- Creating business tags for network objects
- Searching for business tags
- Generating a list of business tags
- Editing business tag details
- Removing business tags
- Exporting business tags through the northbound interface (NBI)
- Writing business tag notes

Complete the following sections to use Chinese characters with Cisco Prime Network.

Using Chinese Characters with Oracle

If you are using Chinese characters, make sure the database parameter NLS_CHARACTERSET is set to a value that supports UTF8. Otherwise, Chinese characters will not display correctly after you install or upgrade to Cisco Prime Network 3.8.

**Note**

If you are using Oracle 10g, you probably need to change the NLS_CHARACTERSET value. If you are using Oracle 11g or the embedded database, the NLS_CHARACTERSET value is set to AL32UTF8 by default, so you probably do not need to change it.

**Step 1**

Stop Cisco Prime Network before changing the character set of your database.

**Step 2**

To check the value of the NLS_CHARACTERSET parameter, enter the following SQL*PLUS command:

```
sql> SELECT parameter, value FROM v$nls_parameters WHERE parameter='NLS_CHARACTERSET';
```

If the value is UTF8 or AL32UTF8, skip the remaining steps; no further action is required.

**Step 3**

Check the job_queue_processes and aq_tm_processes parameters and record the current values, which you will restore later in this procedure. Complete the following substeps:

a. To check the job_queue_processes value, enter the following command:

```
SQL> show parameter job_queue_processes
```

In the command output, you should see:

```
NAME          TYPE      VALUE
-----          -----      ------
job_queue_processes integer 10
```

b. To check the aq_tm_processes value, enter the following command:

```
SQL> show parameter aq_tm_processes
```

In the command output, you should see:

```
NAME          TYPE      VALUE
-----          -----      ------
aq_tm_processes integer 0
```
Using Chinese Characters with Cisco Prime Network

If you are using Chinese characters, the Windows client workstation where the Cisco Prime Network 3.8 client is installed must have East Asian languages installed. Also, the regional options must support Chinese.

Step 1  In the Windows Control Panel, choose Regional and Language Options.
Step 2  Click the Languages tab.
Step 3  Insert the Windows CD.
Step 4  Check the Install files for East Asian languages check box.
Step 5  Click OK.
Step 6  Reopen the Windows Control Panel and choose Regional and Language Options.
Step 7  Click the Regional Options tab.
Using Chinese Characters with Cisco Prime Network

Step 8 In the drop-down list, choose **Chinese (PRC)**.

Step 9 Click **OK**.

Step 10 Restart your Windows client workstation.

Using Chinese Characters with Solaris

If you are using Chinese characters, make sure the Solaris environment variable LC_CTYPE is set to a value that supports UTF8. Otherwise, Chinese characters will not display correctly after you install or upgrade to Cisco Prime Network 3.8.

Step 1 Using SSH, connect to the Cisco Prime Network gateway, switch to `network-user` (where `network-user` is the UNIX user account for the Cisco Prime Network application, created when Cisco Prime Network is installed), and enter the following commands:

```
su - network-user
locale
```

The command output indicates whether the machine language (LC_CTYPE) uses UTF8.

- If the command output is UTF8, stop here; no further action is required.
- If the command output is not UTF8, enter the command `locale -a` and choose an option that uses UTF8 format; for example, `en_US.UTF-8`.

**Note** If the Solaris workstation does not have a UTF8 language package installed, see the Solaris documentation to install a UTF8 language package.

Step 2 If an error regarding language support occurs when you start Cisco Prime Network, do the following:

a. Verify that the LC_CTYPE value matches one of the folder names in the `/usr/lib/locale` directory. This location contains all folders for the currently installed language support on the Solaris operating system.

b. If the required language does not appear in the `/usr/lib/locale` directory, use the localeadm utility to add the language to the operating system.

Step 3 Enter the following command:

```
vi ~/.cshrc
```

Step 4 Add the following line in the `.cshrc` file:

```
setenv LC_CTYPE language-option
```

For example, to use the en_US.UTF-8 language option, enter:

```
setenv LC_CTYPE en_US.UTF-8
```

Step 5 Enter the following command to restart Cisco Prime Network 3.8:

```
networkctl restart
```

Step 6 Use PuTTY to verify whether the BQL connection supports Chinese characters. PuTTY supports UTF-8 on Telnet and SSH connections.

a. Open PuTTY.
b. Choose Windows > Translation > Character set.
c. Select UTF-8.
d. Click Open.
e. Connect to the Cisco Prime Network server 9002 port and run BQL commands. Verify whether the commands display Chinese characters correctly.

---

**Updating the Synth.xml File to Display Chinese Characters Correctly**

If Chinese characters are not displayed correctly in the GUI, it is because the `synth.xml` file contains a physical font (such as Tahoma) that does not support Chinese characters. See the following example.

---

**Step 1** Navigate to the `/export/home/ana37/Main/webstart/jars/xmp-laf` directory and open the Cues.jar file.

**Step 2** Under `com/cisco/plaf`, modify `synth.xml` with the new fonts. The default font is defined as “Tahoma,” as follows:

```xml
<state>
<!-- CUES: <font id="SyntheticaDefaultFont" name="Segoe UI" size="12"/>
<color type="FOREGROUND" value="#333333"/>-->
<font id="SyntheticaDefaultFont" name="Tahoma" size="11"/>
<color type="FOREGROUND" value="#222222"/>
</state>
```

**Step 3** Change all four instances of “font name=” and/or “font id=” to the desired font. Cisco Prime Network was tested with the “Dialog” font.

**Step 4** Save and exit the `synth.xml` file.