Oracle® Solaris Cluster Data Service for Oracle External Proxy Guide
This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish, or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

The information contained herein is subject to change without notice and is not warranted to be error-free. If you find any errors, please report them to us in writing.

If this is software or related documentation that is delivered to the U.S. Government or anyone licensing it on behalf of the U.S. Government, the following notice is applicable:

U.S. GOVERNMENT END USERS. Oracle programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, delivered to U.S. Government end users are "commercial computer software" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, use, duplication, disclosure, modification, and adaptation of the programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, shall be subject to license terms and license restrictions applicable to the programs. No other rights are granted to the U.S. Government.

This software or hardware is developed for general use in a variety of information management applications. It is not developed or intended for use in any inherently dangerous applications, including applications that may create a risk of personal injury. If you use this software or hardware in dangerous applications, then you shall be responsible to take all appropriate fail-safe, backup, redundancy, and other measures to ensure its safe use. Oracle Corporation and its affiliates disclaim any liability for any damages caused by use of this software or hardware in dangerous applications.

Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

Intel and Intel Xeon are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. AMD, Opteron, the AMD logo, and the AMD Opteron logo are trademarks or registered trademarks of Advanced Micro Devices. UNIX is a registered trademark of The Open Group.

This software or hardware and documentation may provide access to or information on content, products, and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third-party content, products, and services. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third-party content, products, or services.

Copyright © 2012, 2013, Oracle and/or its affiliates. All rights reserved.

This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish, or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

The information contained herein is subject to change without notice and is not warranted to be error-free. If you find any errors, please report them to us in writing.

If this is software or related documentation that is delivered to the U.S. Government or anyone licensing it on behalf of the U.S. Government, the following notice is applicable:

U.S. GOVERNMENT END USERS. Oracle programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, delivered to U.S. Government end users are "commercial computer software" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, use, duplication, disclosure, modification, and adaptation of the programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, shall be subject to license terms and license restrictions applicable to the programs. No other rights are granted to the U.S. Government.

This software or hardware is developed for general use in a variety of information management applications. It is not developed or intended for use in any inherently dangerous applications, including applications that may create a risk of personal injury. If you use this software or hardware in dangerous applications, then you shall be responsible to take all appropriate fail-safe, backup, redundancy, and other measures to ensure its safe use. Oracle Corporation and its affiliates disclaim any liability for any damages caused by use of this software or hardware in dangerous applications.

Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

Intel and Intel Xeon are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. AMD, Opteron, the AMD logo, and the AMD Opteron logo are trademarks or registered trademarks of Advanced Micro Devices. UNIX is a registered trademark of The Open Group.

This software or hardware and documentation may provide access to or information on content, products, and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third-party content, products, and services. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third-party content, products, or services.

Copyright © 2012, 2013, Oracle and/or its affiliates. All rights reserved.

This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish, or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

The information contained herein is subject to change without notice and is not warranted to be error-free. If you find any errors, please report them to us in writing.

If this is software or related documentation that is delivered to the U.S. Government or anyone licensing it on behalf of the U.S. Government, the following notice is applicable:

U.S. GOVERNMENT END USERS. Oracle programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, delivered to U.S. Government end users are "commercial computer software" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, use, duplication, disclosure, modification, and adaptation of the programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, shall be subject to license terms and license restrictions applicable to the programs. No other rights are granted to the U.S. Government.

This software or hardware is developed for general use in a variety of information management applications. It is not developed or intended for use in any inherently dangerous applications, including applications that may create a risk of personal injury. If you use this software or hardware in dangerous applications, then you shall be responsible to take all appropriate fail-safe, backup, redundancy, and other measures to ensure its safe use. Oracle Corporation and its affiliates disclaim any liability for any damages caused by use of this software or hardware in dangerous applications.

Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

Intel and Intel Xeon are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. AMD, Opteron, the AMD logo, and the AMD Opteron logo are trademarks or registered trademarks of Advanced Micro Devices. UNIX is a registered trademark of The Open Group.

This software or hardware and documentation may provide access to or information on content, products, and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third-party content, products, and services. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third-party content, products, or services.
Contents

Preface .....................................................................................................................................................5

1 Installing and Configuring HA for Oracle External Proxy .................................................................9
   Overview ................................................................................................................................................9
   Planning the Installation and Configuration ................................................................---------------10
      Configuration Requirements .......................................................................................................10
   Overview of the Installation and Configuration Process for HA for Oracle External Proxy .... 14
   Installing the HA for Oracle External Proxy Packages ....................................................................14
      ▼ How to Install the HA for Oracle External Proxy Packages ....................................................14
   Registering and Configuring HA for Oracle External Proxy ..............................................................16
      Setting HA for Oracle External Proxy Extension Properties .....................................................16
      Tools for Registering and Configuring HA for Oracle External Proxy .........................................17
      ▼ How to Register and Configure HA for Oracle External Proxy ..............................................17
      Setting up Dependencies on Oracle External Proxy Resources ...............................................19
      How to Verify Data Service Installation and Configuration ......................................................20
   Operations By HA for Oracle External Proxy ..................................................................................20
      Actions in Response to Faults ......................................................................................................20
   Upgrading the ORCL.oracle_external_proxy Resource Type ......................................................21
      Information for Registering the New Resource Type Version ...................................................21
      Information for Migrating Existing Instances of the Resource Type ........................................21

A HA for Oracle External Proxy Extension Properties .........................................................................23

Index ......................................................................................................................................................25
Preface

Oracle Solaris Cluster Data Service for Oracle External Proxy Guide explains how to install and configure Oracle Solaris Cluster data services.

Note – This Oracle Solaris Cluster release supports systems that use the SPARC and x86 families of processor architectures: UltraSPARC, SPARC64, AMD64, and Intel 64. In this document, x86 refers to the larger family of 64-bit x86 compatible products. Information in this document pertains to all platforms unless otherwise specified.

This document is intended for system administrators with extensive knowledge of Oracle software and hardware. Do not use this document as a planning or presales guide. Before reading this document, you should have already determined your system requirements and purchased the appropriate equipment and software.

The instructions in this book assume knowledge of the Oracle Solaris operating system and expertise with the volume-manager software that is used with Oracle Solaris Cluster software.

Using UNIX Commands

This document contains information about commands that are specific to installing and configuring Oracle Solaris Cluster data services. The document does not contain comprehensive information about basic UNIX commands and procedures, such as shutting down the system, booting the system, and configuring devices. Information about basic UNIX commands and procedures is available from the following sources:

- Online documentation for the Oracle Solaris operating system
- Oracle Solaris operating system man pages
- Other software documentation that you received with your system
Typographic Conventions

The following table describes the typographic conventions that are used in this book.

<table>
<thead>
<tr>
<th>Typeface</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>AaBbCc123</td>
<td>The names of commands, files, and directories, and onscreen computer output</td>
<td>Edit your .login file. Use \ls -a to list all files. machine_name% you have mail.</td>
</tr>
<tr>
<td>AaBbCc123</td>
<td>What you type, contrasted with onscreen computer output</td>
<td>machine_name% su Password:</td>
</tr>
<tr>
<td>aabbcc123</td>
<td>Placeholder: replace with a real name or value</td>
<td>The command to remove a file is rm filename.</td>
</tr>
<tr>
<td>AaBbCc123</td>
<td>Book titles, new terms, and terms to be emphasized</td>
<td>Read Chapter 6 in the User's Guide. A cache is a copy that is stored locally. Do not save the file. Note: Some emphasized items appear bold online.</td>
</tr>
</tbody>
</table>

Shell Prompts in Command Examples

The following table shows UNIX system prompts and superuser prompts for shells that are included in the Oracle Solaris OS. In command examples, the shell prompt indicates whether the command should be executed by a regular user or a user with privileges.

<table>
<thead>
<tr>
<th>Shell</th>
<th>Prompt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bash shell, Korn shell, and Bourne shell</td>
<td>$</td>
</tr>
<tr>
<td>Bash shell, Korn shell, and Bourne shell for superuser</td>
<td>#</td>
</tr>
<tr>
<td>C shell</td>
<td>machine_name%</td>
</tr>
<tr>
<td>C shell for superuser</td>
<td>machine_name#</td>
</tr>
</tbody>
</table>
Related Documentation

Information about related Oracle Solaris Cluster topics is available in the documentation that is listed in the following table. All Oracle Solaris Cluster documentation is available at http://www.oracle.com/technetwork/indexes/documentation/index.html#sys_sw.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Documentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concepts</td>
<td><em>Oracle Solaris Cluster Concepts Guide</em></td>
</tr>
<tr>
<td>Hardware installation and administration</td>
<td><em>Oracle Solaris Cluster 3.3 3/13 Hardware Administration Manual</em> and individual hardware administration guides</td>
</tr>
<tr>
<td>Software installation</td>
<td><em>Oracle Solaris Cluster Software Installation Guide</em></td>
</tr>
<tr>
<td>Data service installation and administration</td>
<td><em>Oracle Solaris Cluster Data Services Planning and Administration Guide</em> and individual data service guides</td>
</tr>
<tr>
<td>Data service development</td>
<td><em>Oracle Solaris Cluster Data Services Developer’s Guide</em></td>
</tr>
<tr>
<td>System administration</td>
<td><em>Oracle Solaris Cluster System Administration Guide</em></td>
</tr>
<tr>
<td></td>
<td><em>Oracle Solaris Cluster Quick Reference</em></td>
</tr>
<tr>
<td>Software upgrade</td>
<td><em>Oracle Solaris Cluster Upgrade Guide</em></td>
</tr>
<tr>
<td>Error messages</td>
<td><em>Oracle Solaris Cluster Error Messages Guide</em></td>
</tr>
<tr>
<td>Command and function references</td>
<td><em>Oracle Solaris Cluster Reference Manual</em></td>
</tr>
<tr>
<td></td>
<td><em>Oracle Solaris Cluster Data Services Reference Manual</em></td>
</tr>
</tbody>
</table>

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.

Getting Help

If you have problems installing or using Oracle Solaris Cluster, contact your service provider and provide the following information.

- Your name and email address (if available)
- Your company name, address, and phone number
- The model number and serial number of your systems
- The release number of the operating environment (for example, Oracle Solaris 10)
• The release number of Oracle Solaris Cluster (for example, Oracle Solaris Cluster 3.3)

Use the following commands to gather information about your system for your service provider.

<table>
<thead>
<tr>
<th>Command</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>prtconf -v</td>
<td>Displays the size of the system memory and reports information about peripheral devices</td>
</tr>
<tr>
<td>psrinfo -v</td>
<td>Displays information about processors</td>
</tr>
<tr>
<td>showrev -p</td>
<td>Reports which patches are installed</td>
</tr>
<tr>
<td>prtdiag -v</td>
<td>Displays system diagnostic information</td>
</tr>
<tr>
<td>/usr/cluster/bin/clnode show-rev -v</td>
<td>Displays Oracle Solaris Cluster release and package version information for each node</td>
</tr>
</tbody>
</table>

Also have available the contents of the /var/adm/messages file.
Installing and Configuring HA for Oracle External Proxy

This chapter describes the steps to install and configure HA for Oracle External Proxy on your Oracle Solaris Cluster servers.

This chapter contains the following sections:

- “Overview” on page 9
- “Planning the Installation and Configuration” on page 10
- “Overview of the Installation and Configuration Process for HA for Oracle External Proxy” on page 14
- “Installing the HA for Oracle External Proxy Packages” on page 14
- “Registering and Configuring HA for Oracle External Proxy” on page 16
- “Operations By HA for Oracle External Proxy” on page 20
- “Upgrading the ORCL.oracle_external_proxy Resource Type” on page 21

You can configure HA for Oracle External Proxy as a failover or a scalable data service. See Chapter 1, “Planning for Oracle Solaris Cluster Data Services,” in Oracle Solaris Cluster Data Services Planning and Administration Guide and the Oracle Solaris Cluster Concepts Guide document for an overview of failover and scalable data services.

Overview

The ORCL.oracle_external_proxy resource type interrogates the Oracle Database or the Oracle Real Application Clusters (Oracle RAC) services and interprets the availability of those services as an Oracle Solaris Cluster resource state or status in an Oracle Solaris Cluster configuration.

If the Oracle Database or the Oracle RAC services are unavailable, the Oracle Solaris Cluster resource state will be offline. Similarly, if the Oracle Database or the Oracle RAC services are available, the Oracle Solaris Cluster resource state will be online. Additionally, appropriate Oracle Solaris Cluster status messages will also be displayed.

For example:
Furthermore, if the Oracle Database and the Oracle RAC services are unavailable, the Oracle Solaris Cluster resource status message will also display the ORA error number and some part of the error message, if known.

For example:

```
# clrs status oep-rs
=== Cluster Resources ===
Resource Name Node Name State Status Message
------------- --------- ----- --------------
oep-rs oephost1 Offline Offline - Service orcl is DOWN / 
      oephost2 Offline Offline - Service orcl is DOWN /
[ORA-12514, TNS:listener does not currently ...]
      [ORA-12514, TNS:listener does not currently ?]
```

### Planning the Installation and Configuration

**Note** – The HA for Oracle External Proxy software can be configured to run in a whole root or a sparse root non-global zone, if required.

To register and configure HA for Oracle External Proxy, you must consider or provide information on the following points.

- Decide whether to run HA for Oracle External Proxy as a failover or scalable data service.
- Decide which extension properties to set. See the Oracle Solaris Cluster Data Services Planning and Administration Guide for information about the standard properties and Appendix A, “HA for Oracle External Proxy Extension Properties,” for information about the extension properties.
- Provide the name of the resource type for HA for Oracle External Proxy. This name is `ORCL_oracle_external_proxy`.
- Provide the names of the cluster nodes that will master the data service.

### Configuration Requirements

The following sections describe the configuration requirements for Oracle External Proxy.

- “Remote Database User” on page 11
Remote Database User

On the Oracle Database or the Oracle RAC database, create a user that will be used by the Oracle External Proxy resource.

The following example shows that a user hauser with a password hauser has been created by using the SQL commands. You can choose a different username and password. The username and password that you chose will be used later by the Oracle Solaris Cluster resource.

```
-bash-3.00$ sqlplus ‘/ as sysdba’
SQL*Plus: Release 11.2.0.2.0 Production on Fri Nov 4 05:23:31 2011
Copyright (c) 1982, 2010, Oracle. All rights reserved.
Connected to: 
Oracle Database 11g Enterprise Edition Release 11.2.0.2.0 - 64bit Production
With the Partitioning, Real Application Clusters, Automatic Storage Management, OLAP,
Data Mining and Real Application Testing options
SQL> create user hauser identified by hauser;
User created.
SQL> grant create session to hauser;
Grant succeeded.
SQL> grant execute on dbms_lock to hauser;
Grant succeeded.
SQL> grant select on v$instance to hauser;
Grant succeeded.
SQL> create profile hauser limit PASSWORD_LIFE_TIME UNLIMITED;
Profile created.
SQL> alter user hauser identified by hauser profile hauser;
User altered.
SQL>
```

Secure Remote Database Password

The ORCL.oracle_external_proxy resource type verifies a connection to the remote Oracle database. There is no requirement for any Oracle Client software on the nodes where the ORCL.oracle_external_proxy resource type will execute. You will need to create a secure
password to connect to a remote database. **Example 1–1** shows how to encrypt the database user password. However, this password must correspond to the password you used when creating the database user in "Remote Database User" on page 11.

**Note**—Create `/var/cluster/scoep_key` only once on each node. If you intend to create multiple resources of the ORCL.oracle_external_proxy type, use the same key for encryption and decryption. If `/var/cluster/scoep_key` is recreated after an encrypted password has been created, it will not be possible to decrypt the encrypted password using the newly created `/var/cluster/scoep_key`. Consequently, the ORCL.oracle_external_proxy resource type will fail to connect to the remote database. Also, the resource will go OFFLINE and you will get the ORA-01017: invalid username/password; logon denied message.

If you have recreated `/var/cluster/scoep_key`, you will need to recreate the encrypted password again, and then disable and enable the ORCL.oracle_external_proxy resource type for the change to be effective.

**EXAMPLE 1–1** Encrypting the Database User Password

Becoming superuser on all Oracle Solaris Cluster nodes, do the following:

```
bash-3.00# dd if=/dev/urandom of=/var/cluster/scoep_key bs=8 count=1
1+0 records in
1+0 records out
bash-3.00#
```

```
bash-3.00# echo hauser | /usr/sfw/bin/openssl enc -aes128 -e -pass \
file:/var/cluster/scoep_key -out /opt/ORCLscoep/.oep-rs_passwd
bash-3.00#
```

`oep-rs` in `oep-rs_passwd` represents the resource name that you will create later. However, you can choose a different resource name. Now verify that the password can be decrypted.

```
bash-3.00# /usr/sfw/bin/openssl enc -aes128 -d -pass \
file:/var/cluster/scoep_key -in /opt/ORCLscoep/.oep-rs_passwd
hauser
bash-3.00# chmod 400 /var/cluster/scoep_key
bash-3.00# chmod 400 /opt/ORCLscoep/.oep-rs_passwd
```

**tnsnames.ora File**

A valid tnsnames entry for the Oracle Database or Oracle RAC service is required. If an existing Oracle installation exists, for example if an Oracle Application Tier is installed on the Oracle Solaris Cluster nodes, then it is acceptable to use the tnsnames.ora file in that installation:

```
$ORACLE_HOME)/network/admin/tnsnames.ora
```

When registering an Oracle External Proxy resource, you need to specify a tns_admin extension property, unless the default value `/var/opt/oracle` is acceptable. If so, you can provide either of the following entries:
If the tns_admin extension property is omitted, the Oracle External Proxy resource defaults to the /var/opt/oracle file. If you are interrogating either Oracle Database 11g Release 2 or Oracle Database 12c, the HOST entry in tnsnames.ora must refer to the SCAN name. For Oracle Database 10g Release 2 and Oracle Database 11g Release 1, specify the appropriate listener address for each node that runs an instance of the database. In the following example, /var/opt/oracle/tnsnames.ora file is used.

```
bash-3.00# mkdir /var/opt/oracle
bash-3.00# cat /var/opt/oracle/tnsnames.ora
ORCL =
  (DESCRIPTION =
    (ADDRESS = (PROTOCOL = TCP)(HOST = dbhost-scan-lh)(PORT = 1521))
    (CONNECT_DATA =
      (SERVER = DEDICATED)
      (SERVICE_NAME = ORCL)
    )
  )
bash-3.00#```

The hostname dbhost-scan-lh must be resolvable and within the /etc/inet/hosts file on each node.

```
bash-3.00# grep dbhost-scan-lh /etc/inet/hosts
10.134.84.58 dbhost-scan-lh.us.oracle.com dbhost-scan-lh
bash-3.00#```

**Remote Oracle Notification Service**

Running Oracle Notification Service on every database node reduces the time it takes for the ORCL.oracle_external_proxy resource type to connect to the database and to determine the state of the database. To verify that Oracle Notification Service is running on the database nodes, run the following command.

```
bash-3.00# su - oragrid
Oracle Corporation SunOS 5.11 11.0 November 2011
bash-3.00$ crsctl stat res ora.ons -t
---------------------------------------------------------
NAME      TARGET       STATE      SERVER       STATEDETAILS   Local Resources
---------------------------------------------------------
ora.ons    ONLINE       ONLINE     dbhost1      ONLINE         
ora.ons    ONLINE       ONLINE     dbhost2      ONLINE         
bash-3.00$```

If Oracle Notification Service fails or stops running on a database node, the ORCL.oracle_external_proxy resource will still continue to monitor the remote database. However, it will take longer to connect to the database and determine the state of the database.
Overview of the Installation and Configuration Process for HA for Oracle External Proxy

The following table lists the sections that describe the installation and configuration tasks.

<table>
<thead>
<tr>
<th>Task</th>
<th>Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Install the HA for Oracle External Proxy package</td>
<td>&quot;How to Install the HA for Oracle External Proxy Packages&quot; on page 14</td>
</tr>
<tr>
<td>Configure and start HA for Oracle External Proxy</td>
<td>&quot;How to Register and Configure HA for Oracle External Proxy&quot; on page 17</td>
</tr>
</tbody>
</table>

Installing the HA for Oracle External Proxy Packages

If you did not install the HA for Oracle External Proxy packages during your initial Oracle Solaris Cluster installation, perform this procedure to install the packages. To install the packages, use the installer program.

Note – You need to install the HA for Oracle External Proxy packages in the global cluster and not in the zone cluster.

▼ How to Install the HA for Oracle External Proxy Packages

Perform this procedure on each cluster node where you want the HA for Oracle External Proxy software to run.

You can run the installer program with a command-line interface (CLI) or with a graphical user interface (GUI). The content and sequence of instructions in the CLI and the GUI are similar.

Note – Even if you plan to configure this data service to run in non-global zones, install the packages for this data service in the global zone. The packages are propagated to any existing non-global zones and to any non-global zones that are created after you install the packages.

Before You Begin

Ensure that you have the Oracle Solaris Cluster installation media.

If you intend to run the installer program with a GUI, ensure that your DISPLAY environment variable is set.
1 On the cluster node where you are installing the data service packages, become superuser.

2 Load the Oracle Solaris Cluster installation media into the DVD-ROM drive.
   If the Volume Management daemon `vold(1M)` is running and configured to manage DVD-ROM devices, the daemon automatically mounts the DVD-ROM on the `/cdrom` directory.

3 Change to the installation wizard directory of the DVD-ROM.
   - If you are installing the data service packages on the SPARC platform, type the following command:
     
     ```
     # cd /cdrom/cdrom0/Solaris_sparc
     ```
   - If you are installing the data service packages on the x86 platform, type the following command:
     
     ```
     # cd /cdrom/cdrom0/Solaris_x86
     ```

4 Start the installation wizard.
   ```
   # ./installer
   ```

5 When you are prompted, accept the license agreement.

6 From the list of Oracle Solaris Cluster agents under Availability Services, select the data service for Oracle External Proxy.

7 If you require support for languages other than English, select the option to install multilingual packages.
   English language support is always installed.

8 When prompted whether to configure the data service now or later, choose Configure Later.
   Choose Configure Later to perform the configuration after the installation.

9 Follow the instructions on the screen to install the data service packages on the node.
   The installation wizard displays the status of the installation. When the installation is complete, the wizard displays an installation summary and the installation logs.

10 (GUI only) If you do not want to register the product and receive product updates, deselect the Product Registration option.
    The Product Registration option is not available with the CLI. If you are running the installation wizard with the CLI, omit this step.

11 Exit the installation wizard.
12 Unload the installation media from the DVD-ROM drive.

   a. To ensure that the DVD-ROM is not being used, change to a directory that does not reside on the DVD-ROM.

   b. Eject the DVD-ROM.
      
      # eject cdr0m

Registering and Configuring HA for Oracle External Proxy

The following sections describe how to register and configure HA for Oracle External Proxy.

- “Setting HA for Oracle External Proxy Extension Properties” on page 16
- “Tools for Registering and Configuring HA for Oracle External Proxy” on page 17
- “How to Register and Configure HA for Oracle External Proxy” on page 17
- “Setting up Dependencies on Oracle External Proxy Resources” on page 19
- “How to Verify Data Service Installation and Configuration” on page 20

You can configure HA for Oracle External Proxy as a failover service or as a scalable service.

Setting HA for Oracle External Proxy Extension Properties

The sections that follow contain instructions for registering and configuring HA for Oracle External Proxy resources. For information about the extension properties, see Appendix A, “HA for Oracle External Proxy Extension Properties.” The Tunable entry indicates when you can update a property.

See the `rt_properties`, `r_properties`, and `rg_properties` man pages for details on all of the Oracle Solaris Cluster extension properties.

To set an extension property of a resource, include the following option in the `cl_resource` command that creates or modifies the resource:

```
-p property=value
-p property
```

- `property` Identifies the extension property that you are setting.
- `value` Specifies the value to which you are setting the extension property.

You can also use the procedures in Chapter 2, “Administering Data Service Resources,” in Oracle Solaris Cluster Data Services Planning and Administration Guide to configure resources after the resources are created.
Tools for Registering and Configuring HA for Oracle External Proxy

Oracle Solaris Cluster provides the following tool for registering and configuring HA for Oracle External Proxy:

- **Oracle Solaris Cluster maintenance commands.** For more information, see "How to Register and Configure HA for Oracle External Proxy" on page 17.

▼ How to Register and Configure HA for Oracle External Proxy

Complete the registration and configuration on any cluster member.

**Before You Begin**

Ensure that you have completed the requirements as described in “Configuration Requirements” on page 10.

1. On a cluster member, become superuser or assume a role that provides `solaris.cluster.admin` RBAC authorization.

2. Register the `ORCL.oracle_external_proxy` resource type for the data service.
   
   # clresourcetype register ORCL.oracle_external_proxy

3. Create either a scalable or a failover resource group for the Oracle External Proxy resource.
   
   For example, to create a scalable resource group, do the following:
   
   # clresourcegroup create -S [-n node-zone-list] resource-group

   `resource-group`
   
   Specifies the name of the scalable service resource group to add.

   `-n node-zone-list`
   
   Specifies a comma-separated, ordered list of zones that can master this resource group. This list is optional. If you omit this list, then all the nodes of the global cluster or zone cluster are used to master the resource group.

4. Create an Oracle External Proxy resource in the resource group that you created.
   
   # clresource create -g resource-group \
   -t ORCL.oracle_external_proxy \
   -p service_name=service-name \
   -p ons_nodes=ons-nodes \
   -p dbuser=dbuser \
   [ -p plugin_name=plugin-name ] \
   [ -p tns_admin=tns-admin ] \
   -d \
   resource
-g resource-group
   Specifies the name of the resource group.

-t resource-type
   Specifies the resource type to add.

-p service_name=service-name
   Specifies the Oracle Database or Real Application Clusters (RAC) service name that the Oracle External Proxy uses to connect to the database.

-p ons_nodes=ons-nodes
   Specifies the Remote Oracle Notification Service (ONS) nodes that the Oracle External Proxy uses to connect to the database, for example node:port[node:port].

-p dbuser=dbuser
   Specifies the server side Oracle database user that the Oracle External Proxy uses to connect to the database.

-p plugin_name=plugin-name
   Specifies the plugin module that the Oracle External Proxy uses to connect to the database. You can omit this entry as it will default to OracleExternalProxy.

-p tns_admin=tns-admin
   Specifies the client-side location for the Oracle tns_admin path that the Oracle External Proxy uses to connect to the database. Omit this entry so that it defaults to the /var/opt/oracle directory.

-d
   Creates the resource in the disabled state.

resource
   Specifies your choice for the name of the resource to add.

---

Note – Optionally, you can set additional extension properties that belong to the Oracle External Proxy data service to override their default values. See Appendix A, “HA for Oracle External Proxy Extension Properties,” for a list of extension properties.

5 Bring the resource group online.

   # clresourcegroup online -emM resource-group

resource-group
   Specifies the name of the resource group.

The Oracle Solaris Cluster resource is now configured and online, thereby interrogating the state of the remote database.
Creating an ORCL.oracle_external_proxy Resource

This example shows the commands for performing the following operations which create a scalable multi-master ORCL.oracle_external_proxy resource on a two-node cluster.

- Creating the oep-rg resource group
- Registering the ORCL.oracle_external_proxy resource type
- Adding the oep-rs resource to the oep-rg resource group

This example assumes that default values are being used for the dbuser, tns_admin, and plugin_name extension properties. It also assumes that the dbuser password has been encrypted on each cluster node.

```
phys-schost-1# clresourcetype register ORCL.oracle_external_proxy
phys-schost-1# clresourcetype oep-rg
phys-schost-1# clresource create -g oep-rg ORCL.oracle_external_proxy -p service_name=orcl -p ons_nodes=binks-scan-lh:6200 -d oep-rs
phys-schost-1# clresourcetype online -M oep-rg
phys-schost-1# clresource enable oep-rs
```

Registering Failover HA for Oracle External Proxy

The following example shows how to register a failover Oracle External Proxy service.

```
phys-schost-1# clresourcetype register ORCL.oracle_external_proxy
phys-schost-1# clresource oep-rg
phys-schost-1# clresource create -g oep-rg ORCL.oracle_external_proxy -p service_name=orcl -p ons_nodes=binks-scan-lh:6200 -d oep-rs
phys-schost-1# clresourcetype online -M oep-rg
phys-schost-1# clresource enable oep-rs
```

Setting up Dependencies on Oracle External Proxy Resources

To use the Oracle Solaris Cluster resource as a dependency for an application resource, set up appropriate dependencies as shown in the following example.

```
phys-schost-1# clresourcetype register ORCL.oracle_external_proxy
phys-schost-1# clresource oep-rg
phys-schost-1# clresource create -g oep-rg ORCL.oracle_external_proxy -p service_name=orcl -p ons_nodes=binks-scan-lh:6200 -d oep-rs
phys-schost-1# clresourcetype online -M oep-rg
phys-schost-1# clresource enable oep-rs
```

Example 1–3   Registering Failover HA for Oracle External Proxy
EXAMPLE 1–4  Setting Up Application Resource Group Dependencies  

(Continued)

# clrg set -p RG_Affinities=++oep-rg app-rg
# clrs set -p resource_dependencies_offline_restart=oep-rs{any_node} app-rs

As an example, when the Oracle External Proxy resource and the application resource are within the same failover resource group, you can do the following:

# clrs set -p resource_dependencies_offline_restart=oep-rs app-rs

As an example, when the Oracle External Proxy resource and the application resource are in separate failover resource groups, you can do the following:

# clrg set -p RG_Affinities=++oep-rg app-rg
# clrs set -p resource_dependencies_offline_restart=oep-rs app-rs

**How to Verify Data Service Installation and Configuration**

After the Oracle External Proxy resource has been installed, configured, and registered, verify it by enabling the Oracle External Proxy resource. Once the Oracle External Proxy resource has been enabled, the resource status will reflect the state and status of the server-side Oracle database. The presence of a resource status message is verification that the Oracle External Proxy has been installed and configured.

**Operations By HA for Oracle External Proxy**

The Oracle External Proxy software interrogates an Oracle Database or Oracle RAC service and interprets the availability of that service as an Oracle Solaris Cluster resource state or status. As part of that interrogation, the Oracle External Proxy software uses the Oracle JDBC thin driver to connect to the Oracle Database or Oracle RAC service. The connection is then interpreted by Oracle Solaris Cluster with the Oracle External Proxy resource state and status message.

The Oracle External Proxy writes to a trace file within the 
/var/opt/ORCLscoeop/message_log.resource file on each node where three generations are kept. The Oracle External Proxy resource type is responsible for maintaining the generations and automatically removes old generations.

**Actions in Response to Faults**

If the Oracle External Proxy cannot connect to the Oracle Database or Oracle RAC service, the Oracle Solaris Cluster resource will go offline. An appropriate resource status message will
indicate the reason why the connection was not possible. As soon as the Oracle External Proxy can connect to the Oracle Database or Oracle RAC service, the Oracle Solaris Cluster resource will come online.

**Upgrading the ORCL.oracle_external_proxy Resource Type**

Upgrading the ORCL.oracle_external_proxy resource type if the following conditions apply:

- You are upgrading from an earlier version of the HA for Oracle External Proxy data service.
- You need to use the new features of this data service.

For general instructions that explain how to upgrade a resource type, see “Upgrading a Resource Type” in *Oracle Solaris Cluster Data Services Planning and Administration Guide*. The information that you require to complete the upgrade of the ORCL.oracle_external_proxy resource type is provided in the following subsections.

- “Information for Registering the New Resource Type Version” on page 21
- “Information for Migrating Existing Instances of the Resource Type” on page 21

**Information for Registering the New Resource Type Version**

The relationship between a resource type version and the release of Oracle Solaris Cluster data services is shown in the following table. The release of Oracle Solaris Cluster data services indicates the release in which the version of the resource type was introduced.

<table>
<thead>
<tr>
<th>Resource Type Version</th>
<th>Oracle Solaris Cluster Data Services Release</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.0</td>
</tr>
</tbody>
</table>

To determine the version of the resource type that is registered, use the `clresource type show` command.

The resource type registration (RTR) file for this resource type is `/opt/SUNWsoap/etc/ORCL.oracle_external_proxy`.

**Information for Migrating Existing Instances of the Resource Type**

The information that you require to edit each instance of the ORCL.oracle_external_proxy resource type is as follows:
You can perform the migration at any time.

The following example shows the command for modifying an instance of the ORCL.oracle_external_proxy resource type.

EXAMPLE 1–5  Migrating Instances of the ORCL.oracle_external_proxy Resource Type

The following command sets the Type_version property of the ORCL.oracle_external_proxy resource named oep-rs to 2.

# clresource set -p Type_version=2 oep-rs
HA for Oracle External Proxy Extension Properties

This section describes the extension properties for the resource type ORCL.oracle_external_proxy. This resource type represents the Oracle External Proxy application in an Oracle Solaris Cluster configuration.

For details about system-defined properties, see the r_properties(5) and rg_properties(5) man pages.

The extension properties of the ORCL.oracle_external_proxy resource type are as follows:

**Debug_level**
This property indicates the level to which debug messages for the ORCL.oracle_external_proxy resources are logged. When the debug level is increased, more debug messages are written to the terminal, the console, and the system log /var/adm/messages as follows:

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No debug messages</td>
</tr>
<tr>
<td>1</td>
<td>Function Begin and End messages</td>
</tr>
<tr>
<td>2</td>
<td>All debug messages and function Begin and End messages</td>
</tr>
</tbody>
</table>

For messages to appear in the system log, perform the following:

1. Edit the /etc/syslog.conf file and make sure that the debug is set.
   ```
   *.err;kern.debug;daemon.debug;mail.crit /var/adm/messages
   ```
2. Disable the system log.
   ```
   bash-3.00# svcadm disable system-log
   ```
3. Enable the system log.
   ```
   bash-3.00# svcadm enable system-log
   ```

**Data Type** Integer

**Range** 0-2
<table>
<thead>
<tr>
<th>Property</th>
<th>Default</th>
<th>Tunable</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dbuser</strong></td>
<td>0</td>
<td>Any time</td>
</tr>
<tr>
<td><strong>Ons_nodes</strong></td>
<td>hauser</td>
<td>When disabled</td>
</tr>
<tr>
<td><strong>Plugin_name</strong></td>
<td>OracleExternalProxy</td>
<td>When disabled</td>
</tr>
<tr>
<td><strong>Service_name</strong></td>
<td>None</td>
<td>When disabled</td>
</tr>
<tr>
<td><strong>Tns_admin</strong></td>
<td>/var/opt/oracle</td>
<td>When disabled</td>
</tr>
</tbody>
</table>
Index

C
configuring, Oracle Solaris Cluster HA for Oracle External Proxy, 17–19

E
extension properties, ORCL.oracle_external_proxy resource type, 23–24

F
fault monitor, HA for Oracle External Proxy, 20
files, RTR, 21

G
global zone, 14

H
HA for Oracle External Proxy
fault monitor, 20
installing, 14–16
resource type versions, 21
software packages, installing, 14–16
help, 7–8

I
installing, HA for Oracle External Proxy, 14–16

L
local zones, See non-global zone

N
non-global zone, 14

O
Oracle Solaris Cluster HA for Oracle External Proxy
installation
verifying, 20
registering and configuring, 17–19
task map, 14
ORCL.oracle_external_proxy resource type,
extension properties, 23–24

P
packages, 14–16
properties
See also extension properties
Type_version, 21
Proxy Server, installing and configuring, 9
Index

R
registering, Oracle Solaris Cluster HA for Oracle External Proxy, 17–19
resource type registration (RTR) file, 21
restrictions, zones, 14
RTR (resource type registration) file, 21

S
software packages, 14–16

T
task map, Oracle Solaris Cluster HA for Oracle External Proxy, 14
technical support, 7–8
Type_version property, 21

V
verifying, Oracle Solaris Cluster HA for Oracle External Proxy installation, 20
versions, resource types, 21

Z
zones, 14