



# N1 Grid Service Provisioning System 5.0 User's Guide for the Solaris Plug-In

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# Preface

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The *N1 Grid Service Provisioning System 5.0 User's Guide for the Solaris Plug-In* contains information about installing, configuring, and using N1 Grid Service Provisioning System to provision Solaris™ 10 zones.

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## Who Should Use This Book

The main audience for the *N1 Grid Service Provisioning System 5.0 User's Guide for the Solaris Plug-In* includes system administrators and operators of N1 Grid Service Provisioning System 5.0 software who want to be able to incorporate Solaris 10 zones functionality with N1 Grid Service Provisioning System software. These users are expected to have the following background:

- Familiar with the N1 Grid Service Provisioning System 5.0 product
- Familiar with standard UNIX® and Microsoft Windows commands and utilities
- Familiar with the general concepts associated with Solaris 10 zones

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## Before You Read This Book

If you are not already familiar with using the N1 Grid Service Provisioning System software, read the following books:

- *N1 Grid Service Provisioning System 5.0 System Administration Guide*
- *N1 Grid Service Provisioning System 5.0 Operation and Provisioning Guide*
- *N1 Grid Service Provisioning System 5.0 Release Notes*

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## How This Book Is Organized

[Chapter 1](#) provides an overview of the Solaris Plug-In.

[Chapter 2](#) explains how to install and configure the Solaris Plug-In.

[Chapter 3](#) describes how to use the specific components and plans that are provided with the Solaris Plug-In.

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## 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.
<b>AaBbCc123</b>	What you type, contrasted with onscreen computer output	<code>machine_name%</code> <b>su</b> 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.]

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## 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	<code>machine_name%</code>
C shell superuser prompt	<code>machine_name#</code>
Bourne shell and Korn shell prompt	<code>\$</code>
Bourne shell and Korn shell superuser prompt	<code>#</code>





## Overview of Solaris Plug-In

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This chapter explains general information about using N1 Grid Service Provisioning System to provision Solaris containers. The chapter includes the following information:

- “Purpose of the Solaris Plug-In” on page 9
- “What the Solaris Plug-In Includes” on page 10
- “Requirements for Using the Solaris Plug-In” on page 11

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## Purpose of the Solaris Plug-In

The Solaris plug-in adds a `Container` component to N1 Grid Service Provisioning System. You use this component to create and manage Solaris 10 zones from the provisioning software.

## Introduction to Zones Partitioning

The Solaris Zones partitioning technology is used to virtualize operating system services and to provide an isolated and secure environment for running applications. A *zone* is a virtualized operating system environment that is created within a single instance of the Solaris Operating System. When you create a zone, you produce an application execution environment in which processes are isolated from the rest of the system. This isolation prevents processes that are running in one zone from monitoring or affecting processes that are running in other zones. Even a process that is running with superuser credentials cannot view or affect activity in other zones.

Zones can be used on any machine that is running the Solaris 10 release. The total resource requirements of the application software running in all of the zones determines how many zones a single system can host effectively. For more information about Solaris Zones, see Part II, “Zones,” in *System Administration Guide: Solaris Containers—Resource Management and Solaris Zones*.

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## What the Solaris Plug-In Includes

The Solaris Plug-In includes the following items:

Container component

Main component used to create and manage zones. For more information, see “[Container Component](#)” on page 18.

container\_util.tar file

Component that contains utility scripts for zones

containerUtil component

Component that installs zone\_util.tar file on global zones

Container-create plan

Plan that creates zones

Container-attach plan

Plan that attaches zones

Container-delete plan

Plan that deletes zones

Container-detach plan

Plan that detaches zones

Container-activate plan

Plan that activates zones

Container-deactivate plan

Plan that deactivates zones

solaris folder

Folder that contains plans for zones

com.sun.solaris#global\_zones host set

Host set for global zones

com.sun.solaris#global\_zones host search

Host search for global zones

com.sun.solaris#global\_zone host type

Host type for global zones

com.sun.solaris#local\_zone host type

Host type for local zones

---

# Requirements for Using the Solaris Plug-In

## Requirements for Deployment Server

To deploy Solaris 10 zones, make sure that the following two parts of the N1 Grid Service Provisioning System are installed on the master server from which you want to deploy:

- CLI (command-line interface)
- Remote agent (RA)

## Requirements for Target Hosts

Any host on which you intend to deploy Solaris 10 zones must meet the following requirements:

- Run the Solaris 10 Operating System.
- Meet the operating system requirements for hosting zones.



# Installing and Configuring the Solaris Plug-In

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This chapter contains the following information:

- “Acquiring the Solaris Plug-In” on page 13
- “Adding the Solaris Plug-In to the N1 Grid Service Provisioning System” on page 13
- “Customizing the Solution for Your Environment” on page 14

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## Acquiring the Solaris Plug-In

The Solaris Plug-In is packaged as a *plug-in* to the N1 Grid Service Provisioning System software. Plug-ins are packaged in Java™ Archive (JAR) files. The plug-in files for the Solaris Plug-In are available from the N1 Grid Service Provisioning System 5.0 Supplement CD or from the Sun Download Center.

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## Adding the Solaris Plug-In to the N1 Grid Service Provisioning System

To make a given plug-in known to the N1 Grid Service Provisioning System product, you need to import the plug-in. To import a plug-in, follow these steps as explained in detail in Chapter 5, “Plug-In Administration,” in *N1 Grid Service Provisioning System 5.0 System Administration Guide*.

1. In the Administrative section of the browser interface main window, click Plug-ins.
2. In the Action column of the Plug-ins page, click Import.

3. Browse to the location where you downloaded the `com.sun.solaris_1.0.jar` file.
4. Click the Continue to Import button.

When the import completes successfully, a plug-in details page appears that shows you the objects that the plug-in provides.

You can also import a plug-in archive file from the command line. Use the following command:

```
% cr-cli -cmd plg.p.add -path com.sun.solaris_1.0.jar -u username -p password
```

---

## Customizing the Solution for Your Environment

By default, the configuration file for the master server resides in the following directory:

```
/opt/SUNWn1sps/N1_Grid_Service_Provisioning_System_5.0/server/config
```

Before you deploy Solaris zones from the master server, you need to add the following lines to the `config.properties` file:

```
config.allowSessionIDOnHosts=masterserver  
pe.defaultPlanTimeout=6000
```

The `config.allowSessionIDOnHosts` variable enables the plug-in to communicate with the master server through the N1 Grid Service Provisioning System remote agent/CLI interface.

By default, the timeout value for plans is set to 1800 seconds or 30 minutes. In some instances, such as when executing a plan on older hardware, the amount of time that is needed for a plan to complete exceeds 30 minutes. To increase the plan timeout value, add the `pe.defaultPlanTimeout` line to the `config.properties` file. In the example shown above, the value is set to 100 minutes.

---

**Note** – After you modify the `config.properties` file, you must restart the master server.

---

## Using the Solaris Plug-In

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This chapter explains how to use the specific components and plans that are provided with the Solaris Plug-In. The chapter contains the following information:

- “Creating and Managing Solaris Zones” on page 15
- “Component Types” on page 18
- “Components” on page 18
- “Plans” on page 19
- “Hosts and Solaris Zones” on page 20

---

## Creating and Managing Solaris Zones

The Common Tasks page of the software enables you to create and manage Solaris 10 zones.

### ▼ How to Identify a Host as a Global Zone

A global zone is a host on which individual zones are defined. Before you can create any local zones, you must have at least one host defined to be in the host set `com.sun.solaris#global_zones`. This task explains how to identify a host as a global zone.

- Steps**
1. Select Hosts from the Hosts Setup section of the left control panel.
  2. Type the name of the host that you want to create as a global zone (container) in the Name field and click Create.
  3. Choose `com.sun.solaris#global_zone` from the host type menu.

4. **Modify values for any attributes as needed.**

For example, you might want to change the connection type from RAW (the default) to SSH or SSL.

---

**Note** – To use SSH for the local zone connection, you must set the port to 7000.

---

5. **Click the appropriate checkbox to include a remote agent or a local distributor on the physical host.**

## ▼ How to Create a Solaris Local Zone

- Steps**
1. **Select the Sun Solaris icon under the Common Tasks section of the left control panel.**
  2. **Select the Solaris Containers: Create and Manage link.**
  3. **Click the Run action next to Create: Install.**
  4. **Select the target host on which to create the local zone.**

---

**Note** – The target host must be a member of the `com.sun.solaris#global_zones` host set.

---

5. **Select the local zone host name from the Plan Variables settings.**

If desired local zone names are not present, you can create new zone names. To create new zone names, follow these steps:

- a. **Click Select From List in the plan variable settings table.**
- b. **In the Variable Setting window, click Create Set**
- c. **Type the new zone set name in the New Set Name field.**
- d. **Click the box next to Zone Name prompt and enter a new zone name.**

---

**Note** – Zone names become network Zone Host Names during local zone creation. Zone Host Names should resolve to matching available local network IP addresses.

---

6. **Click Run Plan (includes preflight).**



## Using the CLI to Work With Solaris Zones

By default, the N1 Grid Service Provisioning System command-line interface is located in the following directory:

```
/opt/SUNWn1sps/N1_Grid_Service_Provisioning_system_5.0/cli/bin/cr_cli
```

Solaris zone plug-in plans that run Container procedures are located in the folder `/com/sun/solaris/zones`.

### EXAMPLE 3-1 Creating a Solaris Zone by Using the CLI

This example illustrates how you can use the N1 Grid Service Provisioning System command-line interface to create a Solaris zone. The example contains three command segments. All commands use an example user name of `spsadmin` and password of `x1y2z3`.

The first command creates a host for global zone on `server10` and defines default values for the `local_zone_default_name`, `local_zone_connection_type`, and `local_zone_port` variables.

```
% cr_cli -cmd hdb.h.mod                host modify
      -ID "NM:server10"                 target global host
      -tID "NM:com.sun.solaris#global_zone" host type
      -attr "local_zone_default_name=server10_z1;
            local_zone_connection_type=RAW;
            local_zone_port=1131"       local zone attributes
      -u spsadmin                       user name
      -p x1y2z3                         password
```

The second command creates a local zone using the default variables.

```
% cr_cli -cmd pe.p.run                 plan execution
      -PID "NM:/com/sun/solaris/Container-create" create zone plan ID
      -tar "H:NM:server10"             target global host
      -vs "+"                          default var set "default set"
      -comp "+"                        default component "latest build"
      -pto 6000                        plan time 1 hr max [6000 secs]
      -nto 6000                        call time 1 hr max [6000 secs]
      -u spsadmin                      user name
      -p x1y2z3                        user password
```

The third command activates the local zone.

```
% echo "server10_z1" | cr_cli -cmd pe.p.run plan execution, std input is zone name
      -PID "NM:/com/sun/solaris/Container-activate" attach zone plan ID
      -tar "H:NM:server10"             target global host
      -f "-"                          standard input args
      -pto 6000                        plan time 1 hr max [6000 secs]
      -nto 6000                        call time 1 hr max [6000 secs]
      -u spsadmin                      user name
      -p x1y2z3                        user password
```

---

## Component Types

There are no specific component types for Solaris containers. However, some specific host types are associated with Solaris containers. For information, see [“Hosts and Solaris Zones”](#) on page 20.

---

## Components

### Container Component

The `Container` component is the main component delivered by the Solaris plug-in. The `Container` component is an untyped component.

The `Container` component includes several procedures. You can run these procedures directly from the N1 Grid Service Provisioning System interface or from within execution plans.

### Create Procedure

Creating a `Container` component creates a corresponding local Solaris 10 zone. The host target of this procedure is a Solaris 10 host that is running a provisioning software remote agent. The target host type must be set to `com.sun.solaris#global_zone`. The create procedure uses Solaris 10 `zonecfg` and `zoneadm` commands to configure and install a local Solaris 10 zone from the Solaris 10 global zone. After the installation, this procedure then installs a remote agent on the newly create local zone. A new host of type `com.sun.solaris#local_zone` appears on the host page.

### Attach Procedure

This procedure is similar to the create procedure, but it does not create the zone. Instead, the procedure attaches to an existing local zone on the host. This procedure creates a `Container` component in the provisioning software database and installs a remote agent on the existing local zone. The attach procedure is useful for times when a tool other than N1 Grid Service Provisioning System created the zone. For example, you might use the attach procedure when a zone has been created directly through Solaris APIs or by another software management application.

## Detach Procedure

The detach procedure is similar to the delete procedure. This procedure removes the `Container` component from the provisioning software database and uninstalls the remote agent. However, the local zone is not removed from the global zone host. If the local zone is booted, it remains booted. If it is halted, it remains halted.

## Activate Procedure

This procedure activates (boots) a local zone. You select the zone from the list of installed `Container` components on the targeted Solaris 10 host. The procedure uses the `zoneadm -z zonename boot` command. This procedure also initiates provisioning software host preparation for unprepared hosts.

## Deactivate Procedure

This procedure deactivates (halts) a local zone. You select the zone from the list of installed `Container` components on the targeted Solaris 10 host. The procedure uses the `zoneadm -z zonename halt` command.

## Delete Procedure

The delete procedure uses the Solaris 10 `zonecfg` and `zoneadm` commands to remove the specified Solaris 10 local zone from the global zone host. The procedure also removes the corresponding `Container` component from the provisioning software database.

---

## Plans

For each of the procedures described for the `Container` component, an associated plan is provided in the `/com/sun/solaris` plan folder. These plans are convenient to use with command-line shell calls, as shown in [Example 3-1](#)

---

## Hosts and Solaris Zones

The Solaris Plug-In includes a specific host set, a host search, and two host types for Solaris 10 zones.

### Global Zone Host Set

Any host on which you want to install a zone must be a member of the global zone host set. To ensure this relationship, set the host type of the target host to `com.sun.solaris#global_zone`.

### Global Zone Host Search

The global zones host search provides a search string that matches any host that is a global zone.

### Global Zone Host Type

Any physical host on which you want to install a zone must have a host type of `com.sun.solaris#global_zone`.

### Local Zone Host Type

When you install the Container component onto a global zone host, the provisioning software creates a host of type `com.sun.solaris#local_zone`.

---

## Troubleshooting

If you are experiencing problems managing your Solaris zones through the provisioning software, messages will likely appear on the screen to tell you that a problem exists.

For example, if you try to create a local zone for a target host that is not known to be a global zone, then you see a message similar to the following:

Problems encountered during plan run or preflight

The plan (or preflight) `"/system/autogen/Container-inst-create-1098225529078"` finished with 1 failed host(s).

The specified target host `"masterserver"` was not in the required host set `"com.sun.solaris#global_zones"` for component `"/com/sun/solaris/Container"`.

Although the message in this example is easily deciphered, not all messages are this straightforward. To find out more information about the specific problem, follow the [Details](#) links.



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