

Oracle® Solaris Cluster Data Service for Oracle iPlanet Web Server Guide

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Preface

Oracle Solaris Cluster Data Service for Oracle iPlanet Web Server Guide explains how to install and configure Oracle Solaris Cluster data services.

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.

Bash is the default shell for Oracle Solaris 11. Machine names shown with the Bash shell prompt are displayed for clarity.

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

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 P-2 Shell Prompts

Shell	Prompt
Bash shell, Korn shell, and Bourne shell	\$
Bash shell, Korn shell, and Bourne shell for superuser	#
C shell	<code>machine_name%</code>
C shell for superuser	<code>machine_name#</code>

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>.

Topic	Documentation
Hardware installation and administration	<i>Oracle Solaris Cluster 4.1 Hardware Administration Manual</i> Individual hardware administration guides
Concepts	<i>Oracle Solaris Cluster Concepts Guide</i>
Software installation	<i>Oracle Solaris Cluster Software Installation Guide</i>
Data service installation and administration	<i>Oracle Solaris Cluster Data Services Planning and Administration Guide</i> and individual data service guides
Data service development	<i>Oracle Solaris Cluster Data Services Developer's Guide</i>
System administration	<i>Oracle Solaris Cluster System Administration Guide</i> <i>Oracle Solaris Cluster Quick Reference</i>
Software upgrade	<i>Oracle Solaris Cluster Upgrade Guide</i>
Error messages	<i>Oracle Solaris Cluster Error Messages Guide</i>
Command and function references	<i>Oracle Solaris Cluster Reference Manual</i> <i>Oracle Solaris Cluster Data Services Reference Manual</i> <i>Oracle Solaris Cluster Geographic Edition Reference Manual</i> <i>Oracle Solaris Cluster Quorum Server Reference Manual</i>
Compatible software	Oracle Solaris Cluster Compatibility Guide available at the Oracle Solaris Cluster Technical Resources page

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 11)
- The release number of Oracle Solaris Cluster (for example, Oracle Solaris Cluster 4.1)

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

Command	Function
<code>prtconf -v</code>	Displays the size of the system memory and reports information about peripheral devices
<code>psrinfo -v</code>	Displays information about processors
<code>pkg list</code>	Reports which packages are installed
<code>prtdiag -v</code>	Displays system diagnostic information
<code>/usr/cluster/bin/clnode show-rev -v</code>	Displays Oracle Solaris Cluster release and package version information for each node

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

Installing and Configuring HA for Oracle iPlanet Web Server

This chapter provides the procedures to install and configure Oracle Solaris Cluster HA for Oracle iPlanet Web Server (HA for Oracle iPlanet Web Server).

Note – The same procedures are also applicable for installing and configuring Oracle Solaris Cluster HA for Oracle iPlanet Web Proxy Server (HA for Oracle iPlanet Web Proxy Server).

This chapter contains the following sections.

- “Planning the Installation and Configuration” on page 10
- “Overview of the Installation and Configuration Process for HA for Oracle iPlanet Web Server” on page 11
- “Installing and Configuring Oracle iPlanet Web Server Software” on page 12
- “Installing the HA for Oracle iPlanet Web Server Package” on page 16
- “Registering and Configuring HA for Oracle iPlanet Web Server” on page 16
- “Tuning the HA for Oracle iPlanet Web Server Fault Monitor” on page 28
- “Upgrading the HA for Oracle iPlanet Web Server Resource Type” on page 30

You can configure HA for Oracle iPlanet Web Server as a failover or 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* for general information about data services, resource groups, resources, and other related topics.

Note – If you run multiple data services in your Oracle Solaris Cluster configuration, you can set up the data services in any order, with the following exception. If HA for Oracle iPlanet Web Server depends on Oracle Solaris Cluster HA for DNS, you must set up DNS first. See *Oracle Solaris Cluster Data Service for DNS Guide* for details. The Oracle Solaris OS includes the DNS software. If the cluster is to obtain the DNS service from another server, then configure the cluster to be a DNS client first.

Note – After installation, do not manually start and stop the Oracle iPlanet Web Server except by using the `clresourcegroup` command. See the `clresourcegroup(1CL)` man page for details. After Oracle iPlanet Web Server is started, the Oracle Solaris Cluster software controls it.

Planning the Installation and Configuration

Answer the following questions before you start your installation.

- Will you run HA for Oracle iPlanet Web Server as a failover or as a scalable data service? See the *Oracle Solaris Cluster Concepts Guide* document for information on the two types of services. For scalable services, consider the following questions.
 - What nodes will host the scalable service? In most cases, you will want to scale across all nodes. You can, however, limit the set of nodes that host the service.
 - Will your Oracle iPlanet Web Server instances require sticky IP? Sticky IP is a resource property setting, `Load_balancing_policy`, which stores the client state in memory so that return traffic from the same node always goes to the same cluster node. You can choose from several load balancing policies. See the `r_properties(5)` man page for details.

Exercise caution when you change `Load_balancing_weights` for an online scalable service that has `Load_balancing_policy` set to `LB_STICKY` or `LB_STICKY_WILD`. Changing those properties while the service is online can cause existing client affinities to be reset, and hence a different node might service a subsequent client request even if another cluster member had previously serviced the client.

Similarly, when a new instance of the service is started on a cluster, existing client affinities might be reset.

- Where will the Web server root reside?
- Does the Web server serve data for another highly available application? If so, resource dependencies might exist between the resources so that one starts or stops before the other. See the `r_properties(5)` man page for a description of the resource property `Resource_dependencies` that sets these dependencies.
- Determine the resource groups to use for network addresses and application resources and the dependencies between them. See the `rg_properties(5)` man page for a description of the resource group property `RG_dependencies` that sets these dependencies.
- Provide the logical hostname (for failover services) or shared address (for scalable services) for clients to use to access the data service.
- Because you can configure Oracle iPlanet Web Server to bind to `INADDR_ANY`, if you plan to run multiple instances of the Oracle iPlanet Web Server data service or multiple data services on the same node, each instance must bind to a unique network address and port number.

- Determine the entries for the `Confdir_list` and `Port_list` properties. For failover services, both of these properties can have only one entry. For scalable services, they can have multiple entries. The number of entries, however, must be the same and must map to each other in the order specified. See [“How to Register and Configure HA for Oracle iPlanet Web Server in a Failover Configuration”](#) on page 18 for details.
- Determine if you will utilize the `Monitor Uri List` extension property. This extension property enables you to monitor an arbitrary list of URIs. Monitoring arbitrary URIs is beneficial if you will configure other data services that are accessible over the web. Use of the `Monitor Uri List` extension property is not supported with SSL-based instances of Oracle iPlanet Web Server. If you are upgrading HA for Oracle iPlanet Web Server from a previous version, you must perform the resource type upgrade procedure to use the new property. For instructions, see [“Upgrading a Resource Type”](#) in *Oracle Solaris Cluster Data Services Planning and Administration Guide*. See [“Monitoring Arbitrary URIs”](#) on page 17 for detailed information about this option and example usage of `Monitor Uri List`.
- Determine where to place logs and error files on the local file system.
- Determine where to place the contents on the cluster file system.

Overview of the Installation and Configuration Process for HA for Oracle iPlanet Web Server

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

TABLE 1-1 Task Map: Installing and Configuring HA for Oracle iPlanet Web Server

Task	For Instructions
Install Oracle iPlanet Web Server.	“Installing and Configuring Oracle iPlanet Web Server Software” on page 12
Install Oracle iPlanet Web Proxy Server.	“Installing and Configuring Oracle iPlanet Web Server Software” on page 12
Install the HA for Oracle iPlanet Web Server package.	“How to Install the HA for Oracle iPlanet Web Server Package” on page 16
Register HA for Oracle iPlanet Web Server and configure the cluster for the data service.	“Registering and Configuring HA for Oracle iPlanet Web Server” on page 16
Tune the HA for Oracle iPlanet Web Server fault monitor.	“Tuning the HA for Oracle iPlanet Web Server Fault Monitor” on page 28

Installing and Configuring Oracle iPlanet Web Server Software

This section describes the steps to perform the following tasks:

- Install the Oracle iPlanet Web Server software.
- Enable the Oracle iPlanet Web Server software to run as HA for Oracle iPlanet Web Server.

Note – HA for Oracle iPlanet Web Proxy Server is not supported in a scalable configuration.

Note – You must follow certain conventions when you configure URL mappings for the Web server. For example, to preserve availability when setting the CGI directory, you must locate the mapped directories on the cluster file system. In this example, you map your CGI directory to `/global/pathname/cgi-bin`.

In situations where the CGI programs access “back-end” servers, such as an RDBMS, ensure that the Oracle Solaris Cluster software also controls the “back-end” server. If the server is an RDBMS that the Oracle Solaris Cluster software supports, use one of the highly available RDBMS packages. Alternatively, you can use the APIs documented in the [Oracle Solaris Cluster Data Services Developer's Guide](#) to put the server under Oracle Solaris Cluster control.

▼ How to Install Oracle iPlanet Web Server

To perform this procedure, you need the following information about your configuration.

- The server root directory (the path to the application binaries). You can install the binaries on the local disks or on the cluster file system. For a discussion of the advantages and disadvantages of each location, see “[Configuration Guidelines for Oracle Solaris Cluster Data Services](#)” in [Oracle Solaris Cluster Data Services Planning and Administration Guide](#).
- The logical hostname (for failover services) or shared address (for scalable services) that clients use to access the data service. You must configure these addresses, and they must be online.

Note – If you run HA for Oracle iPlanet Web Server and another HTTP server and they use the same network resources, configure them to listen on different ports. Otherwise, a port conflict might occur between the two servers.

- 1 **On a cluster member, assume a role that provides `solaris.cluster.admin` RBAC authorization.**
- 2 **Start the installation.**

3 When prompted, enter the location where the Oracle iPlanet Web Server binaries will be installed.

You can specify a location on the cluster file system or on local disks for the location of the install. If you choose to install on local disks, install the web server on all the cluster nodes that are potential primaries of the network resource (logical hostname or shared address) that the next step specifies.

4 When prompted for a machine name, enter the logical hostname on which the Oracle iPlanet Web Server depends and the appropriate DNS domain name.

A full logical hostname is of the format *network-resource.domainname*, such as `schost-1.example.com`.

Note – For HA for Oracle iPlanet Web Server to fail over correctly, you must use either the logical hostname or shared address resource name (rather than the physical hostname) here and everywhere else that you are asked.

5 Select Run Admin Server as Root when you are asked.

Note the port number that the Oracle iPlanet install script selects for the administration server. You might want to use this default value later when you use the administration server to configure an instance of the Oracle iPlanet Web Server. Otherwise, you can specify a different port number when you configure the Oracle iPlanet server instance.

6 Type a Server Administrator ID and a chosen password when you are asked.

Follow the guidelines for your system.

When a message displays that the admin server will be started, your installation is ready for configuration.

▼ How to Configure Oracle iPlanet Web Server

This procedure describes how to configure an instance of the Oracle iPlanet Web Server to be highly available. Use a browser to interact with this procedure.

Consider the following points before you perform this procedure.

- Before you start, ensure that you have installed the browser on a machine that can access the network on which the cluster resides. You can install the browser on a cluster node or on the administrative workstation for the cluster.
- HA for Oracle iPlanet Web Server supports HA for Oracle iPlanet Web Proxy Server. For Oracle iPlanet Web Proxy Server installation and configuration information, see your Oracle iPlanet Web Proxy Server installation documentation.
- Your configuration files can reside on either a local file system or on the cluster file system.

- Any certificates that are installed for SSL-based instances must be installed from all cluster nodes. This installation involves running the admin console on each node. Thus, if a cluster has nodes n1, n2, n3, and n4, the installation steps are as follows.
 1. Run the admin server on node n1.
 2. From your Web browser, connect to the admin server as `http://n1.domain:port`. For example, `http://n1.example.com:8888`, or whatever you specified as the admin server port. The port is typically 8888.
 3. Install the certificate.
 4. Stop the admin server on node n1 and run the admin server from node n2.
 5. From the Web browser, connect to the new admin server as `http://n2.domain:port`, for example, `http://n2.example.com:8888`.
 6. Repeat these steps for nodes n3 and n4.

After you have considered the preceding points, complete the following steps.

- 1 If you will configure Oracle iPlanet Web Server as a scalable data service, create a directory on the local disk of all the nodes to hold the logs and error files that Oracle iPlanet Web Server manages.**

For the scalable configuration to work correctly, these files must be located on each node of the cluster, not on the cluster file system. Use shared storage only if you will configure Oracle iPlanet Web Server as a failover data service.

Choose a location on the local disk that is the same for all the nodes in the cluster. Use the `mkdir -p` command to create the directory. Make nobody the owner of this directory.

The following example shows how to complete this step.

```
phys-schost-1# mkdir -p /var/pathname/http-instance/logs/
```

Note – If you anticipate large error logs, do not put them in a directory under `/var` because they will overwhelm this directory. Rather, create a directory in a partition with adequate space to handle large files.

- 2 From the administrative workstation or a cluster node, start the browser.**
- 3 On one of the cluster nodes, go to the directory `admin-server`, then start the Oracle iPlanet admin server.**

```
# cd admin-server  
# ./startserv
```

4 Enter the URL of the Oracle iPlanet admin server in the Netscape browser.

The URL consists of the logical hostname and port number that the Oracle iPlanet installation script established in [Step 4](#) of the server installation procedure, for example, `n1.example.com:8888`. When you perform [Step 2](#) of this procedure, the `./start` command displays the admin URL.

When prompted, use the user ID and password you specified in [Step 6](#) of the server installation procedure to log in to the Oracle iPlanet administration server interface.

5 Using the administration server where possible and manual changes otherwise, complete the following:

- Verify that the server name is correct.
- Verify that the server user is set as the root role.
- Change the bind address field to one of the following addresses.
 - A logical hostname or shared address if you use DNS as your name service
 - The IP address associated with the logical hostname or shared address if you use NIS as your name service
- Update the Error Log and Access Log entries to reflect the directory created in [Step 1](#) of this procedure.
- Save your changes.

6 Store the key password.

Choose one of the following methods.

- **Create a file named `keypass` that contains the secure key password you need to start this instance, and place this file under the server root directory.**

Note – Because this file contains the NSS database password, protect the file with the appropriate permissions.

- **If you do not want to save the password in the `keypass` file, add the following to the `server.xml` file located in the server root directory.**

```
<pkcs11>
    <enabled>true</enabled>
    <token>
        <name>internal</name>
        <pin>admin123</pin>
    </token>
</pkcs11>
```

Installing the HA for Oracle iPlanet Web Server Package

If you did not install the HA for Oracle iPlanet Web Server package during your initial Oracle Solaris Cluster installation, perform this procedure to install the package.

▼ How to Install the HA for Oracle iPlanet Web Server Package

Perform this procedure on each cluster node where you want the HA for Oracle iPlanet Web Server software to run.

- 1 On the cluster node where you are installing the data service package, assume the root role.
- 2 Ensure that the `solaris` and `ha-cluster` publishers are valid.

```
# pkg publisher
PUBLISHER          TYPE    STATUS  URI
solaris            origin  online  solaris-repository
ha-cluster         origin  online  ha-cluster-repository
```

For information about setting the `solaris` publisher, see [“Set the Publisher Origin to the File Repository URI”](#) in *Copying and Creating Oracle Solaris 11.1 Package Repositories*.

- 3 Install the HA for Oracle iPlanet Web Server software package.

```
# pkg install ha-cluster/data-service/iplanet-web-server
```

- 4 Verify that the package installed successfully.

```
$ pkg info ha-cluster/data-service/iplanet-web-server
```

Installation is successful if output shows that State is Installed.

- 5 Perform any necessary updates to the Oracle Solaris Cluster software.

For instructions on updating single or multiple packages, see [Chapter 11, “Updating Your Software,”](#) in *Oracle Solaris Cluster System Administration Guide*.

Registering and Configuring HA for Oracle iPlanet Web Server

You can configure HA for Oracle iPlanet Web Server as a failover data service or as a scalable data service. You must include some additional steps to configure Oracle iPlanet Web Server as a scalable data service. In the first procedure in this section, these additional steps begin with a notation that they are required for scalable services only. Individual examples of a failover service and a scalable service follow the procedure.

Setting HA for Oracle iPlanet Web Server Extension Properties

The sections that follow contain instructions for registering and configuring HA for Oracle iPlanet Web Server resources. For information about the extension properties, see [Appendix A, “HA for Oracle iPlanet Web Server Extension Properties.”](#) The Tunable entry indicates when you can update a property.

See the `r_properties(5)`, `rg_properties(5)`, and `rt_properties(5)` man pages for details on all the Oracle Solaris Cluster 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`

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.

Monitoring Arbitrary URIs

Set the `Monitor_Uri_List` extension property if you want the web server fault monitor to probe an arbitrary list of applications (URIs) served by the web server. This extension property provides extended probing functionality and is useful if you are layering services in addition to your web server. The `Monitor_Uri_List` extension property is not supported with an SSL-based Oracle iPlanet Web Server instance. If you do not set the `Monitor_Uri_List` extension property, the fault monitor will perform basic probing. See [“Tuning the HA for Oracle iPlanet Web Server Fault Monitor”](#) on page 28 for details. The following examples show how to set the `Monitor_Uri_List` extension property when you add the Oracle iPlanet Web Server instance to your configuration.

EXAMPLE 1-1 Setting `Monitor_Uri_List` for Scalable Oracle iPlanet Web Server Instance

```
(Add a non-SSL based Oracle iPlanet Web Server instance with default load balancing.)
# clresource create -g resource-group-1 -t SUNW.iws \
-p Confdir_List=/opt/SUNWbsrv/https-Sun-app-insecure-1 \
-p Scalable=True -p Resource_dependencies=schost-1 \
-p Port_List=8000/tcp \
-p Monitor_Uri_List=http://schost-1:8000/servlet/monitor web-not-secure-1
```

EXAMPLE 1-2 Setting Monitor_Uri_List for Failover Oracle iPlanet Web Server Instance

```
(Add a non-SSL based Oracle iPlanet Web Server application resource instance.)
# clresource create -g resource-group-1 -t SUNW.iws \
-p Confdir_list=/opt/SUNWbsrv/conf -p Scalable=False \
-p Resource_dependencies=schost-1 -p Port_list=80/tcp \
-p Monitor_Uri_list=http://schost-1:80/servlet/monitor web-not-secure-1
```

EXAMPLE 1-3 Setting Monitor_Uri_List for Failover Oracle iPlanet Web Proxy Server Instance

```
(Add a non-SSL based Oracle iPlanet Web Proxy Server application resource instance.)
# clresource create -g resource-group-1 -t SUNW.iws \
-p Confdir_list=/opt/SUNWbproxy/conf -p Scalable=False \
-p Resource_dependencies=schost-1 -p Port_list=80/tcp \
-p Monitor_Uri_list=http://schost-1:80/servlet/monitor Sun-app-insecure-1
```

Setting IP Addresses and Port Numbers for the Oracle iPlanet Web Server Application

The Resource_dependencies setting on the Oracle iPlanet Web Server application resource determines the set of IP addresses that Oracle iPlanet Web Server uses. The Port_list setting on the resource determines the list of port numbers that Oracle iPlanet Web Server uses. The fault monitor assumes that the Oracle iPlanet Web Server daemon is listening on all combinations of IP and port. You can configure the server.xml file for the Oracle iPlanet Web Server to listen on different port numbers (in addition to port 80). The fault monitor attempts to probe all such combinations and starts to fail if the Oracle iPlanet Web Server is not listening on a particular IP address-port combination. If the Oracle iPlanet Web Server does not serve all IP address-port combinations, you must break the Oracle iPlanet Web Server into separate instances that do.

▼ How to Register and Configure HA for Oracle iPlanet Web Server in a Failover Configuration

This procedure describes how to use the Oracle Solaris Cluster maintenance commands to register and configure HA for Oracle iPlanet Web Server in a failover configuration.

Note – Other options also enable you to register and configure the data service. See “Tools for Data Service Resource Administration” in *Oracle Solaris Cluster Data Services Planning and Administration Guide* for details about these options.

To perform this procedure, you must have the following information.

- The name of the resource type for HA for Oracle iPlanet Web Server. This name is SUNW.iws.

- The names of the cluster nodes that master the data service. For a failover service, only one node can master a data service at a time.
- The logical hostname (for failover services) or shared address (for scalable services) that clients use to access the data service.
- The path to the Oracle iPlanet binaries. You can install the binaries on the local disks or the cluster file system. See “[Configuration Guidelines for Oracle Solaris Cluster Data Services](#)” in *Oracle Solaris Cluster Data Services Planning and Administration Guide* for a discussion of the advantages and disadvantages of each location.

Note – The `Resource_dependencies` setting on the Oracle iPlanet application resource determines the set of IP addresses that Oracle iPlanet Web Server uses. The `Port_list` setting on the resource determines the list of port numbers that Oracle iPlanet Web Server uses. The fault monitor assumes that the Oracle iPlanet Web Server daemon is listening on all combinations of IP and port. You can configure the `server.xml` file for the Oracle iPlanet Web Server to listen on different port numbers (in addition to port 80). The fault monitor attempts to probe all such combinations and starts to fail if the Oracle iPlanet Web Server is not listening on a particular IP address-port combination. If the Oracle iPlanet Web Server does not serve all IP address-port combinations, you must break the Oracle iPlanet Web Server into separate instances that do.

Note – Perform this procedure on any cluster member.

1 On a cluster member, assume a role that provides `solaris.cluster.modify` and `solaris.cluster.admin` RBAC authorization.

2 Register the `SUNW.iws` resource type for HA for Oracle iPlanet Web Server.

```
# clresourcetype register SUNW.iws
```

3 Create a failover resource group.

You can optionally select the set of nodes on which the data service can run with the `-n` option.

```
# clresourcegroup create [-n node[,...]] resource-group
```

resource-group

Specifies the name of the failover resource group. This name can be your choice but must be unique for resource groups within the cluster.

`-n node[,...]`

Specifies a comma-separated, ordered list of nodes that can master this resource group.

This list is optional. If you omit this list, the global zone of each cluster node can master the resource group.

4 Verify that all of the network addresses that you use have been added to your name service database.

You should have performed this verification during the Oracle Solaris Cluster installation. See the planning chapter in the *Oracle Solaris Cluster Software Installation Guide* for details.

Note – To avoid any failures because of name service lookup, ensure that all logical hostnames and shared addresses are present in the server's and client's `/etc/inet/hosts` file. Configure name service mapping in `/etc/nsswitch.conf` on the servers to first check the local files before trying to access NIS or NIS+.

5 Add a logical hostname to the failover resource group.

```
# clreslogicalhostname create -g resource-group \
-h logical-hostname[,...] \
[-p auxnodelist=node] [-N netiflist] resource-name
```

`-g resource-group`

Specifies the name of the failover resource group.

`-h logical-hostname[,...]`

Specifies a comma-separated list of logical hostnames that this resource is to make available.

`-p auxnodelist=node,...`

Specifies an optional comma-separated list of physical node IDs that identify cluster nodes that can host the shared address but never serve as a primary if failover occurs. These nodes are mutually exclusive with the nodes identified in *nodelist* for the resource group, if specified.

resource-group

Specifies the name of the resource group. This name can be your choice but must be unique for resource groups within the cluster.

`-N netiflist`

Specifies an optional, comma-separated list that identifies the IPMP groups that are on each node. The format of each entry in the list is *netif@node*. The replaceable items in this format are as follows:

netif Specifies an IPMP group name, such as `sc_ipmp0`, or a public network interface card (NIC). If you specify a public NIC, Oracle Solaris Cluster attempts to create the required IPMP groups.

node Specifies the name or ID of a node.

This list is optional. If you omit this list, Oracle Solaris Cluster attempts to create the required IPMP groups.

Note – If you require a fully qualified hostname, you must specify the fully qualified name with the `-h` option and you cannot use the fully qualified form in the resource name.

Note – Oracle Solaris Cluster does not currently support using the adapter name for `netif`.

resource

Specifies the name of the resource.

6 Create an application resource in the failover resource group.

You can repeat this step to add multiple application resources (such as SSL and non-SSL based versions) to the same resource group.

```
# clresource create -g resource-group \
-t resource-type \
-p Confdir_list=config-directory \
-p Resource_dependencies=logical-hostname-list,... \
-p Port_list=port-number/protocol resource
```

`-g resource-group`

Specifies the name of the failover resource group into which the resources are to be placed.

`-t resource-type`

Specifies the type of the resource to add.

`-p Confdir_list=config-directory`

Specifies the location of the Oracle iPlanet configuration files. The `Confdir_list` file for failover services must have exactly one entry only. The `config-directory` must contain a directory called `config`. HA for Oracle iPlanet Web Server requires this extension property.

`-p Resource_dependencies=logical-hostname-list,...`

Specifies a comma-separated list of network resources that identify the logical hosts that the data service uses.

`-p Port_list=port-number/protocol`

Specifies the port number and protocol to use, for example, `80/tcp`. `Port_list` for failover services must have exactly one entry only because of the one-to-one mapping rule between `Port_list` and `Confdir_list`.

resource

Specifies the name of the resource to add.

The resource is created in the enabled state.

Note – Optionally, you can set additional extension properties that belong to the HA for Oracle iPlanet Web Server to override the default values of the properties. See [Appendix A, “HA for Oracle iPlanet Web Server Extension Properties,”](#) for a list of these properties.

7 Bring the failover resource group online.

```
# clresourcegroup online -M resource-group
resource-group
```

Specifies the name of the failover resource group.

Example 1-4 Registering a Failover HA for Oracle iPlanet Web Server on a Two-Node Cluster

Cluster Information

Node names: phys-schost-1, phys-schost-2

Logical hostname: schost-1

Resource group: resource-group-1 (for all resources)

Resources: schost-1 (logical hostname), app-insecure-1 (non-SSL based application resource), app-secure-1 (SSL-based application resource)

(Add the resource group to contain all resources.)

```
# clresourcegroup create resource-group-1
```

(Add the logical hostname resource to the resource group.)

```
# clreslogicalhostname create -g resource-group-1 -h schost-1 resource-name schost-1
```

(Register the resource type for the HA for Oracle iPlanet Web Server.)

```
# clresourcetype register SUNW.iws
```

(Add a non-SSL based application resource instance.)

```
# clresource create -g resource-group-1 -t SUNW.iws \
-p Confdir_list=/opt/SUNWbsrv/conf -p Scalable=False \
-p Resource_dependencies=schost-1 -p Port_list=80/tcp app-insecure-1
```

(Add an SSL-based application resource instance.)

```
# clresource create -g resource-group-1 -t SUNW.iws \
-p Confdir_List=/opt/SUNWbsrv/https-app-secure-1 -p Scalable=False \
-p Resource_dependencies=schost-1 -p Port_list=443/tcp app-secure-1
```

(Bring the failover resource group online.)

```
# clresourcegroup online -M resource-group-1
```

Example 1-5 Registering a Failover HA for Oracle iPlanet Web Proxy Server on a Two-Node Cluster

Cluster Information

Node names: phys-schost-1, phys-schost-2

Logical hostname: schost-1

Resource group: resource-group-1 (for all resources)

Resources: schost-1 (logical hostname), app-insecure-1 (non-SSL based application resource), app-secure-1 (SSL-based application resource)

(Add the resource group to contain all resources.)

```
# clresourcegroup create resource-group-1
```

```
(Add the logical hostname resource to the resource group.)
# clreslogicalhostname create -g resource-group-1 -h schost-1

(Register the resource type for the HA for Oracle iPlanet Web Proxy Server.)
# clresourcetype register SUNW.iws

(Add a non-SSL based application resource instance.)
# clresource create -g resource-group-1 -t SUNW.iws \
-p Confdir_list=/opt/SUNWbproxy/proxy-insecure-1 -p Scalable=False \
-p Resource_dependencies=schost-1 -p Port_list=80/tcp app-insecure-1

(Add an SSL-based application resource instance.)
# clresource create -g resource-group-1 -t SUNW.iws \
-p Confdir_list=/opt/SUNWbproxy/proxy-secure-1 -p Scalable=False \
-p Resource_dependencies=schost-1 -p Port_list=443/tcp app-secure-1

(Bring the failover resource group online.)
# clresourcegroup online -M resource-group-1
```

In this example, it is assumed that the global file system is being used. If a failover file system is used, you must set the dependency on the HAStoragePlus resource using the `Resource_dependencies` extension property during resource creation.

▼ How to Register and Configure HA for Oracle iPlanet Web Server in a Scalable Configuration

- 1 On a cluster member, assume a role that provides `solaris.cluster.modify` and `solaris.cluster.admin` RBAC authorization.
- 2 Register the `SUNW.iws` resource type for HA for Oracle iPlanet Web Server.


```
# clresourcetype register SUNW.iws
```
- 3 Create a failover resource group for the shared address resource.

You can optionally select the set of nodes on which the data service can run with the `-n` option.

```
# clresourcegroup create [-n node[,...]] resource-group
```

resource-group

Specifies the name of the failover resource group. This name can be your choice but must be unique for resource groups within the cluster.

`-n node[,...]`

Specifies a comma-separated, ordered list of nodes that can master this resource group.

This list is optional. If you omit this list, the global zone of each cluster node can master the resource group.

4 Verify that all of the network addresses that you use have been added to your name service database.

You should have performed this verification during the Oracle Solaris Cluster installation. See the planning chapter in the *Oracle Solaris Cluster Software Installation Guide* for details.

Note – To avoid any failures because of name service lookup, ensure that all logical hostnames and shared addresses are present in the server's and client's `/etc/inet/hosts` file. Configure name service mapping in `/etc/nsswitch.conf` on the servers to first check the local files before trying to access NIS or NIS+.

5 Add a shared address resource to the failover resource group.

```
# clressharedaddress create -g resource-group \
-h shared-address[,...] \
[-p auxnodelist=node[,...]] \
[-N netiflist] \
resource
```

resource-group

Specifies the name of the failover resource group.

-h shared-address[,...]

Specifies a comma-separated list of shared addresses that this resource is to make available.

-p auxnodelist=node[,...]

Specifies an optional comma-separated list of physical node IDs that identify cluster nodes that can host the shared address but never serve as a primary if failover occurs. These nodes are mutually exclusive with the nodes identified in *nodelist* for the resource group, if specified.

resource-group

Specifies the name of the resource group. This name can be your choice but must be unique for resource groups within the cluster.

-N netiflist

Specifies an optional, comma-separated list that identifies the IPMP groups that are on each node. The format of each entry in the list is *netif@node*. The replaceable items in this format are as follows:

netif Specifies an IPMP group name, such as `sc_ipmp0`, or a public network interface card (NIC). If you specify a public NIC, Oracle Solaris Cluster attempts to create the required IPMP groups.

node Specifies the name or ID of a node. To specify the global zone, or to specify a node without non-global zones, specify only *node[,...]*

This list is optional. If you omit this list, Oracle Solaris Cluster attempts to create the required IPMP groups.

Note – Oracle Solaris Cluster does not currently support using the adapter name for `netif`.

resource

Specifies the name of the resource.

6 Create a scalable resource group to run on all the desired cluster nodes.

Create a resource group to hold a data service application resource. You must specify the maximum and desired number of primary nodes as well as a dependency between this resource group and the failover resource group that you created in [Step 3](#). This dependency ensures that in the event of failover, the resource manager starts the network resource before starting any data services that depend on the network resource.

```
# clresourcegroup create -p Maximum primaries=m \
-p Desired primaries=n \
-p RG_dependencies=resource-group \
scalable-resource-group
```

```
-p Maximum primaries=m
```

Specifies the maximum number of active primary nodes allowed for this resource group. If you do not assign a value to this property, the default is 1.

```
-p Desired primaries=n
```

Specifies the desired number of active primary nodes allowed for this resource group. If you do not assign a value to this property, the default is 1.

```
-p RG_dependencies= resource-group
```

Identifies the resource group that contains the shared address resource on which the resource group being created depends.

```
scalable-resource-group
```

Specifies the scalable resource group.

7 Create an application resource in the scalable resource group.

You can repeat this step to add multiple application resources, such as SSL and non-SSL based versions, to the same resource group.

To set load balancing for the data service, use the two standard resource properties `Load_balancing_policy` and `Load_balancing_weights`. See the [r_properties\(5\)](#) man page for a description of these properties. Additionally, see the examples that follow this section.

```
# clresource create -g scalable-resource-group \
-t resource-type \
-p Confdir_list=config-directory[,...] \
-p Resource_dependencies=shared-address[,...] \
-p Port_list=port-number/protocol[,...] \
-p Scalable=True \
resource
```

- g *scalable-resource-group*
Specifies the name of the scalable resource group into which the resources are to be placed.
- t *resource-type*
Specifies the type of the resource to add.
- p *Confdir_list=config-directory[,...]*
Specifies a comma-separated list of the locations of the Oracle iPlanet configuration files. HA for Oracle iPlanet Web Server requires this extension property.
- p *Resource_dependencies=shared-address[,...]*
Specifies a comma-separated list of network resources that identify the shared addresses that the data service uses.
- p *Port_list=port-number/protocol[,...]*
Specifies a comma-separated list of port numbers and protocol to be used, for example, 80/tcp, 81/tcp.
- p *Scalable=True*
Specifies a Boolean that is required for scalable services.

resource
Specifies the name of the resource to add.

The resource is created in the enabled state.

Note – A one-to-one mapping applies for *Confdir_List* and *Port_List*. Each value in one list must correspond to the value in the other list in the specified order.

8 Bring the failover resource group online.

```
# clresourcegroup online -M resource-group
```

resource-group
Specifies the name of the failover resource group.

9 Bring the scalable resource group online.

```
# clresourcegroup online -M resource-group
```

resource-group
Specifies the name of the scalable resource group.

Example 1–6 Registering a Scalable HA for Oracle iPlanet Web Server

```
Cluster Information
Node names: phys-schost-1, phys-schost-2
Shared address: schost-1
Resource groups: sa-resource-group-1 (for shared addresses),
iws-resource-group-1 (for scalable application resources)
Resources: schost-1 (shared address), app-insecure-1 (non-SSL based)
```

```

application resource), app-secure-1 (SSL-based application resource)

(Add a failover resource group to contain shared addresses.)
# clresourcegroup create sa-resource-group-1

(Add the shared address resource to the failover resource group.)
# clressharedaddress create -g sa-resource-group-1 -h schost-1 sa-resource

(Add a scalable resource group.)
# clresourcegroup create -p Maximum primaries=2 \
-p Desired primaries=2 \
-p RG_dependencies=sa-resource-group-1 iws-resource-group-1

(Register the resource type for the HA for Oracle iPlanet Web Server.)
# clresourcetype register SUNW.iws

(Add a non-SSL based application instance with default load balancing.)
# clresource create -g iws-resource-group-1 -t SUNW.iws \
-p Confdir_List=/opt/SUNWbsrv/https-app-insecure-1 \
-p Scalable=True -p Resource_dependencies=schost-1 \
-p Port_list=80/tcp app-insecure-1

(Add an SSL-based application instance with sticky IP load balancing.)
# clresource create -g iws-resource-group-1 -t SUNW.iws \
-p Confdir_List=/opt/SUNWbsrv/https-app-secure-1 \
-p Scalable=True -p Resource_dependencies=schost-1 \
-p Port_list=443/tcp -p Load_balancing_policy=LB_STICKY \
-p Load_balancing_weights=40@1,60@2 app-secure-1

(Bring the failover resource group online.)
# clresourcegroup online -M sa-resource-group-1

(Bring the scalable resource group online.)
# clresourcegroup online -M iws-resource-group-1

```

How to Configure the SUNW.HASStoragePlus Resource Type

The SUNW.HASStoragePlus resource type synchronizes actions between HA storage and the data service. SUNW.HASStoragePlus also has an additional feature to make a local file system highly available.

See the [SUNW.HASStoragePlus\(5\)](#) man page and “Relationship Between Resource Groups and Device Groups” in *Oracle Solaris Cluster Data Services Planning and Administration Guide* for background information. See “Synchronizing the Startups Between Resource Groups and Device Groups” in *Oracle Solaris Cluster Data Services Planning and Administration Guide* for the procedure.

Tuning the HA for Oracle iPlanet Web Server Fault Monitor

The HA for Oracle iPlanet Web Server fault monitor is contained in the resource that represents Oracle iPlanet Web Server. You create this resource when you register and configure HA for Oracle iPlanet Web Server. For more information, see [“Registering and Configuring HA for Oracle iPlanet Web Server”](#) on page 16.

System properties and extension properties of this resource control the behavior of the fault monitor. The default values of these properties determine the preset behavior of the fault monitor. The preset behavior should be suitable for most Oracle Solaris Cluster installations. Therefore, you should tune the HA for Oracle iPlanet Web Server fault monitor *only* if you need to modify this preset behavior.

For more information, see the following sections.

- [“Tuning Fault Monitors for Oracle Solaris Cluster Data Services”](#) in *Oracle Solaris Cluster Data Services Planning and Administration Guide*
- [“Changing Resource Type, Resource Group, and Resource Properties”](#) in *Oracle Solaris Cluster Data Services Planning and Administration Guide*
- [“Standard Properties”](#) in *Oracle Solaris Cluster Data Services Planning and Administration Guide*

Operations by the Fault Monitor During a Probe

The probe for HA for Oracle iPlanet Web Server uses a request to the server to query the health of that server. Before the probe actually queries the server, a check is made to confirm that network resources are configured for this web server resource. If no network resources are configured, an error message (No network resources found for resource) is logged, and the probe exits with failure.

Note – The probe for HA for Oracle iPlanet Web Proxy Server also uses a similar mechanism to that of HA for Oracle iPlanet Web Server.

The probe must address the following two configurations of Oracle iPlanet Web Server.

- SSL-based instance (secure)
- Non-SSL based instance (insecure)

If the web server is in SSL-based mode and if the probe cannot communicate with the secure ports, the error message `Unable to parse configuration file` is logged, and the probe exits with failure. The SSL and non-SSL based instance probes involve common steps.

The `Resource_dependencies` resource-property setting on the Oracle iPlanet Web Server resource determines the set of IP addresses that the web server uses. The `Port_list` resource-property setting determines the list of port numbers that Oracle iPlanet Web Server uses. The fault monitor assumes that the web server is listening on all combinations of IP and port. The fault monitor attempts to probe all such combinations and might fail if the web server is not listening on a particular IP address and port combination.

If the probe fails to connect to the web server using a specified IP address and port combination, a complete failure occurs. The probe records the failure and takes appropriate action.

If the probe successfully connects, the probe checks if the web server is run in SSL-based mode. If so, the probe disconnects and returns with a success status. No further checks are performed for an SSL-based Oracle iPlanet Web Server.

However, if the web server is running in non-SSL based mode, the probe sends an HTTP 1.0 HEAD request to the web server and waits for the response. The request can be unsuccessful for various reasons, including heavy network traffic, heavy system load, and misconfiguration.

Misconfiguration can occur when the web server is not configured to listen on all IP address and port combinations that are being probed. The web server should service every port for every IP address specified for this resource.

Misconfigurations can also result if the `Resource_dependencies` and `Port_list` resource properties were not set correctly when you created the resource.

If the reply to the query is not received within the `Probe_timeout` resource time limit, the probe considers this probe a failure of HA for Oracle iPlanet Web Server. The failure is recorded in the probe's history.

A probe failure can be a complete or partial failure. The following probe failures are considered complete failures.

- Failure to connect to the server. The following error message is sent, where %s indicates the host name and %d indicates the port number.


```
Failed to connect to %s port %d
```
- Timeout (exceeding the resource-property timeout `Probe_timeout`) after trying to connect to the server.
- Failure to successfully send the probe string to the server. The following error message is sent, where the first %s indicates the host name, %d indicates the port number, and the second %s indicates further details about the error.

```
Failed to communicate with server %s port %d: %s
```

The monitor accumulates two such partial failures within the resource-property interval `Retry_interval` and counts them as one failure.

The following probe failures are considered partial failures.

- Timeout (exceeding the resource-property timeout `Probe_timeout`) while trying to read the reply from the server to the probe's query.
- Failing to read data from the server for other reasons. The following error message is sent, where the first %s indicates the host name, %d indicates the port number, and the second %s indicates further details about the error.

```
Failed to communicate with server %s port %d: %s
```

The probe connects to the Oracle iPlanet Web Server server and performs an HTTP 1.1 GET check by sending a HTTP request to each of the URIs in `Monitor_Uri_List`. If the HTTP server return code is 500 (Internal Server Error) or if the connect fails, the probe will take action.

The result of the HTTP requests is either failure or success. If all of the requests successfully receive a reply from the Oracle iPlanet Web Server server, the probe returns and continues the next cycle of probing and sleeping.

Heavy network traffic, heavy system load, and misconfiguration can cause the HTTP GET probe to fail. Misconfiguration of the `Monitor_Uri_List` property can cause a failure if a URI in the `Monitor_Uri_List` includes an incorrect port or hostname. For example, if the web server instance is listening on logical host `schost - 1` and the URI was specified as `http://schost - 2/servlet/monitor`, the probe will try to contact `schost - 2` to request `/servlet/monitor`.

Based on the history of failures, a failure can cause either a local restart or a failover of the data service. This action is further described in “[Tuning Fault Monitors for Oracle Solaris Cluster Data Services](#)” in *Oracle Solaris Cluster Data Services Planning and Administration Guide*.

Upgrading the HA for Oracle iPlanet Web Server Resource Type

Upgrade the `SUNW.iws` resource type if the following conditions apply:

- You are upgrading from an earlier version of the HA for Oracle iPlanet Web Server 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 `SUNW.iws` resource type is provided in the subsections that follow.

Information for Registering the New Resource Type Version

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

The resource type registration (RTR) file for this resource type is `/opt/SUNWschtt/etc/SUNW.iws`.

Information for Migrating Existing Instances of the Resource Type

The information that you require to edit each instance of the `SUNW.iws` resource type is as follows:

- You can perform the migration at any time.
- If you need to monitor deployed applications, set the `Monitor Uri List` extension property to a single URI or a list of URIs to specify the locations of the applications that are to be probed.

The following example shows a command for modifying an instance of the `SUNW.iws` resource type.

EXAMPLE 1-7 Migrating Instances of the `SUNW.iws` Resource Type

```
# clresource set \  
-p Monitor Uri List=http://schost-1/test.html \  
-p Type_version=4 webserver-rs
```

This command modifies the `SUNW.iws` resource named `webserver-rs` as follows:

- The `Type_version` property of this resource is set to 4.
- The fault monitor probe will monitor the URI `http://schost-1/test.html`.

HA for Oracle iPlanet Web Server Extension Properties

This section describes the extension properties for the resource type `SUNW.iws`. This resource type represents the Oracle iPlanet Web Server application in an Oracle Solaris Cluster configuration.

For details about system-defined properties, see the [r_properties\(5\)](#) man page and the [rg_properties\(5\)](#) man page.

The extension properties of the `SUNW.iws` resource type are as follows:

`Confdir_list`

A pointer to the server root directory for a particular Oracle iPlanet Web Server or Oracle iPlanet Web Proxy Server instance. If the Oracle iPlanet Web Server or Oracle iPlanet Web Proxy Server is in secure mode, the path name must contain a file named `keypass`, which contains the secure key password needed to start this instance.

For failover, the data service enforces that the size of `Confdir_list` is one. If you want multiple configuration files (instances), make multiple failover resources, each with one `Confdir_list` entry.

Data type	String array
Default	No default defined
Range	Not applicable
Tunable	At creation

`Failover_enabled`

A specification of whether the fault monitor fails over the Oracle iPlanet Web Server resource if the number of attempts to restart exceeds `Retry_count` within the time that `Retry_interval` specifies. The possible values of this extension property are as follows:

- `True` – Specifies that the fault monitor fails over the Oracle iPlanet Web Server resource
- `False` – Specifies that the fault monitor does *not* fail over the Oracle iPlanet Web Server resource

Data type	Boolean
Default	True
Range	Not applicable
Tunable	When resource is disabled

Monitor_retry_count

The number of times that the process monitor facility (PMF) restarts the fault monitor during the time window that the `Monitor_retry_interval` property specifies. This property refers to restarts of the fault monitor itself rather than to the resource. The system-defined properties `Retry_interval` and `Retry_count` control restarting of the resource.

Data type	Integer
Default	4
Range	0 - 2,147,483,641 -1 indicates an infinite number of retry attempts.
Tunable	At any time

Monitor_retry_interval

The time (in minutes) over which failures of the fault monitor are counted. If the number of times that the fault monitor fails exceeds the value that is specified in the extension property `Monitor_retry_count` within this period, the PMF does not restart the fault monitor.

Data type	Integer
Default	2
Range	0 - 2,147,483,641 -1 indicates an infinite retry interval.
Tunable	At any time

Monitor Uri_List

A single URI or a list of URIs that can be used by the fault monitor to probe any deployed applications on the Oracle iPlanet Web Server or Oracle iPlanet Web Proxy Server. Probe deployed applications by setting the property to one or more URIs that are serviced by applications deployed on the Oracle iPlanet Web Server or Oracle iPlanet Web Proxy Server.

Data type	String
Default	Null
Range	Not applicable
Tunable	At any time

Probe_timeout

The timeout value (in seconds) that the fault monitor uses to probe an Oracle iPlanet Web Server instance.

Data type	Integer
Default	90
Range	0 – 2,147,483,641
Tunable	At any time

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