



Sun Cluster Data Service for DNS Guide for Solaris OS

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Preface

Sun Cluster Data Service for DNS Guide for Solaris OS explains how to install and configure Sun™ Cluster HA for Domain Name Service (DNS) on both SPARC® and x86 based systems.

Note – In this document, the term “x86” refers to the Intel 32-bit family of microprocessor chips and compatible microprocessor chips made by AMD.

This document is intended for system administrators with extensive knowledge of Sun 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 document assume knowledge of the Solaris™ Operating System and expertise with the volume manager software that is used with Sun Cluster.

Note – Sun Cluster software runs on two platforms, SPARC and x86. The information in this document pertains to both platforms unless otherwise specified in a special chapter, section, note, bulleted item, figure, table, or example.

UNIX Commands

This document contains information about commands that are specific to installing and configuring Sun 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 Solaris Operating System
- Solaris Operating System man pages
- Other software documentation that you received with your system

Typographic Conventions

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

TABLE P-1 Typographic Conventions

Typeface or Symbol	Meaning	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>	Command-line placeholder: replace with a real name or value	The command to remove a file is <code>rm filename</code> .
<i>AaBbCc123</i>	Book titles, new terms, and terms to be emphasized	Read Chapter 6 in the <i>User's Guide</i> . Perform a <i>patch analysis</i> . Do <i>not</i> save the file. [Note that some emphasized items appear bold online.]

Shell Prompts in Command Examples

The following table shows the default system prompt and superuser prompt for the C shell, Bourne shell, and Korn shell.

TABLE P-2 Shell Prompts

Shell	Prompt
C shell prompt	machine_name%
C shell superuser prompt	machine_name#
Bourne shell and Korn shell prompt	\$
Bourne shell and Korn shell superuser prompt	#

Related Documentation

Information about related Sun Cluster topics is available in the documentation that is listed in the following table. All Sun Cluster documentation is available at <http://docs.sun.com>.

Topic	Documentation
Data service administration	<i>Sun Cluster Data Services Planning and Administration Guide for Solaris OS</i> Individual data service guides
Concepts	<i>Sun Cluster Concepts Guide for Solaris OS</i>
Overview	<i>Sun Cluster Overview for Solaris OS</i>
Software installation	<i>Sun Cluster Software Installation Guide for Solaris OS</i>
System administration	<i>Sun Cluster System Administration Guide for Solaris OS</i>
Hardware administration	<i>Sun Cluster 3.0-3.1 Hardware Administration Manual for Solaris OS</i> Individual hardware administration guides
Data service development	<i>Sun Cluster Data Services Developer's Guide for Solaris OS</i>

Topic	Documentation
Error messages	<i>Sun Cluster Error Messages Guide for Solaris OS</i>
Command and function reference	<i>Sun Cluster Reference Manual for Solaris OS</i>

For a complete list of Sun Cluster documentation, see the release notes for your release of Sun 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 – Sun is not responsible for the availability of third-party web sites mentioned in this document. Sun 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. Sun 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

Sun Function	URL	Description
Documentation	http://www.sun.com/documentation/	Download PDF and HTML documents, and order printed documents
Support and Training	http://www.sun.com/supporttraining/	Obtain technical support, download patches, and learn about Sun courses

Product Training

Sun Microsystems offers training in many Sun technologies through a variety of instructor-led courses and self-paced courses. For information about the training courses that Sun offers and to enroll in a class, visit Sun Microsystems Training at <http://training.sun.com/>.

Getting Help

If you have problems installing or using Sun 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 and serial numbers of your systems
- The release number of the Solaris Operating System (for example, Solaris 8)
- The release number of Sun Cluster (for example, Sun Cluster 3.0)

Use the following commands to gather information about each node on 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>showrev -p</code>	Reports which patches are installed
<code>SPARC: prtdiag -v</code>	Displays system diagnostic information
<code>scinstall -pv</code>	Displays Sun Cluster release and package version information

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

Installing and Configuring Sun Cluster HA for DNS

This chapter describes the steps to install and configure the Sun Cluster HA for Domain Name Service (DNS) data service on your Sun Cluster servers.

This chapter contains the following sections.

- “Overview of the Installation and Configuration Process for Sun Cluster HA for DNS” on page 12
- “Installing DNS” on page 12
- “Installing Sun Cluster HA for DNS Packages” on page 15
- “Registering and Configuring Sun Cluster HA for DNS” on page 17
- “Verifying Data Service Installation and Configuration” on page 22
- “Tuning the Sun Cluster HA for DNS Fault Monitor” on page 22

You must configure Sun Cluster HA for DNS as a failover data service. See Chapter 1, “Planning for Sun Cluster Data Services,” in *Sun Cluster Data Services Planning and Administration Guide for Solaris OS* and the *Sun Cluster Concepts Guide for Solaris OS* document for general information on data services, resource groups, resources, and other related topics.

Note – You can use SunPlex™ Manager to install and configure this data service. See the SunPlex Manager online help for details.

Overview of the Installation and Configuration Process for Sun Cluster HA for DNS

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

TABLE 1 Task Map: Installing and Configuring Sun Cluster HA for DNS

Task	For Instructions, Go To ...
Install DNS	"Installing DNS" on page 12
Install Sun Cluster HA for DNS packages	"Installing Sun Cluster HA for DNS Packages" on page 15
Configure and start Sun Cluster HA for DNS	"Registering and Configuring Sun Cluster HA for DNS" on page 17
Verify the data service installation and configuration	"Verifying Data Service Installation and Configuration" on page 22
Tune the Sun Cluster HA for DNS fault monitor	"Tuning the Sun Cluster HA for DNS Fault Monitor" on page 22

Installing DNS

This section describes the steps to install DNS and to enable DNS to run as Sun Cluster HA for DNS.

Sun Cluster HA for DNS uses the Internet Domain Name Server (`in.named`) software that is bundled with the Solaris 8 and Solaris 9 operating environments. See the `in.named(1M)` man page for information on how to set up DNS. The Sun Cluster configuration involves the following differences.

- The DNS database is located on the cluster file system, not a local file system.
- A network resource (relocatable IP address), not the name of a physical host, identifies the name of a DNS server.

▼ How to Install DNS

This section describes how to install the DNS.

Steps 1. Become superuser on a cluster member.

2. Decide on the network resource that will provide the DNS service.

This name should be an IP address (logical hostname or shared address) that you set up when you install the Sun Cluster software. See the *Sun Cluster Concepts Guide for Solaris OS* document for details on network resources.

3. Ensure that the DNS executable (in `.named`) is in the directory `/usr/sbin`.

The DNS executable is bundled with the Solaris 8 and Solaris 9 operating environments. Ensure that this executable is located in the `/usr/sbin` directory before you begin the installation.

4. Create directory structure `/global/dns/named` on the cluster file system to hold the DNS configuration files (at level `/global/dns`) and database files (at level `/global/dns/named`).

See the *Sun Cluster Software Installation Guide for Solaris OS* for information on how to set up cluster file systems.

```
# mkdir -p /global/dns/named
```

5. Place the configuration file for DNS, `named.conf` or `named.boot`, under the `/global/dns` directory.

If you have already installed DNS, you can copy the existing `named.conf` or `named.boot` file to the `/global/dns` directory. Otherwise, create a `named.conf` file in this directory. See the `in.named(1M)` man page for information on the types of entries to place in `named.conf` or `named.boot`. Either the `named.conf` file or the `named.boot` file must exist. Both files can exist.

6. Place all of the DNS database files (listed in the `named.conf` file) under the `/global/dns/named` directory.

7. On all of the clients of Sun Cluster HA for DNS, create an entry for the network resource of the DNS service in the `/etc/resolv.conf` file.

On all of the nodes, edit the `/etc/resolv.conf` file to contain the network resource. The following example shows the entries for a four-node configuration (`phys-schost-1`, `phys-schost-2`, `phys-schost-3`, and `phys-schost-4`) with the logical hostname `schost-1.eng.sun.com`.

```
domain eng.sun.com
; schost-1.eng.sun.com
```

(Only entry to be added if the file is already present.)

```
nameserver 192.29.72.90
```

```

; phys-schost-2.eng
nameserver 129.146.1.151

; phys-schost-3.eng
nameserver 129.146.1.152

; phys-schost-4.eng
nameserver 129.144.134.19

; phys-schost-1.eng
nameserver 129.144.1.57

```

Make the network resource the first entry after the domain name. DNS attempts to use the addresses in the order that they are listed in the `resolv.conf` file to access the server.

Note – If the `/etc/resolv.conf` is already present on the nodes, just add the first entry that shows the logical hostname in the preceding example. The order of the entries determines the order in which DNS tries to access the server.

8. On all of the cluster nodes, edit the `/etc/inet/hosts` file to create an entry for the network resource of the DNS service.

In the following example, perform these steps.

- Replace the *IPaddress* variable with your actual IP address, such as `129.146.87.53`.
- Replace the *logical-hostname* variable with your actual network resource (logical hostname or shared address).

```

127.0.0.1                localhost
IPaddress                logical-hostname

```

9. On all of the cluster nodes, edit the `/etc/nsswitch.conf` file to add the string `dns` after `cluster` and `files` to the `hosts` entry.

Example:

```

hosts:                cluster files dns

```

10. On all of the cluster nodes, test DNS.

The following example shows how to test DNS.

```

# /usr/sbin/in.named -c /global/dns/named.conf
# nslookup phys-schost-1

```

11. On all of the cluster nodes, stop DNS.

Be sure to stop the `in.named` executable before you proceed.

```

# pkill -x in.named

```

Next Steps If you installed the Sun Cluster HA for DNS packages during your Sun Cluster installation, go to “[Registering and Configuring Sun Cluster HA for DNS](#)” on page 17. Otherwise, go to “[Installing Sun Cluster HA for DNS Packages](#)” on page 15.

Installing Sun Cluster HA for DNS Packages

If you did not install the Sun Cluster HA for DNS packages during your initial Sun Cluster installation, perform this procedure to install the packages. Perform this procedure on each cluster node where you are installing the Sun Cluster HA for DNS packages. To complete this procedure, you need the Sun Cluster Agents CD.

If you are installing more than one data service simultaneously, perform the procedure in “[Installing the Software](#)” in *Sun Cluster Software Installation Guide for Solaris OS*.

Install the Sun Cluster HA for DNS packages by using one of the following installation tools:

- The Web Start program
- The `scinstall` utility

Note – If you are using Solaris 10, install these packages *only* in the global zone. To ensure that these packages are not propagated to any local zones that are created after you install the packages, use the `scinstall` utility to install these packages. Do *not* use the Web Start program.

▼ How to Install Sun Cluster HA for DNS Packages Using the Web Start Program

You can run the Web Start 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. For more information about the Web Start program, see the `installer(1M)` man page.

- Steps**
1. **On the cluster node where you are installing the Sun Cluster HA for DNS packages, become superuser.**
 2. **(Optional) If you intend to run the Web Start program with a GUI, ensure that your `DISPLAY` environment variable is set.**

3. Insert the Sun Cluster Agents CD into the CD-ROM drive.

If the Volume Management daemon `vold(1M)` is running and configured to manage CD-ROM devices, it automatically mounts the CD-ROM on the `/cdrom/cdrom0` directory.

4. Change to the Sun Cluster HA for DNS component directory of the CD-ROM.

The Web Start program for the Sun Cluster HA for DNS data service resides in this directory.

```
# cd /cdrom/cdrom0/components/SunCluster_HA_DNS_3.1
```

5. Start the Web Start program.

```
# ./installer
```

6. When you are prompted, select the type of installation.

- To install only the C locale, select Typical.
- To install other locales, select Custom.

7. Follow the instructions on the screen to install the Sun Cluster HA for DNS packages on the node.

After the installation is finished, the Web Start program provides an installation summary. This summary enables you to view logs that the Web Start program created during the installation. These logs are located in the `/var/sadm/install/logs` directory.

8. Exit the Web Start program.

9. Remove the Sun Cluster Agents CD 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 “Registering and Configuring Sun Cluster HA for DNS” on page 17.

▼ How to Install Sun Cluster HA for DNS Packages Using the `scinstall` Utility

Perform this procedure on all of the cluster members that can master Sun Cluster HA for DNS.

Before You Begin Ensure that you have the Sun Cluster Agents CD.

- Steps**
1. **Load the Sun Cluster Agents CD into the CD-ROM drive.**
 2. **Run the `scinstall` utility with no options.**
This step starts the `scinstall` utility in interactive mode.
 3. **Select the menu option, Add Support for New Data Service to This Cluster Node.**
The `scinstall` utility prompts you for additional information.
 4. **Provide the path to the Sun Cluster Agents CD.**
The utility refers to the CD as the “data services cd.”
 5. **Specify the data service to install.**
The `scinstall` utility lists the data service that you selected and asks you to confirm your choice.
 6. **Exit the `scinstall` utility.**
 7. **Unload the CD from the drive.**

Next Steps Go to [“Registering and Configuring Sun Cluster HA for DNS”](#) on page 17.

Registering and Configuring Sun Cluster HA for DNS

This procedure describes how to use the `scrgadm(1M)` command to register and configure Sun Cluster HA for DNS.

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

Setting Sun Cluster HA for DNS Extension Properties

The sections that follow contain instructions for registering and configuring Sun Cluster HA for DNS resources. For information about the extension properties, see [Appendix A](#). The Tunable entry indicates when you can update a property.

See Appendix A, “Standard Properties,” in *Sun Cluster Data Services Planning and Administration Guide for Solaris OS* for details on all of the Sun Cluster properties.

To set an extension property of a resource, include the following option in the `scrgadm (1M)` command that creates or modifies the resource:

`-x property=value`

`-x 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 *Sun Cluster Data Services Planning and Administration Guide for Solaris OS* to configure resources after the resources are created.

▼ How to Register and Configure Sun Cluster HA for DNS

This section describes how to register and configure Sun Cluster HA for DNS.

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

- The name of the resource type for Sun Cluster HA for DNS. This name is `SUNW.dns`.
- The names of the cluster nodes that master the data service.
- The network resource that clients use to access the data service. You normally set up this IP address when you install the cluster. See the *Sun Cluster Concepts Guide for Solaris OS* document for details on network resources.
- The path to the DNS configuration files, which you must install on a cluster file system. This path maps to the `Config_dir` resource property that is configured in this procedure.

Note – Perform this procedure on any cluster member.

- Steps**
1. **Become superuser on a cluster member.**
 2. **Disable the SMF service `/network/nfs/server:default`.**
Perform this step before starting any Sun Cluster HA for DNS resource.

In the event of any failure in the initial primary node, failover is possible only if the Service Management Facility (SMF) service `/network/nfs/server:default` is disabled. On all potential primary nodes, disable this service by running the following command.

```
# svcadm disable /network/nfs/server:default
```

3. Register the resource type for the data service.

```
# scrgadm -a -t SUNW.dns
```

`-a`

Adds the data service resource type.

`-t SUNW.dns`

Specifies the predefined resource type name for your data service.

4. Create a resource group for network and DNS resources to use.

You can use the `-h` option to optionally select the set of nodes on which the data service can run.

```
# scrgadm -a -g resource-group [-h nodelist]
```

`-g resource-group`

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

`[-h nodelist]`

Specifies an optional comma-separated list of physical node names or IDs that identify potential masters. The order here determines the order in which the nodes are considered as primary during failover.

Note – Use the `-h` option to specify the order of the node list. If all of the cluster nodes are potential masters, you do not need to use the `-h` option.

5. Verify that all of the network resources that you will use have been added to your name service database.

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

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

6. Add network resources to the resource group.

For example, run the following command to add a logical hostname to a resource group.

```
# scrgadm -a -L -g resource-group -l logical-hostname [logical-hostname] \  
[-n netiflist]  
  
-l logical-hostname  
Specifies a comma-separated list of network resources (logical hostname or  
shared address).  
  
-n netiflist  
Specifies an optional, comma-separated list that identifies the IP Networking  
Multipathing groups that are on each node. Each element in netiflist must be in  
the form of netif@node. netif can be given as an IP Networking  
Multipathing group name, such as sc_ipmp0. The node can be identified by the  
node name or node ID, such as sc_ipmp0@1 or sc_ipmp@phys-schost-1.
```

Note – Sun Cluster does not currently support using the adapter name for *netif*.

7. Add a DNS application resource to the resource group.

```
# scrgadm -a -j [resource] -g resource-group \  
-t SUNW.dns -y Network_resources_used=network-resource, ...\  
-y Port_list=port-number/protocol -x DNS_mode=config-file \  
-x Confdir_list=config-directory  
  
-j resource  
Specifies the DNS application resource name.  
  
-t SUNW.dns  
Specifies the name of the resource type to which this resource belongs. This  
entry is required.  
  
-y Network_resources_used=network-resource, ...  
Specifies a comma-separated list of network resources (logical hostnames or  
shared addresses) that DNS will use. If you do not specify this property, the  
value defaults to all of the network resources that are contained in the resource  
group.  
  
-y Port_list=port-number/protocol  
Specifies a port number and the protocol to be used. If you do not specify this  
property, the value defaults to 53/udp.  
  
-x DNS_mode=config-file  
Specifies the configuration file to use, either conf (which specifies the file  
named .conf) or boot (which specifies the file named .boot). If you do not  
specify this property, the value defaults to conf.  
  
-x Confdir_list=config-directory  
Specifies the DNS configuration directory, which must be on the cluster file  
system. Sun Cluster HA for DNS requires this extension property.
```

8. Run the `scswitch(1M)` command to complete the following tasks.

- Enable the resource and fault monitoring.
- Move the resource group into a managed state.
- Bring the resource group online.

```
# scswitch -Z -g resource-group
```

-Z

Enables the resource and monitor, moves the resource group to the managed state, and brings the resource group online.

-g *resource-group*

Specifies the name of the resource group.

Example 1 Registering Failover Sun Cluster HA for DNS

The following example shows how to register Sun Cluster HA for DNS on a two-node cluster. Note that at the end, the `scswitch` command starts Sun Cluster HA for DNS.

Cluster Information

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

Logical hostname: schost-1

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

Resources: schost-1 (logical hostname), dns-1 (DNS application resource)

(Disable the SMF service /network/nfs/server:default.)

```
# svcadm disable /network/nfs/server:default
```

(Register the DNS resource type.)

```
# scrgadm -a -t SUNW.dns
```

(Add the resource group to contain all of the resources.)

```
# scrgadm -a -g resource-group-1
```

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

```
# scrgadm -a -L -g resource-group-1 -l schost-1
```

(Add DNS application resources to the resource group.)

```
# scrgadm -a -j dns-1 -g resource-group-1 -t SUNW.dns \  
-y Network_resources_used=schost-1 -y Port_list=53/udp \  
-x DNS_mode=conf -x Confdir_list=/global/dns
```

(Bring the failover resource group online.)

```
# scswitch -Z -g resource-group-1
```

How to Configure SUNW.HAStoragePlus Resource Type

The SUNW.HAStoragePlus resource type was introduced in Sun Cluster 3.0 5/02. This new resource type performs the same functions as SUNW.HAStorage, and it has an additional feature to make a local file system highly available. Sun Cluster HA for DNS is not disk-intensive and is not scalable, and therefore, setting up the SUNW.HAStoragePlus resource type is optional.

See the SUNW.HAStoragePlus(5) man page and “Relationship Between Resource Groups and Disk Device Groups” in *Sun Cluster Data Services Planning and Administration Guide for Solaris OS* for background information. See “Synchronizing the Startups Between Resource Groups and Disk Device Groups” in *Sun Cluster Data Services Planning and Administration Guide for Solaris OS* for the procedure. (If you are using a Sun Cluster 3.0 version prior to 5/02, you must set up SUNW.HAStorage instead of SUNW.HAStoragePlus. See “Synchronizing the Startups Between Resource Groups and Disk Device Groups” in *Sun Cluster Data Services Planning and Administration Guide for Solaris OS* for the procedure.)

Verifying Data Service Installation and Configuration

To verify that you have correctly installed and configured Sun Cluster HA for DNS, run the following command after you complete the procedure “How to Register and Configure Sun Cluster HA for DNS” on page 18.

```
# nslookup logical-hostname logical-hostname
```

In this example, *logical-hostname* is the name of the network resource that you have configured to service DNS requests—for example, *schost-1*—as shown in the previous registration example. The output should indicate that the network resource that you specified answered (served) the query.

Tuning the Sun Cluster HA for DNS Fault Monitor

The Sun Cluster HA for DNS fault monitor is contained in the resource that represents DNS. You create this resource when you register and configure Sun Cluster HA for DNS. For more information, see “Registering and Configuring Sun Cluster HA for DNS” on page 17.

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 Sun Cluster installations. Therefore, you should tune the Sun Cluster HA for DNS fault monitor *only* if you need to modify this preset behavior.

For more information, see the following sections.

- “Tuning Fault Monitors for Sun Cluster Data Services” in *Sun Cluster Data Services Planning and Administration Guide for Solaris OS*
- “Changing Resource Type, Resource Group, and Resource Properties” in *Sun Cluster Data Services Planning and Administration Guide for Solaris OS*
- Appendix A, “Standard Properties,” in *Sun Cluster Data Services Planning and Administration Guide for Solaris OS*

Operations by the Fault Monitor During a Probe

The fault monitor probe uses the `nslookup` command to query the health of DNS. Before the probe actually queries the DNS server, a check is made to confirm that network resources are configured in the same resource group as the DNS data service. If no network resources are configured, an error message is logged, and the probe exits with failure.

The result of the `nslookup` command can be either failure or success. If DNS successfully replied to the `nslookup` query, the probe returns to its infinite loop, waiting for the next probe time.

If the `nslookup` fails, the probe considers this scenario a failure of the DNS data service and records the failure in its history. The DNS probe considers every failure a complete failure.

Based on the success/failure history, a failure can cause a local restart or a data service failover. “Tuning Fault Monitors for Sun Cluster Data Services” in *Sun Cluster Data Services Planning and Administration Guide for Solaris OS* further describes this action.

Sun Cluster HA for DNS Extension Properties

This section describes the extension properties for the resource type `SUNW.dns`. This resource type represents the DNS application in a Sun 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.dns` resource type are as follows:

`Confdir_list`

The DNS configuration directory, which contains the configuration file for a DNS instance.

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

`DNS_mode`

The DNS configuration file to use, either `conf` (which specifies the file named `.conf`) or `boot` (which specifies the file named `.boot`).

Data type	String
Default	<code>conf</code>
Range	Not applicable
Tunable	At creation

`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 resource restarts.

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

`Probe_timeout`

The timeout value (in seconds) that the fault monitor uses to probe a DNS instance.

Data type Integer
Default 120
Range 0 - 2,147,483,641
Tunable At any time

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