Operating System Requirements for the Oracle Solaris Platform
CONFIDENTIAL INFORMATION

The information herein is the property of Ex Libris Ltd. or its affiliates and any misuse or abuse will result in economic loss. DO NOT COPY UNLESS YOU HAVE BEEN GIVEN SPECIFIC WRITTEN AUTHORIZATION FROM EX LIBRIS LTD.

This document is provided for limited and restricted purposes in accordance with a binding contract with Ex Libris Ltd. or an affiliate. The information herein includes trade secrets and is confidential.

DISCLAIMER

The information in this document will be subject to periodic change and updating. Please confirm that you have the most current documentation. There are no warranties of any kind, express or implied, provided in this documentation, other than those expressly agreed upon in the applicable Ex Libris contract. This information is provided AS IS. Unless otherwise agreed, Ex Libris shall not be liable for any damages for use of this document, including, without limitation, consequential, punitive, indirect or direct damages.

Any references in this document to third-party material (including third-party Web sites) are provided for convenience only and do not in any manner serve as an endorsement of that third-party material or those Web sites. The third-party materials are not part of the materials for this Ex Libris product and Ex Libris has no liability for such materials.

TRADEMARKS

"Ex Libris," the Ex Libris bridge, Primo, Aleph, Alephino, Voyager, SFX, MetaLib, Verde, DigiTool, Preservation, Rosetta, URM, ENCompass, Endeavor eZConnect, WebVoyáge, Citation Server, LinkFinder and LinkFinder Plus, and other marks are trademarks or registered trademarks of Ex Libris Ltd. or its affiliates.

The absence of a name or logo in this list does not constitute a waiver of any and all intellectual property rights that Ex Libris Ltd. or its affiliates have established in any of its products, features, or service names or logos.

Trademarks of various third-party products, which may include the following, are referenced in this documentation. Ex Libris does not claim any rights in these trademarks. Use of these marks does not imply endorsement by Ex Libris of these third-party products, or endorsement by these third parties of Ex Libris products.

Oracle is a registered trademark of Oracle Corporation.

UNIX is a registered trademark in the United States and other countries, licensed exclusively through X/Open Company Ltd.

Microsoft, the Microsoft logo, MS, MS-DOS, Microsoft PowerPoint, Visual Basic, Visual C++, Win32,

Microsoft Windows, the Windows logo, Microsoft Notepad, Microsoft Windows Explorer, Microsoft Internet Explorer, and Windows NT are registered trademarks and ActiveX is a trademark of the Microsoft Corporation in the United States and/or other countries.

Unicode and the Unicode logo are registered trademarks of Unicode, Inc.

Google is a registered trademark of Google Inc.

iPhone is a registered trademark of Apple Inc.

Copyright Ex Libris Limited, 2016. All rights reserved.

Document released: December 2016

Web address: http://www.exlibrisgroup.com
# Table of Contents

<table>
<thead>
<tr>
<th>Chapter 1</th>
<th>Operating System Requirements ................................................................. 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Operating System ....................................................................................... 5</td>
</tr>
<tr>
<td></td>
<td>Operating System Packages ........................................................................... 6</td>
</tr>
<tr>
<td></td>
<td>Solaris 10 (SPARC 64-Bit) Patches for Oracle 10.2 .................................... 7</td>
</tr>
<tr>
<td></td>
<td>Solaris 10 (x86-64) Patches for Oracle 10.2 ............................................. 7</td>
</tr>
<tr>
<td></td>
<td>Solaris 10 (SPARC 64-Bit) Patches for Oracle 11.1 .................................... 7</td>
</tr>
<tr>
<td></td>
<td>Solaris 10 (SPARC 64-Bit) Patches for Oracle 11.2 .................................... 7</td>
</tr>
<tr>
<td></td>
<td>Solaris 10 Required Patches for Oracle 11.2 .......................................... 7</td>
</tr>
<tr>
<td></td>
<td>Solaris 10 (SPARC 64-bit or x86-64) ........................................................ 8</td>
</tr>
<tr>
<td></td>
<td>Required Executable Files ........................................................................... 8</td>
</tr>
<tr>
<td></td>
<td>Native C Compiler ......................................................................................... 8</td>
</tr>
<tr>
<td></td>
<td>Additional Software ...................................................................................... 9</td>
</tr>
<tr>
<td></td>
<td>Windows Manager ........................................................................................ 9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 2</th>
<th>Performing a System Requirements Verification ........................................ 11</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Operating System Information ...................................................................... 11</td>
</tr>
<tr>
<td></td>
<td>Determining RAM .......................................................................................... 11</td>
</tr>
<tr>
<td></td>
<td>Determining Swap Space ............................................................................... 12</td>
</tr>
<tr>
<td></td>
<td>Determining System Executable Files ........................................................ 12</td>
</tr>
<tr>
<td></td>
<td>Determining Configured Disk Space ............................................................ 12</td>
</tr>
<tr>
<td></td>
<td>Determining the Root User’s PATH Setting ............................................... 12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 3</th>
<th>NFS Mount Options for Ex Libris Products ............................................. 13</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Overview .................................................................................................... 13</td>
</tr>
<tr>
<td></td>
<td>Oracle Mount Options .................................................................................. 13</td>
</tr>
<tr>
<td></td>
<td>Additional Mount Options for Ex Libris Software ....................................... 14</td>
</tr>
</tbody>
</table>
Operating System Requirements

This section provides operating system requirements for installing Ex Libris applications on the Sun Solaris operating system.

This section includes:
- Operating System on page 5
- Operating System Packages on page 6
- Required Executable Files on page 8
- Native C Compiler on page 8
- Additional Software on page 9
- Windows Manager on page 9

Operating System

Solaris 10 is the required operating system.

Supported architecture: 64 bits x86 processors and SPARC processors.

For each of the following operating system versions, Ex Libris recommends that you install the latest OS patch cluster recommended for this operating system.

The mandatory OS level for the Oracle 12c installation is Solaris 10 (64-bit) update 11 or later update.

The following table shows the current OS version certifications for each Ex Libris application.

<table>
<thead>
<tr>
<th>Application</th>
<th>Solaris 10 SPARC</th>
<th>Solaris 10 x86 64</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALEPH 20.x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Aleph 21, 22, 23</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>ARC 2.0</td>
<td>x</td>
<td></td>
</tr>
</tbody>
</table>
Operating System Requirements for the Sun Platform

Table 1. OS Version Certifications for Ex Libris Applications

<table>
<thead>
<tr>
<th>Application</th>
<th>Solaris 10 SPARC</th>
<th>Solaris 10 x86 64</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARC 3.0</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>ARC 4.x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>DigiTool 3.x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>MetaLib 4.x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Primo 3.x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Rosetta 5.x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>SFX 4.0</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Verde 2.0</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Voyager 7.2.x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Voyager 8</td>
<td></td>
<td>x</td>
</tr>
</tbody>
</table>

Operating System Packages

The following operating system packages must be installed:
- SUNWarc
- SUNWbinutils
- SUNWbtool
- SUNWcsl
- SUNWdtrc
- SUNWeu8os
- SUNWgcc
- SUNWgcccruntime
- SUNWhea
- SUNWi15cs
- SUNWi1cs
- SUNWi1of
- SUNWi1ibC
- SUNWi1ibm
- SUNWi1ibs
- SUNWmfrun

December 2016
Chapter 1: Operating System Requirements

SUNWsprot
SUNWtcsh
SUNWtoo
SUNWxfnt

**Solaris 10 (SPARC 64-Bit) Patches for Oracle 10.2**
127127-11 or later

**Solaris 10 (x86-64) Patches for Oracle 10.2**
118345-03 or later (SunOS 5.10_x86: ld Patch)
119961-01 or later (SunOS 5.10_x86, x64, Patch for assembler)

**Solaris 10 (SPARC 64-Bit) Patches for Oracle 11.1**
127111-02 or later (SunOS 5.10: libc patch)
137111-04 or later (SunOS 5.10: kernel patch)
117837-05 or later (C++ compiler optimizer patch)
117846-08 or later (C++ compiler Optimization patch)
118682-01 or later

**Solaris 10 (SPARC 64-Bit) Patches for Oracle 11.2**
120753-06 or later (SunOS 5.10: Microtasking libraries (libmtsk) patch)
139574-03 or later
119963-14 or later (SunOS 5.10: Shared library patch for C++)
124861-15 or later (SunOS 5.10 Compiler Common patch for Sun C C++
(optional))

**Solaris 10 (x86-64) Patches for Oracle 11.2**
120754-06 or later (SunOS 5.10_x86 libmtsk)
119961-05 or later (SunOS 5.10_x86: Assembler)
119964-14 or later (SunOS 5.10_x86 Shared library patch for C++_x86)
137104-02 or later
139575-03 or later
139556-08 or later
Operating System Requirements for the Sun Platform

Solaris 10 Required Patches for Oracle 12c
147440-25147441-25

Solaris 11 (SPARC 64-bit or x86-64)
For Solaris 11 only Oracle 11.2.0.3 (and later) is certified.
The same packages (or equivalent) as Solaris 10 are required.
In addition, the following packages (or later versions) are required for Oracle
Database 11g Release 2 (11.2) for Oracle Solaris 11:
- pkg://solaris/developer/build/make
- pkg://solaris/developer/assembler
- pkg://solaris/system/dtrace
- pkg://solaris/developer/assembler
- pkg://solaris/developer/build/make
- pkg://solaris/system/xopen/xcu4 (if not already installed as part of
  standard Oracle Solaris 11 installation)
- pkg://solaris/x11/diagnostic/x11-info-clients
- pkg://solaris/compress/unzip
Install XCU4 Utilities.

NOTE:
From Solaris 11, the SUNW prefix for package names is no longer used.
With the introduction of IPS, all software packages are renamed. For more
information, refer to Oracle Solaris 10 SVR4 and IPS Package Comparison.

Required Executable Files

The following executable files must be present in the /usr/ccs/bin directory:
make, ar, ld, nm.

Native C Compiler

Requires Sun Studio C/C++ Compiler Collection version 11 or later. Ex Libris
recommends that you install the latest version of these compiling environments.
Chapter 1: Operating System Requirements

Additional Software

tcsh SHELL (package SFWtcsh)
top processes (package SFWtop)
bash SHELL (package SUNWbash)

Windows Manager

The installation of the Oracle Server online install modes requires X-Windows. Use any Sun-supported X-Windows server. For example: dtwm.
Performing a System Requirements Verification

The commands listed in this chapter are intended to help you perform the necessary system requirements verification. Depending on the test results, the Installation Team can determine whether the system is ready for an installation of the application.

This section includes:
- Operating System Information on page 11
- Determining RAM on page 11
- Determining Swap Space on page 12
- Determining System Executable Files on page 12
- Determining Configured Disk Space on page 12

Operating System Information

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

```
/bin/uname -a
```

Determining RAM

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

```
/usr/sbin/prtconf | grep size
```
**Determining Swap Space**

To determine the bytes of swap space currently configured on your system, enter the following command:

```
/usr/sbin/swap -a
```

**Determining System Executable Files**

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

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

**Determining Configured Disk Space**

To determine how much disk space is currently configured on your system, enter the following command:

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

**Determining the Root User’s PATH Setting**

To determine that the C compiler executable file is included in the PATH setting of the root user, as user `root`, enter the following command:

```
/usr/bin/which cc
```

The SPARCworks C compiler executable file is usually located in:

```
/opt/SUNWsunpro/bin
```
NFS Mount Options for Ex Libris Products

This section includes:
- **Overview** on page 13
- **Oracle Mount Options** on page 13
- **Additional Mount Options for Ex Libris Software** on page 14

**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.
Operating System Requirements for the Sun Platform

The following table is for a single instance installation.

Table 2. Mount Options

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

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.