



Operating System Requirements for AIX

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Operating System Requirements

This chapter provides operation system requirements for installing an Ex Libris application on the AIX operating system.

This section includes:

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- **Operating System Patch** on page 6
- **Windows Manager** on page 7
- **Native C Compiler** on page 7
- **Required Executables** on page 7
- **Recommended Operating System Packages for AIX** on page 7
- **System Environment Setup** on page 8

Operating System

The following AIX operating systems are supported:

- AIX 5L version 5.3, TL 05, Service Pack 06 or later
- AIX 6L version 6.1, TL 02, Service Pack 05 ("6100-02-05") or later

AIX 5.3 is supported for the following Ex Libris products:

- Aleph 18.01
- Aleph 19.01
- Aleph 20.x

AIX 6.1 is supported for Aleph 20.x.

The file system should be configured and mounted without the CIO (concurrent IO) option.

Operating System Patch

Maintenance level 5 or higher is required.

The following are required packages for AIX 5 and AIX 6:

- `bos.adt.base`
- `bos.adt.lib`
- `bos.adt.libm`
- `bos.perf.libperfstat`
- `bos.perf.perfstat`
- `bos.perf.proctools`
- `xlC.aix50.rte:8.0.0.3` or later (AIX 5.3)
- `xlC.rte:8.0.0.0` or later (AIX 5.3)
- `xlC.aix61.rte:9.0.0.1` or later (AIX 6.1)
- `xlC.rte:9.0.0.1` or later (AIX 6.1)
- `rsct.basic.rte` (For RAC configurations only)
- `rsct.compat.clients.rte` (For RAC configurations only)
- `xlC.aix61.rte 10.1.0.0` or later

The following are the 5.3 ML5 required patches:

- IY84780
- IY68989
- IY89080
- IY92037
- IY94343
- IZ01060 or `efix` for IZ01060
- IZ03260 or `efix` for IZ03260 (IZ03260 for ML6, IZ03475 for ML7) to address ORA-27061

Use the latest patch from IBM. IBM provides patch information at:

<http://techsupport.services.ibm.com/rs6k/ml.fixes.html>

The following patches are required for AIX 6L:

- IZ41855
- IZ51456
- IZ52319

It is likely that the above three APARs have already been built into the later OS version if the OS is later than the listed version (AIX 6.1 TL 02 SP5) and therefore, can be safely ignored. It is found that if the OS level is higher than 6100-02, you can skip installing IZ51456. If the OS level is equal to or higher than 6100-04-07-1036, the fix for IZ41855 is superseded by IZ39665 and the fix for IZ52319 is superseded by IZ55160.

Note that all AIX maintenance packages and patches are available from the following Web site. Download the packages that matches your AIX version and technical level.

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

AIX Kernel Settings: `AIXTHREAD_SCOPE=S`

In addition, for Aleph installation, the following RPMs should be installed from aixtoolbox:

```
gcc-3.3.2gcc-c++-3.3.2libgcc-3.3.2libstdc++-3.3.2libstdc++-  
devel-3.3.2
```

Windows Manager

The installation of the Oracle server in silent or online install modes requires X Windows. Use any Windows manager that supports Motif.

Native C Compiler

Requires XL C/C++ 9.0 or later. It is also necessary to install the native C++ compiler.

Required Executables

The following executable files must be present in the `/usr/bin` directory:

```
bash, tcsh, make, ar, ld, nm, ksh
```

Recommended Operating System Packages for AIX

```
perl.rte (Perl Scripting Language v.5.8)
```

System Environment Setup

The system must set the following shell limits to the recommended values for the `oracle` user or any users who use Oracle services.

```
Soft CPU time          [-1]
Soft FILE size         [-1]
Soft DATA segment    [-1]
Soft STACK size [-1]
Soft RSS size         [65536]
Soft NOFILE descriptors [2000]
Processes (per user)  [-1]
```

- 1 As the root user, use `smit chuser` to update the shell limits for the `oracle` user and other users.

The system must set the following kernel parameters greater than or equal to the recommended values.

```
maxuproc >= 2048
ncargs >= 128
```

- 2 As the root user, use `smit chgsys` to verify that the value of Maximum number of PROCESSES allowed per user is greater than or equal to 2048 and that the value of ARG/ENV list size in 4K byte blocks is greater than or equal to 128.
- 3 Verify the asynchronous input/output processes.
- 4 Confirm that `aio_maxreq` is 64K (65536) with the following command:

```
ioo -o aio_maxreqs
```


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Performing a System Requirements Verification

This chapter contains information that enables you to verify that you are working with the correct system requirements.

This section includes:

- **Operating System Information** on page 9
- **OS Patch Information** on page 10
- **Determining OS Packages** on page 10
- **Determining RAM** on page 11
- **Determining Swap Space** on page 11
- **Determining X Windows System** on page 11
- **Determining System Executable Files** on page 11
- **Determining Configured Disk Space** on page 11
- **Oracle Version 10 or 11** on page 12

Operating System Information

To determine your current operating system information, enter the following command:

```
uname -a
```

To determine the exact version number of your operation system, enter the following command:

```
oslevel -s
```

To determine the system architecture is 64 bit, enter the following command:

```
lslpp -L | grep 64bit  
OR:  
/usr/bin/getconf HARDWARE_BITMODE
```

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

```
bootinfo -K
```

OS Patch Information

To determine which operating system patches are installed, enter the following command:

```
instfix -a
```

To determine whether a patch has been installed, enter the following command:

```
instfix -ivk APAR_number
```

To determine whether required patches for Oracle 11gR2 have been installed, enter the following command:

```
instfix -i -k "IZ41855 IZ51456 IZ52319"
```

Determining OS Packages

To determine which operating system packages are installed, enter the following command:

```
lslpp -l [fileset_name]
```

If you enter `lslpp -l`, all installed operating system packages will be listed.

To determine whether required operating system packages for Oracle 11gR2 are installed, enter the following command:

```
lslpp -l bos.adt.base bos.adt.lib bos.adt.libm  
bos.perf.libperfstat bos.perf.perfstat bos.perf.proctools  
rsct.basic.rte rsct.compat.clients.rte xlc.aix61.rte
```

Determining RAM

To determine the amount of random-access memory (RAM) installed on your system, enter the following command:

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

Determining Swap Space

To determine the amount of swap memory installed on your system, enter the following command:

```
/usr/sbin/lssps -a
```

Determining X Windows System

To determine whether your X Windows System is working properly on your local system and that your Windows manager works correctly, enter the following command:

```
xclock
```

Determining System Executable Files

To determine whether you are using the correct system executables, enter the following command:

```
/usr/bin/which make
```

Determining Configured Disk Space

To determine the amount of disk space currently configured on your system, enter the following command:

```
/bin/df -k
```

Oracle Version 10 or 11

Hardware Requirements (for DB only)

The system must meet the following minimum hardware requirements:

- For Oracle 10 – at least 1024 MB of physical RAM
- For Oracle 11 – at least 4 GB of physical RAM
- Sufficient swap space. The following table describes the relationship between installed RAM and the configured swap space requirements.

Table 1. Ram and Swap Space

RAM	Swap Space
Between 1GB and 2GB	1.5 times the size of RAM
Between 4GB and 16GB	Equal to the size of RAM
16GB and more	0.75 times the size of RAM

- 400 MB of disk space in the /tmp directory
- Up to 3 GB of disk space for the Oracle software, depending on the installation type
- 1.2 GB of disk space for a preconfigured database that uses file system storage (optional)

NOTE:

The disk space requirement for databases that use Automatic Storage Management or raw device storage is described later in this chapter.

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

Perform the following steps to ensure that the system meets these requirements:

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

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

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

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

```
# /usr/sbin/lspfs -a
```

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

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

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

If there is less than 400 MB 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 your system administrator for information about extending file systems.
- 4 To determine the amount of free disk space on the system, enter the following command:

```
# df -k
```

The following table shows the approximate software file disk space requirements for each installation type:

Table 2. Disk Space Requirements

Installation Type	Requirements for Software Files
Enterprise Edition	2.0
Standard Edition	3.0
Custom (maximum)	2.5

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

```
# /usr/bin/getconf HARDWARE_BITMODE 64
```

NOTE:

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

3

NFS Mount Options for Ex Libris Products

This section includes:

- **Overview** on page 15
- **Oracle Mount Options** on page 15
- **Additional Mount Options for Ex Libris Software** on page 16

Overview

To install Ex Libris products with NFS mounts under Unix/Linux OS requires you to use the correct mount options.

Using the correct mount option is also mandatory for Oracle database files. If the correct option is not used, Oracle fails to mount the database files located on the NFS mounts.

Note that the requirements are different for software mounts and for Oracle data files. Using the Oracle database mount options on a software disk may work, but performance may be affected.

Oracle Mount Options

The Oracle requirements for NFS mounts may change periodically and can be checked in Oracle support note 359515.1.

The following table related to the Oracle software and database files for Oracle versions 10.2 to 11.1.

In the table below:

- Binaries is the shared mount points where the Oracle Home and CRS_HOME are installed.
- Datafiles includes online logs, control files, and data files.

The following table is for a single instance installation.

Table 3. Mount Options

Operating System	Mount Options for Binaries	Mount Options for Oracle Datafiles
Sun Solaris (8, 9, 10)	rw,bg,hard,rsize=32768,wsiz=32768,vers=3,nointr,proto=tcp,suid	rw,bg,hard,rsize=32768,wsiz=32768,vers=3,[forcedirectio or llock],nointr,proto=tcp,suid
AIX (5L)	rw,bg,hard,rsize=32768,wsiz=32768,vers=3,intr,timeo=600,proto=tcp	rw,bg,hard,rsize=32768,wsiz=32768,vers=3,cio,intr,timeo=600,proto=tcp
Linux x86	rw,bg,hard,rsize=32768,wsiz=32768,vers=3,nointr,timeo=600,tcp	rw,bg,hard,rsize=32768,wsiz=32768,vers=3,nointr,timeo=600,tcp,actimeo=0
Linux x86_64	rw,bg,hard,rsize=32768,wsiz=32768,vers=3,nointr,timeo=600,tcp	rw,bg,hard,rsize=32768,wsiz=32768,vers=3,nointr,timeo=600,tcp,actimeo=0

In addition to the Oracle requirements, the nolock option is required in Linux and the llock option is required in Solaris to prevent locked issues that might cause database file locks and severe performance issues.

Additional Mount Options for Ex Libris Software

For most purposes, Ex Libris products work with the same mount options as the Oracle binaries. Note the following:

- The nolock (Linux) llock (Solaris) options are required to prevent file locks and severe performance issues.
- Do not use the noac options in a shared installations.
- Make sure that actimeo is larger than 0, but under 60 to prevent jobd/batchd sync issues.

NOTE:

For mixed environments (binaries and database files on the same mount) Oracle recommends the use of Oracle DNFS - see Oracle document ID 762374.
