

# Oracle® Database

## Quick Installation Guide

11g Release 2 (11.2) for IBM AIX on POWER Systems (64-Bit)

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This guide describes how to quickly install Oracle Database 11g Release 2 (11.2) on IBM AIX on POWER Systems (64-Bit). It includes information about the following topics:

- [Reviewing Information About This Guide](#)
- [Logging In to the System as root](#)
- [Checking the Hardware Requirements](#)
- [Checking the Software Requirements](#)
- [Creating Required Operating System Groups and Users](#)
- [Configure Shell Limits and System Configuration Parameters](#)
- [Creating Required Directories](#)
- [Configuring the oracle User's Environment](#)
- [Running the rootpre.sh Script](#)
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## 1 Reviewing Information About This Guide

This guide describes how to install Oracle Database by using the default installation options.

### Tasks Described in This Guide

The procedures in this guide describe how to:

- Configure your system to support Oracle Database
- Install Oracle Database on a local file system by using the Typical Installation option
- Configure a general-purpose Oracle Database installation that uses the local file system for database file storage

## Results of a Successful Installation

After you successfully install Oracle Database:

- The database that you created and the default Oracle Net listener process run on the system.
- Oracle Enterprise Manager Database Control run on the system and can be accessed by using a Web browser.

## Tasks Not Described in This Guide

This guide covers the Basic Installation scenario and does *not* describe how to complete the following tasks:

- Using the Advanced Installation option to install the software
- Installing the software on a system that has an existing Oracle software installation
- Installing Oracle Clusterware and Oracle Real Application Clusters (Oracle RAC) on a cluster
- Enabling Enterprise Manager e-mail notifications or automated backups
- Using alternative storage options such as Oracle Automatic Storage Management
- Installing and configuring Oracle Grid Infrastructure

## Where to Get Additional Installation Information

For more information about installing Oracle Database, including information about the tasks not described in this guide, refer to the following guides:

- To install the software on a single system, then refer to *Oracle Database Installation Guide*.
- To perform an Oracle Real Application Clusters installation, then refer to *Oracle Grid Infrastructure Installation Guide* and *Oracle Real Application Clusters Installation Guide*. These guides describe how to install Oracle Clusterware and Oracle Real Application Clusters. Oracle clusterware is a prerequisite for Oracle Real Application Clusters installations.

All these guides are available on the product disc. To access them, use a Web browser to open the `welcome.htm` file located in the top-level directory of the media. Platform-specific documentation is available in PDF and HTML formats in the Documentation section.

## 2 Logging In to the System as root

Before you install the Oracle software, you must complete several tasks as the `root` user. To log in as the `root` user, complete one of the following procedures:

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**Note:** You must install the software from an X Window System workstation, an X terminal, or a PC or other system with X server software installed

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- Following are the steps for installing the software from an X Window System workstation or X terminal:
  1. Start a local terminal session, for example, an X terminal (`xterm`).

2. If you are not installing the software on the local system, then enter the following command to enable the remote host to display X applications on the local X server:

```
$ xhost fully_qualified_remote_host_name
```

For example:

```
$ xhost somehost.us.example.com
```

3. If you are not installing the software on the local system, then use the `ssh`, `rlogin`, or `telnet` command to connect to the system where you want to install the software:

```
$ telnet fully_qualified_remote_host_name
```

4. If you are not logged in as the `root` user, then enter the following command to switch user to `root`:

```
$ su - root
password:
#
```

- Following are the steps for installing the software from a PC or other system with X server software:

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**Note:** If necessary, refer to your X server documentation, or contact your X server vendor or system administrator for more information about completing this procedure. Depending on the X server software that you are using, you may have to complete the tasks in a different order.

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1. Start the X server software.
2. Configure the security settings of the X server software to permit remote hosts to display X applications on the local system.
3. Connect to the remote system where you want to install the software and start a terminal session on that system, for example, an X terminal (`xterm`).
4. If you are not logged in as the `root` user on the remote system, then enter the following command to switch user to `root`:

```
$ su - root
password:
#
```

## 3 Checking the Hardware Requirements

The system must meet the following minimum hardware requirements:

- [Memory Requirements](#)
- [System Architecture](#)
- [Disk Space Requirements](#)
- [Run Level Requirement](#)

### 3.1 Memory Requirements

The following are the memory requirements for installing Oracle Database 11g Release 2 (11.2):

- **Minimum:** 1 GB of RAM

**Recommended:** 2 GB of RAM or more

To determine the physical RAM size, enter the following command:

```
# /usr/sbin/lssattr -E -l sys0 -a realmem
```

If the size of the RAM is less than the required size, then you must install more memory before continuing.

- The following table describes the relationship between installed RAM and the configured swap space requirement:

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**Note:** On AIX systems, with 1 GB or more of memory, Oracle recommends that you set the paging space to an initial setting of half the size of RAM plus 4 GB, with an upper limit of 32 GB. During installation, to optimize paging, monitor the paging space use in a separate window. Use the command `chps` to increase or decrease the paging space size. The output of `chps` should indicate paging space use of less than 25 percent on a healthy system. Refer to *Oracle Database Administrator's Reference for Linux and UNIX-Based Operating Systems* for more information about configuring paging space.

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Available RAM	Swap Space Required
Between 1 GB and 2 GB	1.5 times the size of the RAM
Between 2 GB and 16 GB	Equal to the size of the RAM
More than 16 GB	16 GB

To determine the size of the configured swap space, enter the following command:

```
# /usr/sbin/lspcs -a
```

If necessary, refer to the operating system documentation for information about how to configure additional swap space.

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**IMPORTANT:**

- Oracle recommends that you take multiple values for the available RAM and swap space before finalizing a value. This is because the available RAM and swap space keep changing depending on the user interactions with the computer.
  - Contact your operating system vendor for swap space allocation guidance for your server. The vendor guidelines supersede the swap space requirements listed in this guide.
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## 3.2 System Architecture

To determine whether the system architecture can run the software, enter the following command:

```
# /usr/bin/getconf HARDWARE_BITMODE
```

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**Note:** This command displays the processor type. Verify that the processor architecture matches the Oracle software release that you want to install. If you do not see the expected output, then you cannot install the software on this system.

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The expected output of this command is 64. If you do not see the expected output, then you cannot install the software on this system.

To determine if the system is started in 64-bit mode, enter the following command:

```
# bootinfo -K
```

The result of this command must be 64, indicating that the 64-bit kernel is enabled.

For AIX, Oracle Database 11g supports 64-bit kernel and does not provide support for 32-bit kernel applications.

## 3.3 Disk Space Requirements

The following are the disk space requirements for installing Oracle Database 11g Release 2 (11.2):

- At least 1 GB of space in the /tmp directory

To determine the amount of disk space available in the /tmp directory, enter the following command:

```
# df -k /tmp
```

If there is less than the required amount of free disk space available in the /tmp directory, then complete one of the following steps:

- Delete unnecessary files from the /tmp directory to meet the disk space requirement.
- Set the TMP and TMPDIR environment variables when setting the oracle user's environment.
- Extend the file system that contains the /tmp directory. If necessary, contact the system administrator for information about extending file systems.
- To determine the amount of free disk space on the system, enter the following command:  

```
# df -k
```
- The following table describes the disk space requirements for software files for each installation type:

Installation Type	Requirement for Software Files (GB)
Enterprise Edition	7.51

Installation Type	Requirement for Software Files (GB)
Standard Edition	7.07

- The following table describes the disk space for data files for each installation type:

Installation Type	Disk Space for Data Files (GB)
Enterprise Edition	1.75
Standard Edition	1.73

Additional disk space, either on a file system or in an Oracle Automatic Storage Management disk group, is required for the fast recovery area if you choose to configure automated backups.

### 3.4 Run Level Requirement

Ensure that the system is started with run level 2.

## 4 Checking the Software Requirements

Depending on the products that you intend to install, verify that the following software are installed on the system.

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#### Note:

- This guide contains information required to install Oracle Database 11g Release 2 (11.2) on various platforms. Ensure that you review information related to the platform on which you intend to install Oracle Database 11g.
  - Oracle Universal Installer performs checks on the system to verify that it meets the listed requirements. To ensure that these checks pass, verify the requirements before you start Oracle Universal Installer.
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- [Operating System Requirements](#)
- [Compiler Requirements](#)
- [Patch Requirement](#)
- [Additional Software Requirements](#)

### 4.1 Operating System Requirements

The following, or later versions, of the operating systems are required for Oracle Database 11g Release 2 (11.2):

- AIX 5L V5.3 TL 09 SP1 ("5300-09-01"), 64 bit kernel
- AIX 6.1 TL 02 SP1 ("6100-02-01"), 64-bit kernel
- AIX 7.1 TL 0 SP1 ("7100-00-01"), 64-bit kernel

The following operating system filesets are required for **AIX 5L**:

- bos.adt.base
- bos.adt.lib
- bos.adt.libm
- bos.perf.libperfstat 5.3.9.0 or later
- bos.perf.perfstat
- bos.perf.proctools
- xlc.aix50.rte.10.1.0.0 or later
- gpfs.base 3.2.1.8 or later

The following operating system filesets are required for **AIX 6.1**:

- bos.adt.base
- bos.adt.lib
- bos.adt.libm
- bos.perf.libperfstat 6.1.2.1 or later
- bos.perf.perfstat
- bos.perf.proctools
- xlc.aix61.rte.10.1.0.0 or later
- xlc.rte.10.1.0.0 or later
- gpfs.base 3.2.1.8 or later

The following operating system filesets are required for **AIX 7.1**:

- bos.adt.base
- bos.adt.lib
- bos.adt.libm
- bos.perf.libperfstat
- bos.perf.perfstat
- bos.perf.proctools
- xlc.aix61.rte:10.1.0.0 or later
- xlc.rte.10.1.0.0 or later
- gpfs.base 3.3.0.11 or later

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**Note:**

- On AIX 5L operating system, if you set the value of `LOCK_SGA` parameter to true, then you must ensure that the `CAP_BYPASS_RAC_VMM` and `CAP_PROPAGATE` privileges are enabled for the operating system account that is used to start the respective database instances. Otherwise, setting the value of `LOCK_SGA` parameter to TRUE alone does not ensure startup of the database instance.
  - The GPFS fileset is required only if you want to use the IBM GPFS cluster file system as the shared storage for Oracle clusterware or database files.
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1. To determine the distribution and version of AIX installed, enter the following command:

```
# oslevel -s
```

**For AIX 5L:** If the operating system version is lower than AIX 5.3 Technology Level 9 SP 1, then upgrade your operating system to this or a later, level.

**For AIX 6.1:** If the operating system version is lower than AIX 6.1 Technology Level 2 SP 1, then upgrade your operating system to this or a later, level.

**For AIX 7.1:** If the operating system version is lower than AIX 7.1 Technology Level 0 SP 1, then upgrade your operating system to this or a later, level.

AIX maintenance packages are available from the following Web site:

<http://www-933.ibm.com/support/fixcentral/>

2. To determine whether the required filesets are installed and committed, enter a command similar to the following:

```
# lsllp -l bos.adt.base bos.adt.lib bos.adt.libm bos.perf.perfstat \
bos.perf.libperfstat bos.perf.proctools
```

3. To determine the supported kernel mode, enter a command similar to the following:

```
# getconf KERNEL_BITMODE
```

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**Note:**

- The expected output of this command is 64. If you do not see the expected output, then you cannot install the software on this system.
  - Oracle Database 11g supports 64-bit kernel and does not provide support for 32-bit kernel applications.
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## 4.2 Compiler Requirements

The following is the minimum compiler requirement for Pro\*C/C++, Oracle Call Interface, Oracle C++ Call Interface, and Oracle XML Developer's Kit (XDK) with Oracle Database 11g Release 2 (11.2):



IBM XL C/C++ Enterprise Edition for AIX, V9.0 April 2008 PTF:

You can download this software from the following link:

<http://www-01.ibm.com/support/docview.wss?uid=swg24019055>

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**Note:** Even if you do not install the IBM XL C/C++ compiler, you require the compiler for AIX Runtime Environment Component. The run-time environment file sets can be downloaded with no license requirements. The minimum recommended run-time environment for AIX 5.3 and AIX 6.1 is available at the following URL:

**IBM XL C/C++ for AIX, V10.1 Runtime Environment**

<http://www-01.ibm.com/support/docview.wss?rs=2239&uid=swg24019829>

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### 4.3 Patch Requirement

The following, or later, patches are required for Oracle Database 11g Release 2 (11.2) for AIX Based Systems:

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**Note:**

- AIX APAR numbers are tied to AIX versions and technology levels. Download and install the APAR that matches your AIX versions and Technology Levels from the IBM fix central Web site at the following URL:

<http://www-933.ibm.com/support/fixcentral/>

- If you are using a later TL level than the minimum level listed for this release, then check with IBM to determine if the required APARs listed here are included in the TL level that you have on your system. If they are included, then you do not have to install them. If they are not included, then you must install the equivalent APAR for the appropriate TL level.
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Installation Type or Product	Requirement
All installations	<p>Authorized Problem Analysis Reports (APARs) for <b>AIX 5L</b>:</p> <p>If you are using the minimum operating system TL level for AIX 5L listed above, then install all AIX 5L V5.3 Authorized Problem Analysis Reports (APARs) for AIX 5L V5.3 TL 09 SP1, and the following AIX fixes:</p> <ul style="list-style-type: none"> <li>■ IZ42940</li> <li>■ IZ49516</li> <li>■ IZ52331</li> </ul> <p>These 5.3 fixes are present in the following TL levels:</p> <ul style="list-style-type: none"> <li>■ AIX 5.3 TL-09 SP-05 and later</li> <li>■ AIX 5.3 TL-10 SP-02 and later</li> <li>■ AIX 5.3 TL-11</li> </ul> <p>Authorized Problem Analysis Reports (APARs) for <b>AIX 6L</b>:</p> <p>If you are using the minimum operating system TL level for AIX 6L listed above, then install all AIX 6L 6.1 Authorized Problem Analysis Reports (APARs) for AIX 6.1 TL 02 SP1, and the following AIX fixes:</p> <ul style="list-style-type: none"> <li>■ IZ41855</li> <li>■ IZ51456</li> <li>■ IZ52319</li> </ul> <p>These 6.1 fixes are present in the following TL levels:</p> <ul style="list-style-type: none"> <li>■ AIX 6.1 TL-02 SP-04 and later</li> <li>■ AIX 6.1 TL-03 SP-02 and later</li> <li>■ AIX 6.1 TL-04</li> </ul> <p>Authorized Problem Analysis Reports (APARs) for <b>AIX 7L</b>:</p> <p>If you are using the minimum operating system TL level for AIX 7.1 listed above, then install all AIX 7L 7.1 Authorized Problem Analysis Reports (APARs) for AIX 7.1 TL 0 SP1, and the following AIX fixes:</p> <ul style="list-style-type: none"> <li>■ IZ87216</li> <li>■ IZ87564</li> </ul>

The following procedure describes how to check these requirements:

- To determine whether an APAR is installed, enter a command similar to the following:

```
# /usr/sbin/instfix -i -k "IZ42940 IZ49516 IZ52331 IZ41855 IZ52319"
```

If an APAR is not installed, then download it from the following Web site and install it:

<http://www-933.ibm.com/support/fixcentral/>

- If you require a CSD for WebSphere MQ, then refer to the following Web site for download and installation information:

[http://www-947.ibm.com/support/entry/portal/Downloads/Software/WebSphere/WebSphere\\_MQ](http://www-947.ibm.com/support/entry/portal/Downloads/Software/WebSphere/WebSphere_MQ)

## 4.4 Additional Software Requirements

Depending on the components you want to use, you must ensure that the following software are installed:

- [Oracle JDBC/OCI Drivers](#)
- [ODBC Drivers](#)
- [Oracle Messaging Gateway](#)
- [Browser Requirements](#)
- [Programming Languages](#)

### 4.4.1 Oracle JDBC/OCI Drivers

Use JDK 6 (Java 6 64-bit 6.0.0.50 IZ30726 (SR2)) or JDK 5 (Java 5 64-bit 5.0.0.250 IZ55274 (SR10)) with the JNDI extension with the Oracle Java Database Connectivity and Oracle Call Interface drivers. However, these are not mandatory for the database installation. Note that JDK 1.5 is installed with this release.

### 4.4.2 ODBC Drivers

Oracle ODBC driver on AIX is certified with ODBC Driver Manager 2.2.12. You can download and install the Driver Manager from the following link:

<http://www.unixodbc.org>

ODBC Driver Manager is not required to install Oracle Database.

To use ODBC, install gcc 3.4.5.

### 4.4.3 Oracle Messaging Gateway

Oracle Messaging Gateway supports the integration of Oracle Streams Advanced Queuing (AQ) with the following software:

- Tibco Rendezvous 7.2
- IBM WebSphere MQ for AIX V6.0.2.3

`mqm.Client.Bnd`  
`mqm.Server.Bnd`

- IBM WebSphere MQ for AIX V7.0.1.3

If you require a CSD for WebSphere MQ, then refer to the following Web site for download and installation information:

[http://www-947.ibm.com/support/entry/portal/Downloads/Software/WebSphere/WebSphere\\_MQ](http://www-947.ibm.com/support/entry/portal/Downloads/Software/WebSphere/WebSphere_MQ)

#### 4.4.4 Browser Requirements

Web browsers must support JavaScript, and the HTML 4.0 and CSS 1.0 standards. The following browsers meet these requirements for Oracle Enterprise Manager Database Control:

- Netscape Navigator 8.1
- Netscape Navigator 9.0
- Microsoft Internet Explorer 6.0 SP2
- Microsoft Internet Explorer 7.0 SP1
- Microsoft Internet Explorer 8.0
- Microsoft Internet Explorer 9.0
- Firefox 2.0
- Firefox 3.0.7
- Firefox 3.5
- Firefox 3.6
- Safari 3.0.4
- Safari 3.1
- Safari 3.2
- Safari 4.0.x
- Google Chrome 3.0
- Google Chrome 4.0

#### 4.4.5 Programming Languages

The following products are certified for use with:

- Pro\* COBOL
  - IBM COBOL for AIX Version 3.1
  - Micro Focus Server Express 5.1
- Pro\* FORTRAN
  - IBM XL Fortran Enterprise Edition for AIX, V11.1 April 2008 PTF
- Ada
  - OC Systems PowerAda 5.5

For more information about OC Systems and PowerAda, refer to the following URL:

<http://www.ocsystems.com/contact.html>

## 5 Creating Required Operating System Groups and Users

The following local operating system groups and users are required if you are installing Oracle Database:

- The Oracle Inventory group (oinstall)
- The OSDBA group (dba)

- The Oracle software owner (oracle)

To determine whether these groups and users exist, and if necessary, to create them, follow these steps:

1. To determine whether the oinstall group exists, enter the following command:

```
# more /etc/oraInst.loc
```

If the output of this command shows the oinstall group name, then the group exists.

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**Note:** In Oracle documentation, Oracle Inventory group is called oinstall. However, it is not mandatory to use the same name, you can enter a different name for the group.

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If the oraInst.loc file exists, then the output from this command is similar to the following:

```
inventory_loc=/u01/app/oraInventory
inst_group=oinstall
```

The inst\_group parameter shows the name of the Oracle Inventory group, for example oinstall.

2. To determine whether the dba group exists, enter the following command:

```
# grep dba /etc/group
```

If the output from this commands shows the dba group name, then the group exists.

3. If necessary, use the following procedure to create the oinstall and dba groups:

- a. Enter the following command:

```
# smit security
```

- b. Choose the appropriate menu items to create the oinstall and dba groups.

- c. Press **F10** to exit.

4. To determine whether the oracle user exists and belongs to the correct groups, enter the following command:

```
# id oracle
```

If the oracle user exists, then this command displays information about the groups to which the user belongs. The output should be similar to the following, indicating that oinstall (for example) is the primary group and dba is a secondary group:

```
uid=440(oracle) gid=200(oinstall) groups=201(dba),202(oper)
```

5. If the oracle user does not exist or to create the oracle user, then use the following procedure:

- a. Enter the following command:

```
# smit security
```

- b. Choose the appropriate menu items to create the `oracle` user, specifying the following information:

In the **Primary GROUP** field, specify the Oracle Inventory group, for example `oinstall`.

In the **Group SET** field, specify the OSDBA group and if required, the OSOPER group. For example `dba`.

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**Note:** The UID for the `oracle` user must be less than 65536.

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- c. Press **F10** to exit.
6. If the `oracle` user exists, but its primary group is not `oinstall` or it is not a member of the `dba` group, then use the following procedure to modify the `oracle` user:
- a. Enter the following command:  

```
# smit security
```
  - b. Choose the appropriate menu items to modify the `oracle` user, specifying the following information:  
  
In the **Primary GROUP** field, specify the Oracle Inventory group, for example `oinstall`.  
  
In the **Group SET** field, specify the OSDBA group and if required, the OSOPER group. For example `dba`.
  - c. Press **F10** to exit.
7. Set the password for the `oracle` user:  

```
# passwd oracle
```

## 6 Configure Shell Limits and System Configuration Parameters

This section contains the following topics:

- [Configure Shell Limits](#)
- [Configure System Configuration Parameters](#)
- [Checking Asynchronous Input Output Processes](#)

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**Note:** The parameter and shell limit values shown in this section are recommended values only. For production database systems, Oracle recommends that you tune these values to optimize the performance of the system. See your operating system documentation for more information about tuning kernel parameters.

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Oracle recommends that you set shell limits and system configuration parameters as described in this section.

## 6.1 Configure Shell Limits

For AIX, it is the `ulimit` settings that determine process memory related resource limits. Verify that the shell limits shown in the following table are set to the values shown.

Shell Limit (As Shown in <code>smit</code> )	Recommended Value
Soft FILE size	-1 (Unlimited)
Soft CPU time	-1 (Unlimited)
	<b>Note:</b> This is the default value.
Soft DATA segment	-1 (Unlimited)
Soft STACK size	-1 (Unlimited)
Soft Real Memory size	-1 (Unlimited)
Processes (per user)	-1 (Unlimited)
	<b>Note:</b> This limit is available only in AIX 6.1 or later. Refer to <a href="#">"Configure System Configuration Parameters"</a> for information on configuration of processes per user limits.

To view the current value specified for these shell limits, and to change them if necessary:

1. Enter the following command:

```
# smit chuser
```

2. In the **User NAME** field, enter the user name of the Oracle software owner, for example `oracle`.
3. Scroll down the list and verify that the value shown for the soft limits listed in the previous table is -1.  
If necessary, edit the existing value.
4. When you have finished making changes, press **F10** to exit.

## 6.2 Configure System Configuration Parameters

Verify that the kernel parameters shown in the following table are set to values greater than or equal to the minimum value shown.

Parameter	Recommended Value
<code>maxuproc</code> s	16384
<code>ncargs</code>	128

The following procedure describes how to verify and set the values.

- To verify that the maximum number of processes allowed per user is set to 16384 or greater, use the following steps:

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**Note:** For production systems, this value should be at least 128 plus the sum of the PROCESSES and PARALLEL\_MAX\_SERVERS initialization parameters for each database running on the system.

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1. Enter the following command:  

```
# smit chgsys
```
  2. Verify that the value shown for **Maximum number of PROCESSES** allowed per user is greater than or equal to 16384.  
If necessary, edit the existing value.
  3. When you have finished making changes, press **F10** to exit.
- To verify that long commands can be executed from shell, use the following steps:

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**Note:** Oracle recommends that you set the ncargs system attribute to a value greater than or equal to 128. The ncargs attribute determines the maximum number of values that can be passed as command line arguments.

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1. Enter the following command:  

```
# smit chgsys
```
2. Verify that the value shown for **ARG/ENV list size in 4K byte blocks** is greater than or equal to 128.  
If necessary, edit the existing value.
3. When you have finished making changes, press **F10** to exit.

## 6.3 Checking Asynchronous Input Output Processes

On AIX 5, run the rootpre.sh script to enable the AIO (Asynchronous Input Output) device drivers. On AIX 6, the AIO device drivers are enabled by default. For both AIX 5 and AIX 6, increase the number of aioserver processes from the default value. The recommended value for aio\_maxreqs is 64k (65536). Confirm this value for both AIX 5 and AIX 6.

Confirm the aio\_maxreqs value using the procedure for your release:

### AIX 6.1:

```
# ioo -o aio_maxreqs  
aio_maxreqs = 65536
```

### On AIX 5.3:

```
# lsattr -El aio0 -a maxreqs  
maxreqs 65536 Maximum number of REQUESTS True
```

When performing an asynchronous I/O to a file system, note that each asynchronous I/O operation is tied to an asynchronous I/O server. Thus, the number of asynchronous I/O servers limits the number of concurrent asynchronous I/O operations in the system.



The initial number of servers that are started during a system restart is determined by the `minservers` parameter. As concurrent asynchronous I/O operations occur, additional asynchronous I/O servers are started, up to a maximum of the value set in the `maxservers` parameter.

On AIX 5.3, if you are using Oracle Database with data files on a file system then increase the default values for `minservers` and `maxservers`, as the default values for these parameters are too small. Increase the `minservers` and `maxservers` values based on I/O `kprocs` for each processor.

In general, to set the number of asynchronous I/O servers, complete the following procedure:

1. Adjust the initial value of `maxservers` to 10 times the number of disks that are to be used concurrently but no more than 80.
2. Monitor the performance effects on the system during periods of high I/O activity. If all AIO server processes are started, then increase the `maxservers` value. Also, continue to monitor the system performance during peak I/O activity to determine if there was a benefit from the additional AIO servers. Too many asynchronous I/O servers increase memory and processor overload of additional processes, but this disadvantage is small.

To monitor the number of AIO server processes that have started, enter the following:

```
# ps -ek|grep -v grep|grep -v posix_aioserver|grep -c aioserver
```

## 7 Creating Required Directories

Create directories with names similar to the following, and specify the correct owner, group, and permissions for them:

- The Oracle base directory
- An optional Oracle data file directory

The Oracle base directory must have 3 GB of free disk space, or 4 GB of free disk space if you choose not to create a separate Oracle data file directory.

---

---

**Note:** If you do not want to create a separate Oracle data file directory, then you can install the data files in a subdirectory of the Oracle base directory. However, this is not recommended for production databases.

---

---

To create the Oracle base directory:

1. Enter the following command to display information about all mounted file systems:

```
# df -k
```

This command displays information about all the file systems mounted on the system, including:

- The physical device name
- The total amount, used amount, and available amount of disk space
- The mount point directory for that file system

2. From the display, identify either one or two file systems that meet the disk space requirements mentioned earlier in this section.
3. Note the name of the mount point directory for each file system that you identified.
4. Enter commands similar to the following to create the recommended subdirectories in the mount point directory that you identified and set the appropriate owner, group, and permissions on them:

```
# mkdir -p /mount_point/app/  
# chown -R oracle:oinstall /mount_point/app/  
# chmod -R 775 /mount_point/app/
```

For example:

```
# mkdir -p /u01/app/  
# chown -R oracle:oinstall /u01/app/  
# chmod -R 775 /u01/app/
```

## 8 Configuring the oracle User's Environment

You run Oracle Universal Installer from the `oracle` account. However, before you start Oracle Universal Installer, you must configure the environment of the `oracle` user. To configure the environment, you must:

---

---

**Caution:** Use shell programs supported by your operating system vendor. If you use a shell program that is not supported by your operating system, then you can encounter errors during installation.

---

---

- Set the default file mode creation mask (`umask`) to 022 in the shell startup file.
- Set the `DISPLAY` environment variable.

To set the `oracle` user's environment:

1. Start a new terminal session, for example, an X terminal (`xterm`).
2. Enter the following command to ensure that X Window applications can display on this system:

```
$ xhost fully_qualified_remote_host_name
```

For example:

```
$ xhost somehost.us.example.com
```

3. If you are not logged in to the system where you want to install the software, then log in to that system as the `oracle` user.
4. If you are not logged in as the `oracle` user, then switch user to `oracle`:

```
$ su - oracle
```

5. To determine the default shell for the `oracle` user, enter the following command:

```
$ echo $SHELL
```

6. To run the shell startup script, enter the following commands:

- Bash shell:

```
$ . ~/.bash_profile
```

- Bourne or Korn shell:

```
$ . ~/.profile
```

- C shell:

```
% source ~/.login
```

7. If you are not installing the software on the local computer, then run the following command on the remote system to set the `DISPLAY` variable:

- Bourne, Bash or Korn shell:

```
$ export DISPLAY=local_host:0.0
```

- C shell:

```
% setenv DISPLAY local_host:0.0
```

In this example, `local_host` is the host name or IP address of the local computer that you want to use to display Oracle Universal Installer.

Run the following command on the remote system to check if the shell and the `DISPLAY` environmental variable are set correctly:

```
echo $SHELL
echo $DISPLAY
```

Now to enable X applications, run the following commands on the local computer:

```
$ xhost + fully_qualified_remote_host_name
```

To verify that X applications display is set properly, run a X11 based program that comes with the operating system such as `xclock`:

```
$ xclock
```

In this example, you can find `xclock` at `/usr/X11R6/bin/xclocks`. If the `DISPLAY` variable is set properly, then you can see `xclock` on your computer screen.

**See Also:** PC-X Server or operating system vendor documents for further assistance

8. If you determined that the `/tmp` directory has less than 1 GB of free disk space, then identify a file system with at least 1 GB of free space and set the `TMP` and `TMPDIR` environment variables to specify a temporary directory on this file system:

- a. To determine the free disk space on each mounted file system use the following command:

```
# df -k /tmp
```

- b. If necessary, enter commands similar to the following to create a temporary directory on the file system that you identified, and set the appropriate permissions on the directory:

```
su - root
$ mkdir /mount_point/tmp
```

```
$ chmod a+wr /mount_point/tmp
#exit
```

- c. Enter commands similar to the following to set the TMP and TMPDIR environment variables:

- \* Bourne, Bash, or Korn shell:

```
$ TMP=/mount_point/tmp
$ TMPDIR=/mount_point/tmp
$ export TMP TMPDIR
```

- \* C shell:

```
% setenv TMP /mount_point/tmp
% setenv TMPDIR /mount_point/tmp
```

9. Enter commands similar to the following to set the ORACLE\_BASE and ORACLE\_SID environment variables:

- Bourne, Bash, or Korn shell:

```
$ ORACLE_BASE=/u01/app/oracle
$ ORACLE_SID=sales
$ export ORACLE_BASE ORACLE_SID
```

- C shell:

```
% setenv ORACLE_BASE /u01/app/oracle
% setenv ORACLE_SID sales
```

In this example, /u01/app/oracle is the Oracle base directory that you created or identified earlier and sales is the name of the database (typically no more than five characters).

10. Enter the following commands to ensure that the ORACLE\_HOME and TNS\_ADMIN environment variables are not set:

- Bourne, Bash, or Korn shell:

```
$ unset ORACLE_HOME
$ unset TNS_ADMIN
```

- C shell:

```
% unsetenv ORACLE_HOME
% unsetenv TNS_ADMIN
```

---

---

**Note:** If the ORACLE\_HOME environment variable is set, then Oracle Universal Installer uses the value that it specifies as the default path for the Oracle home directory. However, if you set the ORACLE\_BASE environment variable, then Oracle recommends that you unset the ORACLE\_HOME environment variable and choose the default path suggested by Oracle Universal Installer.

---

---

## 9 Running the rootpre.sh Script

---

**Note:** Do not run the `rootpre.sh` script if you have a later release of the Oracle Database software installed on this system.

---

Run the `rootpre.sh` script:

1. Switch user to root:

```
$ su -  
password:  
#
```

2. Complete one of the following steps, depending on the location of the installation files:

- If the installation files are on DVD, enter a command similar to the following, where *directory\_path* is the disc mount point directory or the path of the `db` directory on the DVD:

```
# /directory_path/rootpre/rootpre.sh
```

- If the installation files are on the hard disk, change the directory to the path where `rootpre.sh` exists and enter the following command:

```
# ./rootpre.sh
```

3. Exit from the root account:

```
# exit
```

## 10 Mounting the Product Disc

On most AIX based systems, the product disc mounts automatically when you insert it into the drive. If the disc does not mount automatically, then follow these steps to mount it:

1. Switch user to root:

```
$ su -  
password:
```

2. If necessary, enter a command similar to the following to eject the currently mounted disc, then remove it from the drive:

```
# umount /dvd
```

3. Insert the disc into the disc drive, then enter a command similar to the following to mount it:

```
# /usr/sbin/mount -rv cdrfs /dev/cd0 /dvd
```

In this example, `/dev/cd0` is the device name of the disc drive and `/dvd` is the mount point directory.

4. If Oracle Universal Installer displays the Disk Location dialog box, enter the disc mount point directory path, for example:

```
/dvd
```

## 11 Installing Oracle Database

After configuring the `oracle` user's environment, start Oracle Universal Installer and install Oracle Database as follows:

1. To start Oracle Universal Installer, enter the following command:

```
$ /mount_point/db/runInstaller
```

If Oracle Universal Installer does not start, then refer to *Oracle Database Installation Guide* for information about how to troubleshoot X Window display problems.

2. The following table describes the recommended action for each Oracle Universal Installer screen. Use the following guidelines to complete the installation:
  - If you need more assistance, or to choose an option that is not a default, then click **Help** for additional information.
  - If you encounter errors while installing or linking the software, then refer to *Oracle Database Installation Guide* for information about troubleshooting.

---

**Note:** If you have completed the tasks listed previously, then you can complete the installation by choosing the default values on most screens.

---

Screen	Recommended Action
Configure Security Updates	<p>Enter your e-mail address, preferably your My Oracle Support e-mail address or user name in the <b>Email</b> field.</p> <p>You can select the <b>I wish to receive security updates via My Oracle Support</b> check box to receive security updates.</p> <p>Enter your My Oracle Support password in the <b>My Oracle Support Password</b> field.</p> <p>Click <b>Next</b>.</p>
Download Software Updates	<p>Starting with Oracle Database 11g Release 2 (11.2.0.2), you can use the Software Updates feature to dynamically download and apply latest updates. Select one of the following options and click <b>Next</b>:</p> <ul style="list-style-type: none"><li>■ Use My Oracle Support credentials for download: Select this option to download and apply the latest software updates.</li></ul> <p>Click <b>Proxy Settings</b> to configure a proxy for Oracle Universal Installer to use to connect to the Internet. Provide the proxy server information for your site, along with a user account that has access to the local area network through which the server is connecting. Starting with Oracle Database 11g Release 2 (11.2.0.3), you can enter the Proxy Realm information if required. The proxy realm information is case-sensitive.</p> <p>Click <b>Test Connection</b> to ensure that your proxy settings are correctly entered, and the installer can download the updates.</p> <ul style="list-style-type: none"><li>■ Use pre-downloaded software updates: Select this option to apply previously downloaded software updates.</li><li>■ Skip Software Updates: Select this option if you do not want to apply any updates.</li></ul>

Screen	Recommended Action
Apply Software Updates	<p>This screen is displayed if you select to download the software updates or provide the pre-downloaded software downloads location.</p> <p>If you selected Use My Oracle Support credentials for download in the previous screen, select <b>Download and apply all updates</b>, and then click <b>Next</b>.</p> <p>If you selected Use pre-downloaded software updates in the previous screen, select <b>Apply all updates</b>, and then click <b>Next</b>.</p>
Select Installation Option	<p>Select <b>Create and configure a database</b> from the following list of available options, then click <b>Next</b>:</p> <ul style="list-style-type: none"> <li>■ Create and configure a database</li> <li>■ Install database software only</li> <li>■ Upgrade an existing database</li> </ul>
System Class	<p>Select <b>Server Class</b> from the following options to install the database, and click <b>Next</b>.</p> <ul style="list-style-type: none"> <li>■ Desktop Class: Choose this option if you are installing on a laptop or desktop class system.</li> <li>■ Server Class: Choose this option if you are installing on a server class system, such as what you would use when deploying Oracle in a production data center.</li> </ul>
Grid Installation Options	<p>Select <b>Single instance database installation</b> for the type of database installation you want to perform, and click <b>Next</b>.</p> <ul style="list-style-type: none"> <li>■ Single instance database installation: This option installs the database and the listener.</li> <li>■ Oracle Real Application Clusters database installation: This option installs Oracle Real Application Clusters.</li> <li>■ Oracle RAC One Node database installation: This option installs the Oracle RAC One Node database.</li> </ul> <p><b>Note:</b> Oracle RAC One Node is supported only with Oracle Clusterware.</p>
Select Install Type	<p>Select <b>Typical Install</b> as the installation type from the following options, and click <b>Next</b>:</p> <ul style="list-style-type: none"> <li>■ Typical Install: This installation method is selected by default. It lets you quickly install Oracle Database using minimal input.</li> <li>■ Advanced Install: This installation method enables to perform more complex installations.</li> </ul>

Screen	Recommended Action
Typical Install Configuration	<p>Enter the following information according to your requirements:</p> <p>Oracle base: The Oracle base path appears by default. You can change the path based on your requirement.</p> <p>Software location: In the <b>Software Location</b> section, accept the default value or enter the Oracle home directory path in which you want to install Oracle components. The directory path should not contain spaces.</p> <p>Storage Type: Select <b>File System</b>, or <b>Oracle Automatic Storage Management</b> as the database storage option.</p> <p>Database file location: If you select File System as your storage type, then click <b>Browse</b> and specify a database file location.</p> <p>ASMSNMP Password: If you select Oracle Automatic Storage Management as your Storage Type, then specify the password for the ASMSNMP user.</p> <p>Database edition: Select the database edition that you want to install.</p> <p>OSDBA Group: The OSDBA group is selected by default. You can also select the OSDBA group from the list.</p> <p>Global database name: Specify the Global Database Name using the following syntax:</p> <p><i>database_name.domain</i></p> <p>For example, <i>sales.us.example.com</i></p> <p>Administrative password: Enter the password for the privileged database account.</p> <p>Confirm Password: Reenter, and confirm the password for the privileged database account.</p> <p>Click <b>Next</b> to continue.</p>
Create Inventory	<p>This screen is displayed only during the first installation of Oracle products on a system.</p> <p>Specify the full path of the Oracle Inventory directory. Ensure that the operating system group selected is <code>oinstall</code>. Click <b>Next</b> to continue.</p>
Perform Prerequisite Checks	<p>Verify that all the prerequisite checks succeed, and then click <b>Next</b>.</p> <p>Oracle Universal Installer checks the system to verify that it is configured correctly to run Oracle software. If you have completed all the preinstallation steps in this guide, all the checks should pass.</p> <p>If a check fails, then review the cause of the failure listed for that check on the screen. If possible, rectify the problem and rerun the check. Alternatively, if you are satisfied that your system meets the requirements, then you can select the check box for the failed check to manually verify the requirement.</p> <p><b>Note:</b> Oracle recommends that you use caution in checking the Ignore All option. If you check this option, then Oracle Universal Installer may not confirm that your system can install Oracle Database successfully.</p>
Summary	<p>Review the information displayed on this screen, and then click <b>Install</b>.</p> <p>Note: Starting with Oracle Database 11g Release 2 (11.2), you can save all the installation steps into a response file by clicking <b>Save Response File</b>. Later, this file can be used for a silent installation.</p>



Screen	Recommended Action
Install Product	<p>This screen states the progress of a database installation. After the database is installed, you are prompted to execute some root configuration script for new inventory as the <code>root</code> user. Click <b>Next</b>.</p> <p>This screen then displays the status information for the configuration assistants that configure the software and create a database.</p> <p>Finally, a message is displayed after the Database Configuration Assistant process is complete. Click <b>OK</b>.</p> <p>Execute the <code>root.sh</code> script as the <code>root</code> user to complete the installation and click <b>OK</b>.</p>
Finish	<p>This screen is shown automatically when all the configuration tools are successful.</p> <p>Click <b>Close</b>.</p>

## 12 Installing Oracle Database Examples

If you plan to use the following products or features, then download and install the products from the Oracle Database Examples media:

- Oracle JDBC Development Drivers
- Oracle Database Examples
- Various Oracle product demonstrations

For information about installing software and various Oracle product demonstrations from the Oracle Database Examples media, refer to *Oracle Database Examples Installation Guide*.

## 13 What to Do Next?

To become familiar with this release of Oracle Database, it is recommended that you complete the following tasks:

- Log in to Oracle Enterprise Manager Database Control using a Web browser.

Oracle Enterprise Manager Database Control is a Web-based application that you can use to manage a single Oracle Database installation. The default URL for Database Control is similar to the following:

```
http://host.domain:1158/em/
```

To log in, use the user name `SYS` and connect as `SYSDBA`. Use the password that you specified for this user during the Oracle Database 11g installation.

- Refer to *Oracle Database Installation Guide for IBM AIX on POWER Systems (64-Bit)* for information about required and optional postinstallation tasks, depending on the products to use.
- Refer to *Oracle Database Installation Guide for IBM AIX on POWER Systems (64-Bit)* for information about how to use Database Control to learn about the configuration of your installed database.
- To learn more about using Oracle Enterprise Manager Database Control to administer a database, refer to *Oracle Database 2 Day DBA*.

This guide, designed for new Oracle DBAs, describes how to use Database Control to manage all aspects of an Oracle Database installation. It also provides

information about how to enable e-mail notifications and automated backups, which you might not have configured during the installation.

## 14 Additional Information

This section contains information about the following:

- [Product Licenses](#)
- [Purchasing Licenses and Version Updates](#)
- [Contacting Oracle Support Services](#)
- [Locating Product Documentation](#)

### Product Licenses

You are welcome to install and evaluate the products included in this media pack for 30 days under the terms of the Trial License Agreement. However, you must purchase a program license to continue using any product after the 30 day evaluation period. See the following section for information about purchasing program licenses.

### Purchasing Licenses and Version Updates

You can purchase program licenses and updated versions of Oracle products from the Oracle Store Web site:

<https://shop.oracle.com>

### Contacting Oracle Support Services

If you have purchased Oracle Product Support, you can call Oracle Support Services for assistance 24 hours a day, seven days a week. For information about purchasing Oracle Product Support or contacting Oracle Support Services, go to the Oracle Support Services Web site:

<http://www.oracle.com/support/index.html>

### Locating Product Documentation

Product documentation includes information about configuring, using, or administering Oracle products on any platform. The product documentation for Oracle Database 11g products is available in both HTML and PDF formats in the following locations:

- On the Oracle Database Documentation Library media:  
Use a Web browser to view or open the `index.htm` file in the top-level directory on the media.
- From the Oracle Technology Network (OTN) Web site:  
<http://www.oracle.com/technetwork/indexes/documentation/index.html>

To view PDF documents, download the free Adobe Acrobat Reader from the Adobe Web site, if necessary:

<http://www.adobe.com>

## 15 Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at

<http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc>.

### Access to Oracle Support

Oracle customers have access to electronic support through My Oracle Support. For information, visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info> or visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs> if you are hearing impaired.

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Oracle Database Installation Guide, 11g Release 2 (11.2) for IBM AIX on POWER Systems (64-Bit)  
E24335-01

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