Oracle® Secure Enterprise Search

Quick Installation Guide

10*g* Release 1 (10.1.6) for Linux x86 and Microsoft Windows

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This document describes how to install Oracle Secure Enterprise Search (SES). It includes the following sections:

- Preinstallation Tasks
- Installation Tasks
- Postinstallation Tasks
- Uninstallation Tasks
- Restarting Oracle Secure Enterprise Search
- What to Do Next
- Additional Resources
- Documentation Accessibility

Preinstallation Tasks

Oracle SES can be installed on the following operating systems:

- Windows 2000, Windows Server 2003, Windows XP
- Red Hat Linux 3, Red Hat Linux 4
- SUSE Linux 9

This section contains the following topics:

- Checking the Software Requirements
- Checking Hardware Requirements
- Configuring Kernel Parameters for Linux
- Set Shell Limits for the oracle User
- Installing on a Port Number Less Than 1024
- Installing a Loopback Adapter

Checking the Software Requirements

This section lists software requirements for Microsoft Windows and Linux x86 installations.

Requirements for Windows
A Windows system must meet the following minimum software requirements.

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Operating system requirements:

- Windows Server 2003

- Windows 2000 (Service Pack 2 or higher)

- Windows XP Professional

Requirements for Linux x86

A Linux system must meet the following minimum software requirements, depending on your Linux distribution and version.

Red Hat Enterprise Linux ES/AS 3 (x86)

- The system must be running the following kernel version: 2.4.21 (or a later version)

- Gnu gcc package: gcc-3.2.3 or higher

- The following packages (or higher versions) must be also be installed:
  - glibc-2.3.2-95.20
  - make-3.79.1
  - binutils-2.14.90.0.4
  - openmotif-2.2.3-3
  - compat-db-4.0.14.5
  - compat-gcc-7.3-2.96.128
  - compat-gcc-c++-7.3-2.96.128
  - compat-libstdc++-7.3-2.96.128
  - compat-libstdc++-devel-7.3-2.96.128
  - setarch-1.3-1

Red Hat Enterprise Linux ES/AS 4 (x86)

- The system must be running the following kernel version: 2.6.9 (or a later version)

- Gnu gcc package: gcc-3.4.3-22.1 or higher

- The following packages (or higher versions) must be also be installed:
  - glibc-2.3.4-2.9
  - make-3.80
  - binutils-2.15.92.0.2
  - openmotif-2.2.3-9.RHEL4.1
  - compat-db-4.1.25-9
  - setarch-1.6-1

SUSE Linux Enterprise Server 9

- The system must be running the following kernel version: 2.6.5 (or a later version):

- Gnu gcc package: gcc-3.3.3-43.34 or higher

- The following packages (or higher versions) must be also be installed:
    - glibc-2.3.3-98.47
    - make-3.80-184.1
    - binutils-2.15.90.0.1.1-32.10
    - openmotif-2.2.2-519.4

To ensure that the system meets these requirements:

1. To determine which version of the operating system is installed, enter the following command:

   ```
   # cat /etc/issue
   ```

   Note: Only the distributions and versions listed earlier in this section are supported. Do not install the software on other versions of Linux

2. To determine whether the required kernel is installed, enter the following command:

   ```
   # uname -r
   ```

   On a Red Hat Enterprise Linux 3.0 system, the output may be as follows:

   ```
   2.4.21-27.EL
   ```

   In this example, the output shows the kernel version (2.4.21) and errata level (27.EL). Kernel updates are available from the Red Hat Network.

   On a Red Hat Enterprise Linux 4.0 system, the output may be as follows:

   ```
   2.6.9-11.EL
   ```

   On a SUSE Linux Enterprise Server 9 system, the output may be as follows:

   ```
   2.6.5-7.191
   ```

   In this example, the output shows the kernel version on the system. Contact SUSE for information about obtaining and installing the kernel updates.

3. To determine whether the required packages are installed, enter commands similar to the following:

   ```
   # rpm -q package_name
   ```

   If a package is not installed, or if the version is lower than the required version, then install it from your Linux distribution media or download the required package from your Linux vendor's Web site.

Checking Hardware Requirements

Oracle SES requires a minimum of 2 gigabytes of disk space. This includes 1 gigabyte to install and approximately .5 gigabyte to create the initial Oracle SES index. Additional Oracle SES requirements are based on the amount of data that you need to search. Here are some configuration examples:

To index 100,000 documents:

- 4 gigabytes disk space
- 1 gigabyte RAM

To index 1,000,000 documents:

- 20 gigabytes disk space
- 6 gigabytes RAM

For installation help, including pre-installation tips, see the Oracle SES tutorial:

`http://st-curriculum.oracle.com/tutorial/SESAdminTutorial/in`
`dex.htm`

Configuring Kernel Parameters for Linux

Before starting the Oracle installation, verify that the parameters shown in the following table are set to values greater than or equal to the recommended value shown. The procedure following the table describes how to verify and set the values.

Table 1   Kernel Parameters

Parameter	Value	File
`semmsl`	250	`/proc/sys/kernel/sem`
`semmns`	32000	
`semopm`	100	
	128	
`shmall`	2097152	`/proc/sys/kernel/shmall`
`shmmax`	Half the size of physical memory	`/proc/sys/kernel/shmmax`
`shmmni`	4096	`/proc/sys/kernel/shmmni`
`file-max`	65536	`/proc/sys/fs/file-max`
`ip_local_port_ range`	1024 65000	`/proc/sys/net/ipv4/ip_local_port_ range`

> **Note:** If the current value for any parameter is higher than the value listed in this table, do not change the value of that parameter.

To view the current value specified for these kernel parameters, and to change them if necessary, follow these steps:

1. Enter commands similar to the following to view the current values of the kernel parameters:

> **Note:** Make a note of the current values and identify any values that you must change.

Table 2   Commands for Kernel Parameters

Parameter	Command
`semmsl, semmns, semopm, semmni`	`# /sbin/sysctl -a	grep sem` This command displays the value of the semaphore parameters in the order listed.
`shmall, shmmax, shmmni`	`# /sbin/sysctl -a	grep shm`
`file-max`	`# /sbin/sysctl -a	grep file-max`
`ip_local_port_range`	`# /sbin/sysctl -a	grep ip_local_port_ range` This command displays a range of port numbers.

2. If the value of any kernel parameter is different than the recommended value, then complete the following steps:

    a. Using a text editor, create or edit the `/etc/sysctl.conf` file and add or edit lines similar to the following:

> **Note:**   Include lines only for the kernel parameter values that you want to change. For the semaphore parameters (`kernel.sem`), you must specify all four values. However, if any of the current values are larger than the recommended value, then specify the larger value.

```
kernel.shmall = 2097152
kernel.shmmax = 2147483648
kernel.shmmni = 4096
kernel.sem = 250 32000 100 128
fs.file-max = 65536
net.ipv4.ip_local_port_range = 1024 65000
```

    By specifying the values in the `/etc/sysctl.conf` file, they persist when you reboot the system.

    b. Enter the following command to change the current values of the kernel parameters:

```
# /sbin/sysctl -p
```

    Review the output from this command to verify that the values are correct. If the values are incorrect, then edit the `/etc/sysctl.conf` file and enter this command again.

Set Shell Limits for the oracle User

To improve the performance of the software on Linux systems, you must increase the following shell limits for the `oracle` user:

Table 3   Shell Limits for oracle User

Shell Limit	Item in limits.conf	Hard Limit
Maximum number of open file descriptors	`nofile`	65536
Maximum number of processes available to a single user	`nproc`	16384

To increase the shell limits:

1. Add the following lines to the `/etc/security/limits.conf` file:

   ```
   *     soft    nproc   2047
   *     hard    nproc   16384
   *     soft    nofile  1024
   *     hard    nofile  65536
   ```

2. Add the following line to the `/etc/pam.d/login` file, if it does not already exist:

   ```
   session    required    /lib/security/pam_limits.so
   ```

3. Depending on the oracle user's default shell, make the following changes to the default shell start-up file:

   - For the Bourne, Bash, or Korn shell, add the following lines to the `/etc/profile` file:

     ```
     if [ $USER = "oracle" ]; then
             if [ $SHELL = "/bin/ksh" ]; then
                     ulimit -p 16384
                     ulimit -n 65536
             else
                     ulimit -u 16384 -n 65536
             fi
     fi
     ```

   - For the C or tcsh shell, add the following lines to the `/etc/csh.login` file:

     ```
     if ( $USER == "oracle" ) then
             limit maxproc 16384
             limit descriptors 65536
     endif
     ```

4. Reboot the system after setting shell limits.

   If it is not rebooted, then a pre-requisite check fails with the following error:

   ```
   ========================================================================
   Error:
   Checking Shell Limits ...
   Actual Result: Detected the following existing settings ...
   Failed >>    Limit on maximum number of processes for a single user: 7168
   Failed >>    Limit on maximum number of open file descriptors: 1024
   Check complete. The overall result of this check is: Failed <<<<
   Problem: The Installer has detected that the limits specified for the
   reported SHELL parameters do not match the recommended limits.
   Recommendation: The recommended values for the SHELL limits are:
   <1> For tcsh, csh and zsh:
       a. maximum number of open file descriptors: 65536
       b. maximum number of processes for a single user: 16384
   <2> For ksh, bash and sh:
       a. maximum number of open file descriptors: 65536(hard); 1024(soft)
       b. maximum number of processes for a single user: 16384(hard);
   2047(soft)
   Refer to the documentation for instructions on setting the reported SHELL
   limits to the recommended values.
   ========================================================================
   ```

Installing on a Port Number Less Than 1024

Oracle SES must be installed by a non-root user. However, UNIX operating systems require that only root users can bind to ports less then 1024. On UNIX, follow these steps to install Oracle SES on a port number less than 1024:

> **Note:** On Windows, simply specify any port during installation.

1. During installation, specify the port (for example, 80).

2. After the installation is complete, log in as the root user.

3. Run the following commands:

```
chgrp -R root $ORACLE_HOME/jdk
$ORACLE_HOME/bin/searchctl start
```

> **Notes:**
>
> - The searchctl `start command` must be run by a root user. However, the `searchctl stop` command can be run by either a root user or the user who installed Oracle SES.
>
> - `$ORACLE_HOME` represents the directory where Oracle SES was installed.

If your installation completes on a port greater than 1024 and you want to change to a port less than 1024, then take the following steps:

1. Shutdown the middle tier with the following command:

```
$ORACLE_HOME/bin/searchctl stop
```

2. Edit the value for the `port` attribute in `$ORACLE_HOME/oc4j/j2ee/OC4J_SEARCH/config/http-web-site.xml`. (Make sure that the new port is not already in use.)

3. Log in as the root user.

4. Run the following commands:

```
chgrp -R root $ORACLE_HOME/jdk
$ORACLE_HOME/bin/searchctl start
```

Installing a Loopback Adapter

A loopback adapter is required if:

- You are installing on a Dynamic Host Configuration Protocol (DHCP) computer, or

- You are installing on a non-networked computer and plan to connect the computer to a network after installation

Checking for / Installing / Removing a Loopback Adapter on Windows

For detailed instructions, see the Oracle Database Installation Guide 10g Release 1 (10.1.0.2.0) for Windows. This is posted at

```
http://download.oracle.com/docs/html/B10130_
02/reqs.htm#sthref370.
```

Configuring a Loopback Adapter on Linux

To configure a loopback adapter on Linux:

1. Find the IP address allocated from the DHCP server by running the following command:

   ```
   $ /sbin/ifconfig -a
   ```

   The IP address is associated with the interface configured to use DHCP.

2. Configure the host to resolve host name to loopback IP address, by modifying the /etc/hosts file as the root user to contain the following entries:

   ```
   127.0.0.1 hostname.domainname hostname
   127.0.0.1 localhost.localdomain localhost
   ```

3. Check that the host name resolves to the loopback IP address with the following command:

   ```
   $ /bin/ping hostname.domainname
   ```

   > **Note:** For Oracle SES, if a loopback adapter on Linux is not required, then delete the following entry from the /etc/hosts file as the root user:
   >
   > ```
   > 127.0.0.1 hostname.domainname hostname
   > ```

Installation Tasks

For easy instructions on installing Oracle SES, see the Installation Tips tutorial:

```
http://st-curriculum.oracle.com/tutorial/SESAdminTutorial/in
dex.htm
```

This section contains the following:

- Installation Tasks for Linux
- Installation Tasks for Windows

Installation Tasks for Linux

In the following instructions, the disc mount point is referred to as /SD_CDROM. If your mount point is different, then substitute the correct mount point name for all references to /SD_CDROM.

To start the installer:

1. Ensure that you have checked all the minimum requirements, as described in "Preinstallation Tasks".

2. Log in to the computer as the user who will install Oracle SES.

3. Insert the Oracle Secure Enterprise Search CD.

4. If your computer does not have automount, then see "Mounting the CD-ROM for Linux" for steps on mounting the CD-ROM manually.

5. Start up the installer:

```
prompt> cd
prompt> /SD_CDROM/runInstaller
```

This launches Oracle Universal Installer.

> **Note:** Do not run the installer from the mount point directory. The `cd` command changes your current directory to your home directory, so you do not start the installer from the mount point.

In the Oracle Universal Installer, the only value that you must specify is the administrative password. The remaining values are set to a default, but they can be overridden. Following is the list of the installation parameters:

- **Search Server Name**: Name for your search server.

- **Administrative Password**: The password that you will later use to log on to the administration tool.

- **HTTP Port**: The port on which the Oracle SES middle tier will listen. For example, if you installed Oracle SES on host myhost.oracle.com and you specify port 7890, then your search page URL will be `http://myhost.oracle.com:7890/search/query/search`.

- **Destination Path**: The location where Oracle SES software is installed

- **Data Storage Location**: The location where Oracle SES will store its data.

The following screenshot shows the Oracle Universal Installer screen.
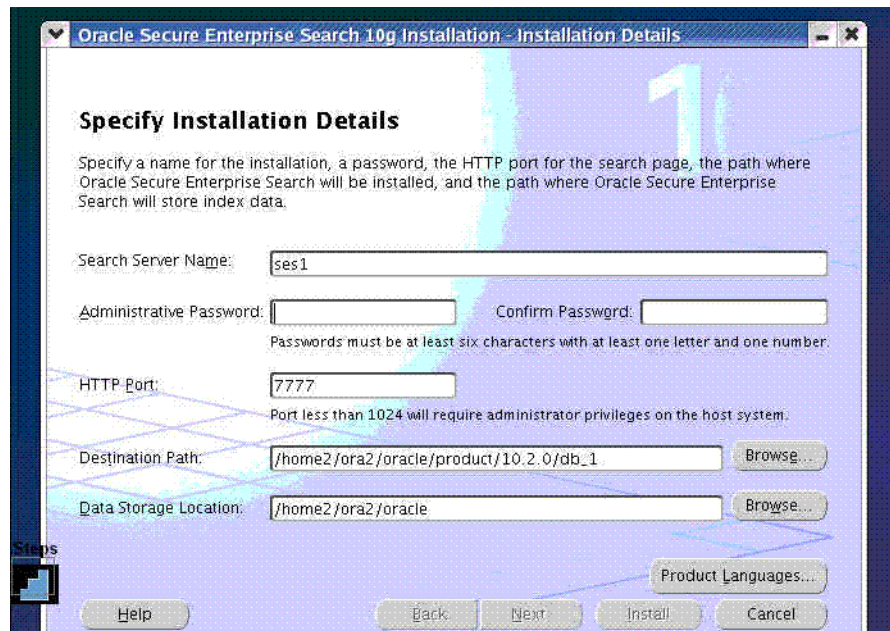
Mounting the CD-ROM for Linux

Follow these steps if your computer does not automount the CD-ROM:

1. Insert the CD-ROM.

2. Log in as the root user:

   ```
   prompt> su
   Password:
   ```

3. Create the CD-ROM mount point directory:

   ```
   prompt> /usr/bin/mkdir /SD_CDROM
   ```

4. Mount the CD-ROM drive on the mount point directory:

   ```
   prompt> /usr/sbin/mount -F cdfs -o rr /dev/cdrom /SD_CDROM
   ```

   In the preceding example, /SD_CDROM is the disc mount point directory and /dev/cdrom is the device name for the disc device.

5. Log out from the root user.

   ```
   prompt> exi
   ```

Installation Tasks for Windows

To install the Oracle Secure Enterprise Search software:

1. Ensure that you have checked all the minimum requirements, as described in "Preinstallation Tasks".

2. Log on as a member of the Administrators group to the computer on which to install Oracle components.

   If you are installing on a Primary Domain Controller (PDC) or a Backup Domain Controller (BDC), log on as a member of the Domain Administrators group.

3. Insert the CD or navigate to the directory where you downloaded or copied the installation files. Use the same installation media to install Oracle Secure Enterprise Search on all supported Windows platforms.

4. Start up the installer:

   - When installing from a hard disk, double-click setup.exe located in the directory you created for the downloaded or copied installation files.

   - When installing from the CD, enter the following

     ```
     prompt> cd
     prompt> CDROM:\setup.exe
     ```

   This launches Oracle Universal Installer. In the Oracle Universal Installer, the only value that you must specify is the administrative password. The remaining values are set to a default, but they can be overridden.

   > **See Also:** "Installation Tasks for Linux", Step 5, for detailed information on the installation parameters

5. When all of the configuration tools have finished, click **Exit**, then click **Yes** to exit from Oracle Universal Installer.

Postinstallation Tasks

This section describes how to complete postinstallation tasks after you have installed the software.

Certifications and Patches

The Oracle SES administration tool and default query application are certified on the following browsers:

- Firefox 1.0, 1.0.1, 1.0.6, 1.0.7, 1.5

- Internet Explorer 6.0

- Netscape 7.1, 7.2

- Mozilla 1.7.3

The requirements and certifications included in this installation guide were current at the time this guide was published. See the certification matrix on the Oracle*Metalink* Web site for the most up-to-date information.

> **See Also:** "Oracle Support Services" on page 14

Increase Memory on Microsoft Windows - Optional

On Windows only, Oracle SES cannot allocate memory (SGA + PGA) correctly if the machine has more than 2G physical memory. The maximum memory usage Oracle SES can allocate is 800M.

If your server has more than 2G physical memory, you can manually increase the SGA and PGA memory size.

> **Note:** Because this task increases the SGA and the PGA to improve cache hit ratio, it should be done by an Oracle Database administrator.

> **See Also:** *Oracle Database Concepts* for more information on Oracle memory architecture

In the following steps:

- `%ORACLE_HOME%` is the directory where Oracle SES was installed

- `<SES Password>` is the Oracle SES administrator password specified during installation

- `<SES NAME>` is the Oracle SES instance name specified during installation

1. Open the original initialization parameter file (`init.ora.*`) file with a text editor. It is in the `%ORACLE_HOME%\admin\<SES NAME>\pfile` directory. Remember to make a backup of this file.

2. Find `sga_target` and `pga_aggregate_target`, and increase the size of each. For example, increase the SGA to 800M with `sga_target=800M`.

   Specify 30% of physical memory to `sga_target` and 10% of physical memory to `pga_aggregate_target`. 1.5G is the limit for `sga_target`, even if you specify more than 1.5G. Save the modified file.

3. Start up Oracle SES.

4. Enter `sqlplus` in a command prompt to start SQL*Plus.

5. Enter the following in the SQL*Plus login prompt:

   ```
   sys/<SES Pasword> as sysdba
   ```

6. Create a new server parameter file (SPFILE) with the following statement:

   ```
   SQL> CREATE SPFILE='%ORACLE_HOME%\dbs\SPFILE_NEW.ORA'
   FROM PFILE='%ORACLE_HOME%\admin\<SES NAME>\pfile\init.ora.*';
   ```

   Specify a new file name for `SPFILE`, and specify the modified `init.ora.*` file for initialization parameter file (`pfile`).

   > **See Also:** *Oracle Database SQL Reference* for details on the `CREATE SPFILE` statement

7. Enter `exit` to quit SQL*Plus.

8. Shut down Oracle SES.

9. Make a backup for the original `SPFILE: %ORACLE_HOME%\dbs\SPFILE.ORA`. Then, rename the newly created `%ORACLE_HOME%\dbs\SPFILE_NEW.ORA` to `SPFILE.ORA`.

10. Start up Oracle SES.

11. To confirm that your change was applied, launch SQL*Plus with the `eqsys/<SES Password>` user. Then enter the following:

    ```
    SQL> show parameter sga_target
    SQL> show parameter pga_aggregat_target
    ```

    If Oracle SES cannot start up, then restore the `SPFILE.ORA` and start Oracle SES again.

Uninstallation Tasks

To uninstall Oracle SES on Linux, run `$ORACLE_HOME/install/deinstall_ses` as the user who installed Oracle SES.

To uninstall Oracle SES on Windows, navigate to Control Panel - Add or Remove Programs, and remove Oracle Secure Enterprise Search.

> **Note:** On UNIX only: If the Oracle SES instance was bound to a port less then 1024 and the middle tier ran as root user, then after uninstallation there could be files left under `$ORACLE_HOME`. After the uninstall completes, log in as the root user and delete those files.

Restarting Oracle Secure Enterprise Search

The tool for starting and stopping the search engine is `searchctl`. To restart Oracle SES after rebooting, navigate to the `$ORACLE_HOME/bin` directory where Oracle SES is installed and run `searchctl startall`.

Users are prompted for a password when running `searchctl` commands on Linux platforms. No password is required on Windows platforms. This is

because Oracle SES installation on Windows requires a user with administrator privileges. When running commands to start or stop the search engine, no password is required as long as the user is a member of the administrator group.

For detailed steps, see the Startup / Shutdown lesson in the Oracle SES tutorial:

http://st-curriculum.oracle.com/tutorial/SESAdminTutorial/index.htm

What to Do Next

To become familiar with Oracle Secure Enterprise Search, Oracle suggests that you complete the following tasks:

- Follow the Oracle Secure Enterprise Search tutorial:

  http://st-curriculum.oracle.com/tutorial/SESAdminTutorial/index.htm

- Log in to the Oracle SES administration tool, using the user name and password set in the installation. With the administration tool, you can:

  - Define sources to search

  - Configure and schedule the crawling of the sources

  - Monitor the status and performance of crawling and search

  Click the **Help** link in the top right corner of any page in the administration tool for context-sensitive help.

- Read the *Oracle Secure Enterprise Search Administrator's Guide*.

- In a production environment, where a load balancer or other monitoring tools are used to ensure system availability, Oracle SES can also be easily monitored through the following URL:
  http://<host>:<port>/monitor/check.jsp. The URL should return the following message: **Oracle Secure Enterprise Search instance is up.**

  > **Note:** This message is not translated to other languages, because system monitoring tools may need to byte-compare this string.

  If Oracle Secure Enterprise Search is not available, then the URL returns either a connection error or the HTTP error code 503.

Additional Resources

To download free release notes, installation documentation, white papers, or other collateral, visit Oracle Technology Network (OTN). You must register online before using OTN; registration is free and can be done at

http://www.oracle.com/technology/membership/

If you already have a user name and password for OTN, then you can go directly to the documentation section of OTN at

http://www.oracle.com/technology/documentation

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Purchase additional products, full-use licenses, version updates, and documentation in the U.S.A.	http://oraclestore.oracle.com
Access technical resources for developers	http://www.oracle.com/technology/index.html
Access information about technical support	http://www.oracle.com/support
Locate local Oracle Support Centers outside the U.S.A.	http://www.oracle.com/support
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