Oracle® Solaris Cluster Data Service for Agfa IMPAX Guide

SPARC Platform Edition

Part No: 821–1572
September 2010, Revision A

ORACLE

110714@25097

Contents

Preface

Oracle Solaris Cluster Data Service for Agfa IMPAX Guide explains how to install and configure Oracle Solaris Cluster HA for Agfa IMPAX.

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 P–1 Typographic Conventions

Typeface	Meaning	Example
`AaBbCc123`	The names of commands, files, and directories, and onscreen computer output	Edit your `.login` file. Use `ls -a` to list all files. `machine_name% you have mail.`
`AaBbCc123`	What you type, contrasted with onscreen computer output	`machine_name%` **`su`** `Password:`
aabbcc123	Placeholder: replace with a real name or value	The command to remove a file is `rm` *filename*.
AaBbCc123	Book titles, new terms, and terms to be emphasized	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.

Shell Prompts in Command Examples

The following table shows the default UNIX system prompt and superuser prompt for shells that are included in the Oracle Solaris OS. Note that the default system prompt that is displayed in command examples varies, depending on the Oracle Solaris release.

TABLE P–2 Shell Prompts

Shell	Prompt
Bash shell, Korn shell, and Bourne shell	`$`
Bash shell, Korn shell, and Bourne shell for superuser	`#`
C shell	`machine_name%`
C shell for superuser	`machine_name#`

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://docs.sun.com`.

Topic	Documentation
Data service administration	*Oracle Solaris Cluster Data Services Planning and Administration Guide* Individual data service guides
Concepts	*Oracle Solaris Cluster Concepts Guide*
Overview	*Oracle Solaris Cluster Overview*
Software installation	*Oracle Solaris Cluster Software Installation Guide*
System administration	*Oracle Solaris Cluster System Administration Guide*
Hardware administration	*Oracle Solaris Cluster 3.3 Hardware Administration Manual* Individual hardware administration guides
Data service development	*Oracle Solaris Cluster Data Services Developer's Guide*
Error messages	*Oracle Solaris Cluster Error Messages Guide*
Command and function reference	*Oracle Solaris Cluster Reference Manual*

For a complete list of Oracle Solaris Cluster documentation, see the release notes for your release of Oracle Solaris Cluster at `http://docs.sun.com`.

Related Third-Party Web Site References

Third-party URLs that are referenced in this document provide additional related information.

Note – Oracle is not responsible for the availability of third-party web sites mentioned in this document. Oracle does not endorse and is not responsible or liable for any content, advertising, products, or other materials that are available on or through such sites or resources. Oracle will not be responsible or liable for any actual or alleged damage or loss caused or alleged to be caused by or in connection with use of or reliance on any such content, goods, or services that are available on or through such sites or resources.

Documentation, Support, and Training

See the following web sites for additional resources:

- Documentation (`http://docs.sun.com`)
- Support (`http://www.oracle.com/us/support/systems/index.html`)
- Training (`http://education.oracle.com`) – Click the Sun link in the left navigation bar.

Oracle Welcomes Your Comments

Oracle welcomes your comments and suggestions on the quality and usefulness of its documentation. If you find any errors or have any other suggestions for improvement, go to `http://docs.sun.com` and click Feedback. Indicate the title and part number of the documentation along with the chapter, section, and page number, if available. Please let us know if you want a reply.

Oracle Technology Network (`http://www.oracle.com/technetwork/index.html`) offers a range of resources related to Oracle software:

- Discuss technical problems and solutions on the Discussion Forums (`http://forums.oracle.com`).
- Get hands-on step-by-step tutorials with Oracle By Example (`http://www.oracle.com/technology/obe/start/index.html`).
- Download Sample Code (`http://www.oracle.com/technology/sample_code/index.html`).

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 Oracle Solaris Operating System (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 each node on your system for your service provider.

Command	Function
`prtconf -v`	Displays the size of the system memory and reports information about peripheral devices
`psrinfo -v`	Displays information about processors
`showrev –p`	Reports which patches are installed
`prtdiag -v`	Displays system diagnostic information
`/usr/cluster/bin/clnode show-rev`	Displays Oracle Solaris Cluster release and package version information

Also have available the contents of the `/var/adm/messages` file.

◆ ◆ ◆ CHAPTER 1

Installing and Configuring Oracle Solaris Cluster HA for Agfa IMPAX

This chapter explains how to install and configure Oracle Solaris Cluster HA for Agfa IMPAX.

This chapter contains the following sections.

Oracle Solaris Cluster HA for Agfa IMPAX Overview

To eliminate single points of failure in an Agfa IMPAX system, Oracle Solaris Cluster HA for Agfa IMPAX provides automatic failover for the Agfa IMPAX application. Oracle Solaris Cluster HA for Agfa IMPAX is a failover data service.

For conceptual information about failover data services, see the *Oracle Solaris Cluster Concepts Guide*.

Oracle Solaris Cluster HA for Agfa IMPAX requires an Oracle database made available by Oracle Solaris Cluster HA for Oracle. Oracle Solaris Cluster HA for Agfa IMPAX provides fault monitoring for the database only. Configure the database resource so that it does not attempt a local restart of the database.

Each component of the Agfa IMPAX application has a data service that protects the component when the component is configured in Oracle Solaris Cluster. See the following table.

TABLE 1–1 Protection of Agfa IMPAX Components by Oracle Solaris Cluster Data Services

Agfa IMPAX Component	Data Service
Oracle database	Oracle Solaris Cluster HA for Oracle
Agfa IMPAX	Oracle Solaris Cluster HA for Agfa IMPAX
NFS file system	Oracle Solaris Cluster HA for NFS

Overview of Installing and Configuring Oracle Solaris Cluster HA for Agfa IMPAX

The following table summarizes the tasks for installing and configuring Oracle Solaris Cluster HA for Agfa IMPAX and provides cross-references to detailed instructions for performing these tasks. Perform the tasks in the order that they are listed in the table.

TABLE 1–2 Tasks for Installing and Configuring Oracle Solaris Cluster HA for Agfa IMPAX

Task	Instructions
Plan the Agfa IMPAX installation.	Refer to the Agfa IMPAX documentation and contact your Agfa consultant for planning Agfa IMPAX installation. "Planning the Oracle Solaris Cluster HA for Agfa IMPAX Installation and Configuration" on page 13
Enable Agfa IMPAX to run in a cluster.	"Enabling Agfa IMPAX to Run in a Cluster" on page 15
Install the Oracle Solaris Cluster HA for Agfa IMPAX packages, together with the HA for Oracle packages.	"Installing the Oracle Solaris Cluster HA for Agfa IMPAX Packages" on page 16
Register the Oracle Solaris Cluster HA for Oracle data service and configure the cluster for the data service.	"Configuring Oracle Solaris Cluster HA for Oracle to Support Oracle Solaris Cluster HA for Agfa IMPAX" on page 18
Register the Oracle Solaris Cluster HA for Agfa IMPAX data service and configure the cluster for the data service.	"Registering and Configuring Oracle Solaris Cluster HA for Agfa IMPAX" on page 19
Verify the Oracle Solaris Cluster HA for Agfa IMPAX installation and configuration.	"Verifying the Oracle Solaris Cluster HA for Agfa IMPAX Installation and Configuration" on page 20

Planning the Oracle Solaris Cluster HA for Agfa IMPAX Installation and Configuration

This section contains the information that you need to plan your Oracle Solaris Cluster HA for Agfa IMPAX installation and configuration.

Note – Before you begin, refer to your Agfa IMPAX documentation and contact your Agfa consultant for configuration restrictions and requirements that are not imposed by Oracle Solaris Cluster software.

Configuration Restrictions

The configuration restrictions in this section apply only to Oracle Solaris Cluster HA for Agfa IMPAX.

Caution – If your data service configuration does not conform to these restrictions, the data service configuration might not be supported.

For restrictions that apply to all data services, see the *Oracle Solaris Cluster Data Services Planning and Administration Guide*.

Connections between the database and Agfa IMPAX are not resilient. To ensure integrity, do not configure Oracle for a local failover. Instead, use the capacity of the Solaris Cluster to fail over to another cluster node.

For performance — related reasons, install the database files on a highly available local file system. Do not install database files on the cluster file system. The resulting degraded performance could affect the functionality of not only the Agfa IMPAX application, but also the functionality of the connected modalities and viewing stations.

Configuration Requirements

The configuration requirements in this section apply only to Oracle Solaris Cluster HA for Agfa IMPAX.

Caution – If your data service configuration does not satisfy these requirements, the data service configuration might not be supported.

For requirements that apply to all data services, see "Configuration Guidelines for Oracle Solaris Cluster Data Services" in *Oracle Solaris Cluster Data Services Planning and Administration Guide*.

Installation Requirements

Agfa IMPAX must be installed according to the installation notes that are supplied by Agfa for your specific version of Agfa IMPAX. You must contact an Agfa consultant to install the Agfa IMPAX software. This is a requirement for the cluster to be supported by Agfa and Sun.

Dependency on Oracle Solaris Cluster HA for Oracle

Oracle Solaris Cluster HA for Agfa IMPAX depends on the Oracle Solaris Cluster HA for Oracle data service and uses an `HAStoragePlus` resource to synchronize startup of this database resource. When your Agfa engineer installs the Agfa IMPAX software, the engineer also installs the Oracle software. "Configuring Oracle Solaris Cluster HA for Oracle to Support Oracle Solaris Cluster HA for Agfa IMPAX" on page 18 contains details about the requirements for configuring Oracle Solaris Cluster HA for Oracle.

Additional Libraries

Oracle Solaris Cluster HA for Agfa IMPAX requires the libraries that are provided in the `/opt/SUNWscpax/impaxapp/util/` directory. These libraries enable the Agfa IMPAX application to be used in a cluster. Additionally, some scripts must be replaced in the installation. The Agfa documentation contains the details about these scripts.

Caution – In Oracle Solaris Cluster 3.2, the libraries are changed. A similar library is included in the Oracle Solaris Cluster 3.2 distribution that has a better coverage of the functionalities needed to obtain the hostname and translate it into the logical hostname needed to operate in Oracle Solaris Cluster.

Configuration Planning Questions

Use the questions in this section to plan the installation and configuration of Oracle Solaris Cluster HA for Agfa IMPAX. Write the answers to these questions in the space that is provided on the data service worksheets in "Configuration Worksheets" in *Oracle Solaris Cluster Data Services Planning and Administration Guide*.

- Which resource groups will you use for the Oracle Solaris Cluster HA for Agfa IMPAX application resource and the logical hostname resource?
- What is the logical hostname for the Oracle Solaris Cluster HA for Agfa IMPAX resource? Clients access the data service through this logical hostname.
- Where will the system configuration files reside?

See "Configuration Guidelines for Oracle Solaris Cluster Data Services" in *Oracle Solaris Cluster Data Services Planning and Administration Guide* for the advantages and disadvantages of using the local file system instead of the cluster file system.

Enabling Agfa IMPAX to Run in a Cluster

Before you begin, contact your Agfa consultant to install the Agfa IMPAX application. Your consultant installs and configures Oracle at the same time as installing the IMPAX software.

▼ How to Enable Agfa IMPAX to Run in a Cluster

1 **Become superuser on one cluster node.**

2 **Create a resource group for the Agfa IMPAX resource.**

```
# clresourcegroup create impax-rg
```

impax-rg The name of the resource group you are adding

Note – You add the Oracle resources to this group. See "Configuring Oracle Solaris Cluster HA for Oracle to Support Oracle Solaris Cluster HA for Agfa IMPAX" on page 18 for more information.

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3 **If necessary, add an entry to `/etc/hosts` for each node on which Agfa IMPAX can run.**

```
# Echo "address host" >>/etc/hosts
```

address The IP address of the node

host The host name, which is the name of the Agfa IMPAX service

4 **Add a logical host name resource to the resource group that you created in Step 2.**

```
# clreslogicalhostname create -g impax-rg -h hostname
```

impax-rg The resource group

hostname A logical host name. Use the Agfa IMPAX service name.

5 **Bring online the resource group that you created in Step 2.**

```
# clresourcegroup online impax-rg
```

Installing the Oracle Solaris Cluster HA for Agfa IMPAX Packages

If you did not install the Oracle Solaris Cluster HA for Agfa IMPAX 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 Oracle Solaris Cluster HA for Agfa IMPAX packages in the global cluster and not in the zone cluster.

▼ How to Install the Oracle Solaris Cluster HA for Agfa IMPAX Packages

Perform this procedure on each cluster node where you are installing the Oracle Solaris Cluster HA for Agfa IMPAX packages.

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.

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 CD-ROM drive.**

   If the Volume Management daemon `vold(1M)` is running and configured to manage CD-ROM devices, the daemon automatically mounts the CD-ROM on the `/cdrom` directory.

3. **Change to the installation wizard directory of the CD-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 Agfa IMPAX.**

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 CD-ROM drive.**

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

    b. **Eject the CD-ROM.**

       ```
       # eject cdrom
       ```

Next Steps Go to "Configuring Oracle Solaris Cluster HA for Oracle to Support Oracle Solaris Cluster HA for Agfa IMPAX" on page 18.

Configuring Oracle Solaris Cluster HA for Oracle to Support Oracle Solaris Cluster HA for Agfa IMPAX

Oracle Solaris Cluster HA for Agfa IMPAX depends on a highly available Oracle database. When configuring Oracle Solaris Cluster HA for Oracle to support Agfa IMPAX, add the Oracle server resource and the Oracle listener resource to the same resource group that you created for the IMPAX service. For details about how to install, configure, and register resources for Oracle Solaris Cluster HA for Oracle, refer to *Oracle Solaris Cluster Data Service for Oracle Guide*.

In addition to registering the resources, add the `oramon` user to Oracle and allow it to probe the database.

EXAMPLE 1–1 Registering Oracle Solaris Cluster HA for Oracle Resources

The following example assumes that you created a resource group called `impax-rg` for the Oracle Solaris Cluster HA for Agfa IMPAX data service.

```
# clresource create -g impax-rg -t SUNW.oracle_listener \
-x ORACLE_HOME=/global/export/oracle -x LISTENER_NAME=LISTNRname oralnsr-rs
```

EXAMPLE 1–2 Adding an Oracle Server Resource to the Agfa IMPAX Resource Group

The following example assumes that you created a resource group called `impax-rg` for the Oracle Solaris Cluster HA for Agfa IMPAX data service.

```
# clresource create -g impax-rg -t SUNW.oracle_server \
-x CONNECT_STRING=oramon/monitor -x ORACLE_SID=oraSID \
-x ORACLE_HOME=/global/export/oracle \
-x ALERT_LOG_FILE=/global/export/oracle/admin/oraSID/bdump \
/alert_oraSID.log oraserver-rs
```

EXAMPLE 1–3 Configuring the `oramon` User

The following example illustrates the necessary `oramon` configuration.

```
su - mvf
    sqlplus "/ as sysdba"
grant connect, resource to oramon identified by "monitor";
alter user oramon default tablespace system quota 1m on system;
grant select on v_$sysstat to oramon;
grant create session to oramon;
grant create table to oramon;
exit;
```

Registering and Configuring Oracle Solaris Cluster HA for Agfa IMPAX

To enable Oracle Solaris Cluster HA for Agfa IMPAX to make Agfa IMPAX highly available, configure the Oracle Solaris Cluster HA for Agfa IMPAX data service as a failover data service.

Before you perform this procedure, ensure that the Oracle Solaris Cluster HA for Agfa IMPAX data service packages are installed. Perform all the steps in "Installing the Oracle Solaris Cluster HA for Agfa IMPAX Packages" on page 16.

▼ How to Register and Configure Oracle Solaris Cluster HA for Agfa IMPAX as a Failover Data Service

1 Add an `impaxscripts` resource.

This resource enables Oracle Solaris Cluster to perform certain tasks before Oracle starts and to clean up afterward if necessary.

a. Edit the registration configuration file, `/opt/SUNWscpax/impaxscripts/util/impaxscripts_config` and change the resource and resource group names according to your configuration.

The following list shows the contents of the `impaxscripts_config` file. If the contents are appropriate for your configuration, you can use the default values for `RS` and `RG`.

```
# These parameters can be customized in (key=value) form
    #
    #        RS - name of the resource for the application
    #        RG - name of the resource group containing RS
    #      PORT - name of the port number
    #        LH - name of the LogicalHostname SC resource
    #    HAS_RS - name of the HAStoragePlus SC resource
    #
    RS=impaxscripts-rs
    RG=impax-rg
    PORT=
    LH=
    HAS_RS=
```

b. Verify that the `/opt/SUNWscpax/impaxscripts/etc/config` configuration file contains the correct variable settings.

These variables are provided by the Agfa IMPAX installation. They should read as follows:

```
USERID=mvf
# default userid for impax installations
CLEANKILL="/usr/mvf/bin/sun_cluster_impax_kill"
ORACLEPRE="/usr/mvf/bin/sun_cluster_oracle_prestart"
```

c. **Create the resource and register it in the cluster by gaining root access and using the `impaxscripts_register` utility.**

```
# /opt/SUNWscpax/impaxscripts/util/impaxscripts_register
```

If this utility fails, return to Step b and verify that the configuration file is correct.

2 **Register the `SUNW.gds` resource type.**

```
# clresourcetype register SUNW.gds
```

3 **Register the `SUNW.HAStoragePlus` resource type.**

```
# clresourcetype register SUNW.HAStoragePlus
```

4 **Create an `HAStoragePlus` resource for the file system on which the database files reside.**

```
# clresource create -g impax-rg -t SUNW.HAStoragePlus  \
-x FileSystemMountPoints=/dbase, /cache1  ora-ds
```

5 **To optimize the data path, manage the global file system in the same manner as you manage the disk groups.**

This approach makes the system local to the base services, although the files are available on both nodes.

```
# clresource create -g impax-rg -t SUNW.HAStoragPlus -x \
 FileSystemMountPoints=/global/export
```

6 **Edit the `/opt/SUNWscpax/impaxapp/util/impax_config` file to match the following:**

- Your configuration
- The name of your resource group, as specified in Step 1
- Your dependencies

7 **Register the resource in the cluster framework by using the `impax_register` utility.**

```
# /opt/SUNWscpax/impaxapp/util/impax_register
```

Verifying the Oracle Solaris Cluster HA for Agfa IMPAX Installation and Configuration

Use the service tools to verify that an Agfa IMPAX instance is available on the logical IP address.

▼ How to Verify the Oracle Solaris Cluster HA for Agfa IMPAX Installation and Configuration as a Failover Data Service

1. **Switch the Agfa IMPAX resource to another node to verify that the stop and start methods work.**
2. **Disable the Agfa IMPAX resource and then try to start the application manually.**
   This step ensures that no cluster-related interaction fails.
3. **Disable all resources except the logical host name resource and data service resource.**
4. **Manually start the Agfa IMPAX application.**

Index

P

R

S

T

V