Requirements for Installing Oracle Database 12.1 on Solaris 11 SPARC/ x86-64 (Doc ID 1525614.1)

In this Document

APPLIES TO:

Oracle Database Exadata Express Cloud Service - Version N/A and later
Oracle Cloud Infrastructure - Database Service - Version N/A and later
Oracle Database Cloud Exadata Service - Version N/A and later
Oracle Database Backup Service - Version N/A and later
Gen 1 Exadata Cloud at Customer (Oracle Exadata Database Cloud Machine) - Version N/A and later
Oracle Solaris on x86-64 (64-bit)
Oracle Solaris on SPARC (64-bit)

PURPOSE

This note explains the requirements that need to be met for a successful installation of the Oracle Database 12.1 on Solaris 11 SPARC 64-bit or Oracle Solaris on x86-64 (64-Bit).

SCOPE

This procedure is meant for those planning/trying to install Oracle Server 12.1.0.1.0 on Solaris 11 SPARC 64-bit or Oracle Solaris on x86-64 (64-Bit).
Please note that the document only lays down the minimum requirements.
If your configuration is higher than as mentioned, you have met the pre-installation requirements.
You may also need to customize certain parameters depending upon your database/application size which is out of scope of this document.

DETAILS

Requirements for Installing Oracle Database 12.1 on Solaris 11 SPARC 64-bit or Oracle Solaris on x86-64 (64-Bit).

Hardware Requirements

* Oracle software requires a minimum of 1024 MB of RAM for successful installation. Recommended: 2 GB of RAM or more

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

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

Use the following command to determine the amount of swap space installed on the system:

```
/usr/sbin/swap -l
swapfile dev swaplo   blocks      free
/dev/swap -  16       37748720 28039984

Multiply the value in the BLOCKS column by 512. For example:
28039984 * 512 = 14356471808 bytes
               = 14 GB of swap
```

* 1 GB of space in the /tmp Directory.

* The disk space requirements for software files for each installation type:

Enterprise Edition - 6.5 GB
Standard Edition - 6.4 GB
Standard Edition One - 6.4 GB

* Between 1.5 GB and 2 GB of disk space is required for a preconfigured database that uses file system storage (optional).

* The system architure must be 64-bit. To determine whether the system architecture is 64-bit, enter the following command:

```
# /bin/isainfo -kv

This command should return the following output. If you do not see the expected output, you cannot
install the software on this system.

64-bit sparcv9 kernel modules
```

Software Requirements

* Oracle Solaris 11 SRU 7.5 or later SRUs and updates (for Oracle database 12.1.0.1.0)

  Oracle Solaris 11 SRU 14.5 or later SRUs and updates (for Oracle databse 12.1.0.2.0)

```
For example the following command shows Solaris11 Update 1 version :pkg list entire
```

NAME(PUBLISHER)	VERSION	INFO
entire	0.5.11-0.175.1.0.0.24.2	i--

Refer to the Note:

Note 1378134.1 The Oracle Solaris 11 Package Branch Version Scheme

To determine the release level enter the following command:

```
# cat /etc/release
Oracle Solaris 11.1 SPARC
```

Package Requirement

* The following packages (or later versions) must be installed:

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

You can access to Solaris 11 by clicking here.

Packages can be checked as:

```
# pkg info -r SUNWdtrc

# pkg info consolidation/osnet/osnet-incorporation  /x11/diagnostic/x11-info-clients /developer/build/make
system/xopen/xcu4 | egrep -i 'Name|installed'
```

In case you are using GUI based installation , Solaris 11 does not by default install the GUI environment pkgs. They need to be added so that the X extensions will be available on the system.

xclock is not included as part of the Standard Oracle Solaris installation. It located in /usr/bin/xclock, after installation of **x11/xclock** package.

Please refer to below document for More details.

Note 1578758.1- Configuring X-Server Display For Oracle Universal Installer (OUI) On Solaris 11 Platforms.

NOTE:1557986.1 - Defining Solaris 11 Standard Installation

Patch Requirements

* No patch requirements at this time.

Oracle Database Prerequisites Package :

http://docs.oracle.com/cd/E36784_01/html/E52463/makehtml-id-4.html

Requirements for Programming Environments for Oracle Solaris

Programming Environments	Support Requirements
Java Database Connectivity	JDK 6 (Java SE Development Kit release 1.6.0_37 or later updates of 1.6) with the JNDI extension with Oracle Java Database Connectivity. Supported on Solaris 11: JDK 7 (Java SE Development Kit release 1.7.0) Supported on Solaris 10: JDK 7 (Java SE Development Kit release 1.7.0) JDK 1.6 is installed with this release.
Oracle Call Interface (OCI)	JDK 6 (Java SE Development Kit release 1.6.0_37 or later updates of 1.6) with the JNDI extension, and Oracle Call Interface drivers. JDK 1.6 is installed with this release.
Oracle C++ Oracle C++ Call Interface Pro*C/C++ Oracle XML Developer's Kit (XDK)	Oracle Solaris Studio 12 (formerly Sun Studio) September 2007 Release. Additional patches may be needed depending on applications you deploy. Download Oracle Solaris Studio from here.
Pro*COBOL	Micro Focus Server Express 5.1
Pro*FORTRAN	Oracle Solaris Studio 12 (Fortran 95)

Additional requirements

***** Additionally, the following installation pre-requisites must be met if the specific Oracle product listed is being installed:

Oracle Messaging Gateway:

Oracle Messaging Gateway is a feature of the Oracle database that enables communication between applications based on non-Oracle messaging systems and Oracle Streams Advanced Queuing.

Oracle Messaging Gateway supports the integration of Oracle Streams Advanced Queuing (AQ) with applications based on WebSphere MQ and TIBCO Rendezvous. For information on supported versions see Oracle Database Advanced Queuing User's Guide.

https://docs.oracle.com/database/121/ADQUE/mg_intro.htm#ADQUE3193

This release of Messaging Gateway supports the integration of Oracle Database Advanced Queuing with applications based on WebSphere MQ 7.0.1.3 and TIB/Rendezvous 8.2.

OS Environment

Kernel parameters

Solaris 11 uses the resource control facility to implement the System V IPC.
On Oracle Solaris 10/11, you are not required to make changes to the/etc/system file to implement the System V IPC.
Oracle Solaris 10/11 uses the resource control facility for its implementation. For further information, contact your vendor.

<table>
<tr><th>Parameter</th><th>Replaced by Resource Control</th><th>Minimum Value</th></tr>
<tr><td>semsys:seminfo_semmni</td><td>project.max-sem-ids</td><td>100</td></tr>
<tr><td>semsys:seminfo_semmsl</td><td>process.max-sem-nsems</td><td>256</td></tr>
<tr><td>shmsys:shminfo_shmmax</td><td>project.max-shm-memory</td><td>
<table>
<tr><th>RAM</th><th>project.max-shm-memory setting</th></tr>
<tr><td>4 GB</td><td>2GB</td></tr>
<tr><td>4 GB to 8 GB</td><td>Half the size of the physical memory</td></tr>
<tr><td>Greater than 8 GB</td><td>8 GB</td></tr>
</table>
</td></tr>
<tr><td>shmsys:shminfo_shmmni</td><td>project.max-shm-ids</td><td>100</td></tr>
</table>

Please note that "project.max-shm-memory" represent the maximum shared memory available for a project, so the value for this parameter should be greater than sum of all SGA sizes.

Diagnosing Oracle Database Performance Issues from a Solaris Operating System Perspective (Doc ID 1909974.1)

Please refer to the following document for checking/setting kernel parameter values using resource control:

> Note 429191.1 Kernel setup for Solaris 10 using project files.

Mimimum Setting UDP and TCP Kernel Parameters :

Use the following command to check your current range for ephemeral ports:

/usr/sbin/ndd /dev/tcp tcp_smallest_anon_port tcp_largest_anon_port
32768

65535

In the preceding example, tcp_smallest_anon_port is set to the default range (32768-65535).

If necessary for your anticipated workload or number of servers , update the UDP and TCP ephemeral port range to a broader range.

tcp_smallest_anon_port	9000
tcp_largest_anon_port	65500

udp_smallest_anon_port	9000
udp_largest_anon_port	65500

Mount options

* Checking Shared Memory File System Mount
Ensure that the /dev/shm mount area is of type tmpfs and is mounted with the following options:

- With rw and execute permissions set on it
- With noexec or nosuid not set on it

umask

The 'umask' setting for the "oracle" user has to be 022.

Hostname

Hostname command should return the fully qualified hostname as shown below:

```
# hostname
hostname
```

Shell Limits

Oracle recommends that you set shell limits and system configuration parameters as documented below:

Note: The shell limit values in this section are minimum 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 on configuring shell limits.

Shell Limit	**Description**	**Soft limit(KB)**	**Hard Limit(KB)**
STACK	Size of the stack segment of the process	at least 10240	at most 32768
NOFILES	Open file descriptors	at least 1024	at least 65536
MAXUPRC or MAXPROC	Maximum user processes	at least 2047	at least 16384

To display the current value specified for these shell limits enter the following commands:

```
ulimit -s
ulimit -n
```

REFERENCES

NOTE:429191.1 - Kernel setup for Solaris 10 and Solaris 11 using project files
NOTE:1351051.1 - Information Center: Install and Configure Database Server/Client Installations
NOTE:1520299.1 - Primary Note For Oracle Database 12c Release 1 (12.1) Database/Client Installation/Upgrade/Migration Standalone Environment (Non-RAC)
NOTE:1578758.1 - Configuring X-Server Display For Oracle Universal Installer (OUI) On Solaris 11 Platforms

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