Sun Open Telecommunications Platform 2.0 Installation Guide

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Preface

Sun Open Telecommunications Platform 2.0 Installation Guide describes how to install the Sun™ Open Telecommunications Platform (Sun OTP) software in the development environment.

The following topics are discussed:

- "What is Sun OTP?" on page 5
- "Target Audience" on page 7
- "Component Product Mapping" on page 8
- "Sun OTP Documentation Set" on page 9
- "Sun Welcomes Your Comments" on page 9

What is Sun OTP?

Sun Open Telecommunications Platform (Sun OTP) provides integrated high availability services, system management services, application provisioning services, and security services that enable you to develop, deploy, host, and secure Network Equipment Provider (NEP) applications.

Sun OTP version 2.0 provides the following services:

- "Provisioning Service" on page 5
- "Management Service" on page 6
- "Availability Service" on page 6
- "Security Service" on page 7

Provisioning Service

Provisioning service consists of platform and application provisioning services.

Platform Provisioning

The platform provisioning service enables end-to-end provisioning of Sun OTP compute elements, including bare metal and firmware provisioning, operating system provisioning, and provisioning of Sun OTP software components.

Application Provisioning

The application provisioning service enables end-to-end provisioning of (NEP) applications, including initial application deployment, application upgrade, and application patching. Application provisioning services are capable of deploying applications on a single system, or on a group of systems that follow a set of defined grouping semantics. These services are also capable of deploying both single and multi-tier applications.

The following operations are supported by the application provisioning service:

- Creating application deployment descriptions
- Modifying application deployment descriptions
- Deleting application deployment descriptions
- Provisioning applications on hosts
- Provisioning a multi-tier application
- Inspecting deployed software on hosts at a specific point
- Removing applications from hosts
- Removing a multi-tier application
- Rolling back to previous version of applications
- Queryingdeployed applications on hosts

Management Service

Management service consists of platform management and application management services.

Platform Management

The platform management service enables monitoring and managing the Sun OTP compute elements. This includes monitoring and managing the bare metal hardware and deployed operating system instances. The platform management service can manage both stand-alone systems and two or more systems grouped together into an administrative group.

Application Management

The application management service enables management of NEP applications. Supported operations include application health monitoring, failure recovery and migration from one Sun OTP instance to another.

Availability Service

The availability service consists of platform availability and application availability services.

Platform Availability

The platform availability service enables availability of the Sun OTP compute elements.

Application Availability

The application availability service enables basic lifecycle and availability management of NEP applications. Supported lifecycle operations include registration, activation, and deactivation of applications.

The following operations are supported by the application lifecycle and availability management services:

- Creating application manifests
- Modifying application manifests
- Deleting application manifests
- Creating application dependencies
- Modifying application dependencies
- Deleting application dependencies
- Registering applications
- Starting applications
- Stopping applications
- Querying application state
- Migrating applications from host A to host B
- Failing over applications from host A to host B
- Restarting applications on host X

Security Service

The security service is used to secure NEP applications by authenticating Web applications through a Web Single Sign-On (Web SSO) feature. Once you log into a web-based administration interface in Sun OTP, you can access the other web-based administration interfaces without any reauthentication. Additionally, you can use the Solaris Security Toolkit (SST) driver to harden the Sun OTP application hosting environment (AHE) to improve the overall network security.

Target Audience

OEM developers who wish to install Sun OTP in their development environment and integrate their applications with Sun OTP.

Component Product Mapping

The following figure shows the components that are part of Sun OTP 2.0.

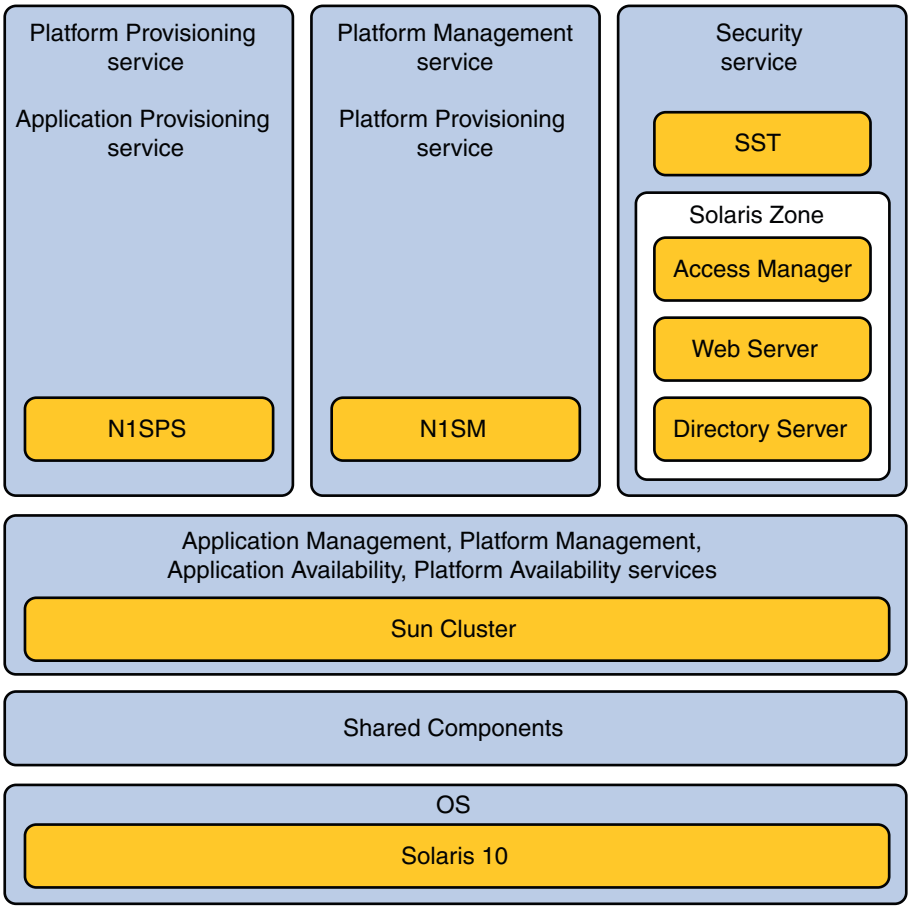

FIGURE P–1 Component Product Mapping

Supported Versions

The following table shows the OS and component versions that are supported by Sun OTP 2.0.

TABLE P–1 Sun OTP 2.0 Supported Versions

OS and Components	Version
Solaris™ OS	10 Update 3

TABLE P–1 Sun OTP 2.0 Supported Versions *(Continued)*

OS and Components	Version
Sun Cluster	3.2
Sun N1™ Service Provisioning System	5.2.4
Sun N1 System Manager	1.3.3
OS Provisioning Plug-in	3.2
Sun Java™ System Web Server	7.0 Update 1
Sun Java System Directory Server	6.1 Enterprise Edition
Sun Java System Access Manager	7.1
Solaris Security Toolkit	4.2

Sun OTP Documentation Set

Sun OTP guides are available as online files in PDF and HTML formats. The following table lists the tasks and concepts described in each guide.

TABLE P–2 Sun OTP Documentation Set

Documentation	Purpose
Sun Open Telecommunications Platform 2.0 Release Notes	Late-breaking information about the software and documentation
Sun Open Telecommunications Platform 2.0 Installation Guide	Provides the procedure for installing Sun OTP in the development environment

The complete Sun OTP documentation is available at *http://docs.sun.com/app/docs/coll/1629.4*.

Sun Welcomes Your Comments

Sun is interested in improving its documentation and welcomes your comments and suggestions. To share your comments, go to `http://docs.sun.com` and click Send Comments. In the online form, provide the full document title and part number. The part number is located on the book's title page and in the document's URL. For example, the name of this book is Sun Open Telecommunications Platform 2.0 Installation Guide and the part number of this book is 820-3533.

◆ ◆ ◆ CHAPTER 1

Installing Sun OTP Development Environment

This chapter describes the configurations supported by Sun OTP and provides the procedure to download and prepare Sun OTP software.

The following topics are discussed:

- "Downloading and Preparing Sun OTP Software" on page 11
- "Deployable Configurations" on page 14

Downloading and Preparing Sun OTP Software

This section describes the procedure for downloading and preparing Sun OTP media files.

Note – The minimum free space required to prepare the ISO image is 10 GB.

The following table lists the ISO image zip files that are present for Sun OTP:

TABLE 1–1 Sun OTP Image Zip Files

Sun OTP Distribution	DVD Label	Files

Solaris SPARC bootable DVD ISO image	DVD 1	`otp-20-boot-sparc-dvd.iso-a.zip`
		`otp-20-boot-sparc-dvd.iso-b.zip`
		`otp-20-boot-sparc-dvd.iso-c.zip`
		and so on

TABLE 1–1 Sun OTP Image Zip Files *(Continued)*

Sun OTP Distribution	DVD Label	Files

Solaris x64 bootable DVD ISO image	DVD 2	`otp-20-boot-x64-dvd.iso-a.zip`
		`otp-20-boot-x64-dvd.iso-b.zip`
		`otp-20-boot-x64-dvd.iso-c.zip` and so on

Combined (SPARC and x64) non-bootable distribution	DVD 3	`otp-20-combined-dvd-iso-a.zip`
		`otp-20-combined-dvd-iso-b.zip`
		`otp-20-combined-dvd-iso-c.zip` and so on

▼ To Download and Prepare Sun OTP Software

1. **Log in as root (`su - root`) to a server that is network-accessible by your Sun OTP system.**

2. **(Optional) Download and install the Sun Download Manager.**

   Downloads of large files using browsers can sometimes fail. For this reason, use the Sun Download Manager to download Sun OTP installation zip files. For instructions about how to download, install, and use the Sun Download Manager, go to `http://www.sun.com/download/sdm/index.xml`.

3. **Create a directory into which the installation zip files are to be saved.**

   For example, `/var/tmp/otp-download`

4. **Download the required Sun OTP installation zip files**

   Refer to Sun OTP Image Zip Files to determine the files to download.

5. **Verify whether the files are downloaded properly.**

   a. **Download the md5 checksum file `md5list.txt`.**

   b. **For each downloaded file, type the following command.**

      `/usr/bin/digest -a md5` *filename*

      where *filename* is the name of the downloaded file.

      Compare the md5 checksum value of this command with the corresponding md5 checksum value of the downloaded file in `md5list.txt`. The two values must be same for successful download.

6 Create a single Sun OTP ISO image.

a. Unzip each of the ISO image zip files.

For example:

```
unzip otp-20-combined-dvd-iso-a.zip

unzip otp-20-combined-dvd-iso-b.zip

unzip otp-20-combined-dvd-iso-c.zip
```

b. Concatenate the unzipped ISO files to a single ISO image.

For example:

```
cat otp-20-combined-dvd-iso-a otp-20-combined-dvd-iso-b \
otp-20-combined-dvd-iso-c > otp-20-combined-dvd.iso
```

7 Use any of the following methods to prepare the Sun OTP ISO image.

a. Burn the Sun OTP ISO image to a DVD.

Use the software that supports your DVD burner to create a DVD using this Sun OTP ISO image (for example, `cdrw` utility on a Solaris system).

Ensure that you use the correct kind of media supported by your DVD burner. There are DVD-R/DVD-RW and DVD+R/DVD+RW recordable DVDs. All DVD burners do not support both media. Do not use DVD+R DL (dual layer) discs.

b. Create an empty NFS-mounted directory and then mount Sun OTP to the NFS-mounted directory as follows:

- Create an empty directory that will be used as the Sun OTP ISO image mount-point directory. For example: `mkdir /var/OTP/otp-download`
- Add the mount-point directory name to the `/etc/dfs/dfstab` file.

  For example: `echo 'share -F nfs -o ro,log=global -d "Sun OTP ISO mount \ point" /var/OTP/otp-download' >> /etc/dfs/dfstab`
- Disable and enable NFS.

  ```
  svcadm disable nfs/server

  svcadm enable nfs/server
  ```
- Mount the Sun OTP ISO image to the mount-point directory. For example:

  ```
  mount -F hsfs -o ro `lofiadm -a
  /var/tmp/otp-download/otp-20-combined-dvd.iso` /var/OTP/otp-download
  ```

Deployable Configurations

You can deploy Sun OTP 2.0 in the following supported configurations.

Stand-alone Sun OTP System Without Zones

A stand-alone Sun OTP system is hosted on a physical hardware platform. In this configuration, all the Sun OTP components are deployed in the global zone.

The steps to deploy Sun OTP in this configuration are described in Chapter 2, "Installing Sun OTP Using Sun OTP Bootable DVD."

Stand-alone Sun OTP System With Zones

In this configuration, Sun OTP components are deployed on the stand-alone system as follows:

- Sun OTP high availability service, Sun OTP application provisioning service, Sun OTP system management service, and shared components are deployed in the global zone.
- Sun OTP security service is deployed in the non-global zone.

Clustered Sun OTP System Without Zones

A clustered Sun OTP system consists of two or more hosts. In this configuration, all the Sun OTP components are deployed in the global zone.

Clustered Sun OTP System With Zones

In this configuration, Sun OTP components are deployed on the clustered system as follows:

- Sun OTP high availability service, Sun OTP application provisioning service, Sun OTP system management service, and shared components are deployed in the global zone.
- Sun OTP security service is deployed in the non-global zone.

Stand-alone Sun OTP System with Logical Domains

In this configuration, all the Sun OTP components are deployed inside a logical domain. This logical domain must be created before installing Sun OTP.

◆ ◆ ◆ CHAPTER 2

Installing Sun OTP Using Sun OTP Bootable DVD

This chapter provides the procedure to install Sun OTP using Sun OTP bootable DVD.

- "Sun OTP Host Disk Drive Partition Requirements" on page 15
- "Installing Sun OTP Using Sun OTP Bootable DVD Image" on page 16

Sun OTP Host Disk Drive Partition Requirements

Before you install Solaris 10 Update 3, review the Sun OTP host disk drive partitioning requirements listed in the following table.

TABLE 2–1 Sun OTP Host Disk Drive Partition Requirements

Slice	Partition	Size
0	/ (root) **Note –** For high availability, it is recommended that the root partition is mirrored. See *Solaris Volume Manager Administration Guide* for more information.	All remaining free space on the disk after allocating space for slices 2 through 7.
1	swap	Two to three times total system RAM, or 4096 Mbytes, whichever is greater.
2	overlap	The entire system disk.

TABLE 2–1 Sun OTP Host Disk Drive Partition Requirements *(Continued)*

3	`/globaldevices`	512 Mbytes minimum. The Sun OTP high availability service later assigns this slice a different mount point and mounts the slice as a cluster file system. **Note –** `/globaldevices` can reside on any unused slice on any disk on the server. Failure to allocate `/globaldevices` on a Sun OTP system will cause Sun Open Telecommunications Platform to fail.
4 through 6	unused	Not used.
7	Solaris Volume Manager	128 Mbytes Used by Solaris Volume Manager software for the state database replica.

Installing Sun OTP Using Sun OTP Bootable DVD Image

This section describes Sun Open Telecommunications Platform (Sun OTP) installation using Sun OTP bootable DVD image on a stand-alone host without zones.

▼ To Install Sun OTP Using Sun OTP Bootable DVD Image

This is the recommended procedure on how to install Sun OTP for developer workstation installation/configuration. In this procedure, all the OTP services are installed in the global zone. All the OTP services are installed through the plans in Sun OTP application provisioning service.

Before You Begin

- Refer to Appendix B, "Sun OTP Hardware and Software Requirements" to determine which hardware is qualified and the hardware requirements.
- Review the disk drive partition requirements described in Table 2–1.
- Set up a naming service such as DNS, NIS, NIS+, or `/etc/hosts` and all host names and IP addresses must be set up on that naming service. See *System Administration Guide: Naming and Directory Services (DNS, NIS, and LDAP)*.
- Prepare the worksheet for the installation. Refer to "Stand-alone Sun OTP Host Plan Worksheet" on page 29.

1 **Install Solaris OS from the bootable OTP DVD.**

Refer to *Solaris 10 11/06 Installation Guide: Basic Installations* or *Solaris 10 11/06 Installation Guide: Solaris Flash Archives (Creation and Installation)* for more information.

- **On SPARC systems**

  a. **Insert the bootable Sun OTP DVD.**

  Note – The bootable DVD for SPARC contains the hybrid flash image that can be used for deploying the sun4v and sun4u hardware architecture platforms.

  b. **Start the installation from the bootable DVD by typing the following command:**

  ```
  boot cdrom
  ```

  This will prompt you for an interactive Solaris installation.

  c. **Respond to the system identification and configuration screens.**

  d. **From the Solaris Interactive Installation screen, select F4_Flash install.**

  e. **From the Flash Archive Retrieval Method screen, place the X symbol on Local File and press F2_Continue.**

  f. **From the Flash Archive Addition screen, provide the** `/cdrom/Solaris_10/otp_sparc.flarc` **path and then press F2_Continue.**

  Continue to respond to the remaining screens until the installation starts and completes.

  g. **When the system reboots, insert the installation DVD.**

- **On x64 systems**

Caution – Installation does not ask for the partitioning or image name. The first disk is chosen automatically and OTP default disk formatting is applied. The existing data, if any, is overwritten.

  a. **Select CDROM as a boot device in BIOS.**

  b. **Respond to the system identification and configuration screens.**

  c. **When the system reboots, insert the installation DVD.**

2 Set up the self-contained Sun OTP provisioning server on the stand-alone host.

a. Log in as root (`su - root`) to the stand-alone host.

b. Add the logical host name and the logical IP address to the `/etc/hosts` file.

c. Set up the Sun OTP provisioning server on the stand-alone host.

`/opt/SUNWotp/cli/setupExternalInstallServer -M` *mediadir* `-N single -R SSH -P` *passwordfile* `-L` *logicalhost* `-I` *logicalip*

mediadir is the fully qualified path name to the Open Telecommunications Platform installation source directory. The media directory is the path where the installation DVD is mounted.

logicalhost and *logicalip* are unused logical host names and logical IP addresses.

passwordfile is the absolute path of the password file. You can create this file in your home directory. The password file must contain a line with a valid password for the Sun OTP provisioning server. The password can be 8 to 12 alphanumeric characters.

Note – Once you set up the Sun OTP provisioning server with this password, the user name to access the Sun OTP provisioning server is `otpadmin` and the password is the password in the password file.

The password specified in this step and the password that will be specified during the Setup Configuration plan must be the same.

---

3 Prepare the Sun OTP hosts.

a. Install the remote agent on the Sun OTP host.

`/opt/SUNWotp/cli/setupRemoteAgent -c SSH` *mediadir*

mediadir is the fully qualified path name to the Open Telecommunications Platform installation source directory. The media directory is the path where the installation DVD is mounted.

b. Configure SSH for the remote agent.

```
/usr/bin/passwd n1spsotp
```

c. Initialize the SSH keys.

```
su - spsotp
```

```
cat /var/otp/.ssh/id_rsa.pub | ssh n1spsotp@hostname "tee >>
/export/home/n1spsotp/.ssh/authorized_keys2"
```

hostname is the host name of Sun OTP host.

4. **Open a browser and log in to the Sun OTP application provisioning service on the stand-alone host.**

   Go to the URL https://*install server*:9090 where *install server* is the IP address or the fully-qualified name of the Sun OTP provisioning server.

5. **Type the user name and password.**

   The user name is `otpadmin`. The password is the password provided in the password file while setting up the Sun OTP provisioning server.

6. **Add the stand-alone Sun OTP host to the self-contained Sun OTP provisioning server.**

   a. **Click Host Setup in the left menu to display the Host Setup page.**

   b. **Click hosts in the central menu to display the hosts page.**

   c. **In the host field, type the name of the Sun OTP host.**

   d. **(Optional) In the description field, type a description of the Sun OTP host.**

   e. **Click create.**

      The host details edit page is displayed.

   f. **To include the remote agent, select the include remote agent on this physical host check box.**

   g. **Choose SSH (encrypted) from the connection type drop-down list.**

   h. **Type the host name in the ip address or name field.**

   i. **Type the following entry in the advanced parameters field.**

      ```
      cprefix=/opt/SUNWn1sps-ra/N1_Service_Provisioning_System/agent,sshargs=-l|n1spsotp
      ```

   j. **Click add to host sets.**

   k. **Select com.sun.solaris#SolarisHostSet from the add host sets drop-down list.**

   l. **Click add host to selected host sets.**

   m. **Scroll to the bottom of the page and click save.**

   n. **In the hosts page, click the name of the host that is added.**

   o. **Click update remote agent.**

p. **After successful update, click prepare remote agent.**
   The host is prepared for provisioning.

7 **Click OTP Setup to display the Sun Open Telecommunications Platform installation steps page.**

8 **Configure Sun OTP installation plan variables.**

   a. **Click Setup Configuration and click run.**
      The SetupConfig screen appears.

   b. **Type the host name on which you want to install Sun OTP in the target host field.**

   c. **Enter the password for the `otpadmin` user in the Enter otpadmin password field.**

   d. **Confirm the password in the Confirm otpadmin password field.**

   e. **Click select from list under variable settings.**
      The select variable setting from list... screen appears.

   f. **At the bottom of the select variable setting from list... screen, click create set to create a new variable set.**

   g. **Type a new variable set name in the Set Name field.**

   h. **Click the check boxes for the appropriate plan variables for which you want to enter the values.**

   i. **Type the values for the appropriate plan variables in the text fields. Refer to Appendix A, "Sun OTP Plan Worksheet" to determine the values.**

   j. **Click save to save the variable set.**

   k. **Close the select variable setting from list... screen.**

   l. **In the SetupConfig screen, click the drop-down list under variable settings, and choose the new variable set.**

   m. **Click run plan (includes preflight).**

9 **Install the OS patches on the Sun OTP host.**

   a. **Click Patch and click run.**
      The InstallPatchOS screen appears.

b. Type the host name on which you want to install the OS patches in the target host field.

c. Click run plan (includes preflight).

When the plan completes, wait for the Sun OTP host to boot into multi-user mode.

10 Install and configure the Sun OTP high availability service in the global zone on the Sun OTP host.

a. Click Install Availability Service and click run.

The InstallAvailability1 screen appears.

b. Type the host name on which you want to install Sun OTP in the target host field.

c. Click run plan (includes preflight).

When the plan completes, wait for the Sun OTP host to reboot.

d. Click Configure Availability Service and click run.

The InstallAvailability2 screen appears.

e. Type the host name on which you want to install Sun OTP in the target host field.

f. Click run plan (includes preflight).

11 Install the Sun OTP system management service in the global zone on the Sun OTP host.

a. Click Install System Management Service and click run.

The InstallManagement screen appears.

b. Type the host name on which you want to install Sun OTP in the target host field.

c. Click run plan (includes preflight).

12 Install the Sun OTP application provisioning service in the global zone on the Sun OTP host.

a. Click Install Provisioning Service and click run.

The InstallProvisioning screen appears.

b. Type the host name on which you want to install Sun OTP in the target host field.

c. Click run plan (includes preflight).

13 Install the Sun OTP security service in the global zone on the Sun OTP host.

a. Click Install Security Service and click run.

The InstallSecurity screen appears.

b. Type the host name on which you want to install Sun OTP in the target host field.

c. Click run plan (includes preflight).

14 Configure and enable high availability for Sun OTP services.

a. Click Configure Components and click run.

The Configure screen appears.

This step creates and starts resource groups for the Sun OTP system management service, the Sun OTP application provisioning service, and the Sun OTP security service. This step also configures and starts master-to-master replication (MMR).

b. Type the host name on which you want to install Sun OTP in the target host field.

c. Click run plan (includes preflight).

Note – Self-contained Sun OTP provisioning server uses a specific logical host name and IP address defined at the beginning of the Sun OTP installation. However, to make Sun OTP application provisioning service highly available, the logical hostname that was previously used will be released upon successful completion of the Configure and Enable HA service plan, and the Sun OTP application provisioning service will be accessible through the Management and Provisioning logical hostname and IP address.

---

15 Install Web SSO.

Note – Verify the completion status of the previous plan (Configure and Enable HA service plan) through the `/var/OTP/SUNWotp.log` file before running the Install Web SSO plan. The file must have the line that reads “enableHA - COMPLETED”.

---

a. Click Install Web SSO and click run.

The InstallWebSSO screen appears.

b. Type the host name in the target host field.

c. Click run plan (includes preflight).

Note – Monitor the `/var/OTP/SUNWotp-debug.log` file to check whether the resource group `otp-system-rg` has been restarted. If the resource group has not been restarted, restart the resource group manually by typing the following command on any host of the cluster.

```
/usr/cluster/bin/clrg online otp-system-rg
```

The installation log files, input files generated for the plans, installation registry information, and the debug log files are stored in the `/var/OTP` directory.

Troubleshooting

The following steps need to be performed if you want to change the values for the configuration variables during the installation:

- Click OTP Setup in the left panel.
- Click the Setup Configuration plan.
- Click run.
- Select the appropriate variable set and click select from list.
- Click edit and update the required plan parameters.
- Save the modified variable settings.
- Choose the target host and click run plan (includes preflight).
- Resume the other plans from the point where they were previously stopped.

◆ ◆ ◆ CHAPTER 3

Advanced Installation Options

Instead of bootstrapping systems using a physical DVD, you can place the flash archive on a jumpstart server or use an existing Sun OTP provisioning server.

Using JumpStart

Refer to "To Prepare to Install a Solaris Flash Archive With a Custom JumpStart Installation" in *Solaris 10 11/06 Installation Guide: Custom JumpStart and Advanced Installations*.

Note – The procedure to install the OTP flash archive using jumpstart is the same as using a standard flash archive process except that you need to copy the OTP flash archive (`otp_sparc.flarc` or `otp_x64.flarc`) from the bootable DVD.

Using Sun OTP Provisioning Server

Refer to "Adding a JET Module" in *Sun N1 Service Provisioning System User's Guide for OS Provisioning Plug-In 3.1*

Note – The procedure to install the OTP flash archive using jumpstart is the same as using a standard flash archive process except that you need to copy the OTP flash archive (`otp_sparc.flarc` or `otp_x64.flarc`) from the bootable DVD.

◆ ◆ ◆ APPENDIX A

Sun OTP Plan Worksheet

This appendix provides descriptions of Sun OTP installation variables and plan worksheet for stand-alone installation without zones.

The following topics are discussed:

- "Sun OTP Plan Settings Description" on page 27
- "Stand-alone Sun OTP Host Plan Worksheet" on page 29

Sun OTP Plan Settings Description

The plan settings are done in the Setup Configuration plan.

The following list describes each of the Sun OTP plan settings that are used by the stand-alone installation without zones. These settings need to be specified in the Setup Configuration plan during the installation.

- **mediaDirectory**

  The fully qualified path name to the Sun Open Telecommunications Platform installation source directory. The media directory is the path where the installation DVD is mounted.

- **clusterName**

  Name of the cluster. The length of the cluster name must be less than 19 characters.

- **mgmtHost**

  Logical host name used by the Sun OTP system management service. The logical host name must correspond to the management logical IP address.

- **mgmtIP**

  Logical IP address used by the Sun OTP system management service. The Sun OTP system management server IP address must be an unused IP address different from the Sun OTP provisioning server IP address.

- **jesHAHost**

Host name for Sun OTP security service shared address.

- **jesHANodeList**

  List of host names on which the Sun OTP security service is running.

- **mmrHostList**

  List of host names between which the master-to-master replication of data between directory server instances are provided.

- **applyAllPatches**

  Specifies whether all patches or only mandatory patches are to be installed.

- **spsRAConnectionType**

  Specifies the connection type between the Sun OTP application provisioning service master server and the remote agent. The values can be `SSH` or `RAW`. The default and recommended value is `SSH`.

  This variable must match the connection type that is provided while setting up the Sun OTP provisioning server and installing the remote agent.

- **domainName**

  Domain name used by the Sun OTP security service.

- **ssoCookieDomain**

  Domain name for the Web SSO cookies. The Domain name must start with a dot (.) symbol.

- **hostName**

  Host name of the stand-alone host. The length of the host name must be less than 19 characters.

- **hostType**

  Type of host in the cluster.

- **autoConfigureIPMP**

  Setting to determine whether IPMP is configured automatically.

- **nodeAuthentication**

  Setting to establish the authentication policies for hosts.

- **managementInterface**

  Name of the network interface used for the Sun OTP system management services. The name of the interface depends on the platform type.

- **provisioningInterface**

  Name of the network interface used for the Sun OTP application provisioning services. The name of the interface depends on the platform type.

Stand-alone Sun OTP Host Plan Worksheet

The following table lists the settings that you need to provide during installation and configuration of the Sun Open Telecommunications Platform on a stand-alone Sun OTP host.

Tip – Print the following table and then fill out the required information to use while installing and configuring the Sun Open Telecommunications Platform on the stand-alone Sun OTP host.

TABLE A–1 Stand-alone Sun OTP Host Worksheet

Plan Setting Name	Example
mediaDirectory	`/cdrom/otp_20_dvd/otp2.0`
clusterName	`stand-alone-cluster`
mgmtHost	`otp-node1b`
mgmtIP	`10.18.144.85`
jesHAHost	`otp-node1c`
jesHANodeList	`otp-node1`
mmrHostList	`otp-node1`
applyAllPatches	`yes`
spsRAConnectionType	`SSH`
domainName	czech.sun.com
ssoCookieDomain	.sun.com
hostName	`otp-node1`
hostType	`single`
autoConfigureIPMP	`no`
nodeAuthentication	`sys`
managementInterface	`bge0`
provisioningInterface	`bge0`

◆ ◆ ◆ APPENDIX B

Sun OTP Hardware and Software Requirements

This appendix provides the Sun Open Telecommunications Platform hardware and software requirements. The information in this appendix will help you to determine the operating system, hardware, and storage resources that are required to implement the Sun Open Telecommunications Platform system.

This appendix discusses the following topics:

- "Sun OTP System Requirements" on page 31
- "Sun OTP Qualified Hardware" on page 33

Sun OTP System Requirements

The following table lists the minimum Sun OTP system server requirements. Ensure that the Sun OTP provisioning server meets the following partitioning requirements.

TABLE B–1 Sun OTP System Server RAM, Disk, and Connectivity Requirements

Category	Requirement
Minimum physical memory	4 GB
Minimum disk space	provisioning server: 32 GB Sun OTP host: 72 GB
Ethernet connectivity for management interfaces	10/100 connection
Ethernet connectivity for provisioning and data interfaces	10/100/1000 connection

The following table lists the system requirements for Sun OTP system servers.

TABLE B–2 Sun OTP SystemServer Hardware, Operating System, Patch, and Firmware Requirements

Hardware	Management Port	OS	Patch	Firmware
Netra™ 240	Advanced Lights Out Manager (ALOM)	Solaris 10 Update 3, 64 bit	121683-04	OBP 4.22.23, POST 4.22.23, OBDIAG 4.22.23
Netra 440	ALOM	Solaris 10 Update 3, 64 bit	121685-02	OBP 4.22.19, POST 4.22.19, OBDIAG 4.22.19
Sun Fire™ V210	ALOM	Solaris 10 Update 3, 64 bit	121683-04	OBP 4.22.23, POST 4.22.23, OBDIAG 4.22.23
Sun Fire V215	ALOM	Solaris 10 Update 3, 64 bit	121683-04	OBP 4.22.23, POST 4.22.23, OBDIAG 4.22.23
Sun FireV240	ALOM	Solaris 10 Update 3, 64 bit	121683-04	OBP 4.22.23, POST 4.22.23, OBDIAG 4.22.23
Sun Fire V245	ALOM	Solaris 10 Update 3, 64 bit	121692-02	OBP 4.22.22, POST 4.22.22, OBDIAG 4.22.22
Sun Fire V440	ALOM	Solaris 10 Update 3, 64 bit	121685-02	OBP 4.22.19, POST 4.22.19, OBDIAG 4.22.19
Sun Fire V445	ALOM	Solaris 10 Update 3, 64 bit	121690-03, 123485-01	OBP 4.22.24, POST 4.22.24, OBDIAG 4.22.24, 1.0.39
Sun Fire V490	Remote System Control (RSC)	Solaris 10 Update 3, 64 bit	121689-01	OBP 4.22.19, POST 4.22.19, OBDIAG 4.22.19
Sun Fire V890	RSC/ALOM	Solaris 10 Update 3, 64 bit	121688-01	OBP 4.22.19, POST 4.22.19, OBDIAG 4.22.19
Sun Fire T2000	ALOM	Solaris 10 Update 3, 64 bit	124750-03	Sun System Firmware 6.3.2 for non-LDOM support Sun System Firmware 6.4.6 for LDOM support

TABLE B–2 Sun OTP SystemServer Hardware, Operating System, Patch, and Firmware Requirements *(Continued)*

Hardware	Management Port	OS	Patch	Firmware
Sun Fire X2100 M2	Embedded Lights Out Manager (ELOM)	Solaris 10 Update 3, 64 bit	Sun Fire X2200 M2 Server Tools & Driver 1.5a ISO Image	BIOS - 3A15, SP - 2.91
Sun Fire X2200 M2	ELOM	Solaris 10 Update 3, 64 bit	Sun Fire X2100 M2 Server 1.5 CD ISO Release	BIOS - 3B16, SP - 2.91
Sun Fire X4100 M2	Integrated Lights Out Manager (ILOM)	Solaris 10 Update 3, 64 bit	Sun Fire X4100 M2 and Sun Fire X4200 M2 Servers Supplemental 1.2	LSI MPT SAS firmware 1.16.40, MPT BIOS 6.14.04, and SP Firmware 1.1.8
Sun Fire X4200 M2	ILOM	Solaris 10 Update 3, 64 bit	Sun Fire X4100 M2 and Sun Fire X4200 M2 Servers Supplemental 1.2	LSI MPT SAS firmware 1.16.40, MPT BIOS 6.14.04, and SP Firmware 1.1.8
Netra T2000	ALOM	Solaris 10 Update 3, 64 bit	126401-02	Sun System Firmware 6.3.2 for non-LDOM support Sun System Firmware 6.4.6 for LDOM support

Note –

- On SPARC systems, Sun OTP supports from 1 to 16-host clusters. On x64 systems, Sun OTP supports from 1 to 4–host clusters.

Sun OTP Qualified Hardware

The following table lists the hardware qualified by Sun OTP.

TABLE B–3 Sun OTP Qualified Hardware

Hardware	Storage	NIC
Sun Fire V210	Sun StorEdge 3120 SCSI (JBOD)	On-board GE
	Sun StorEdge 3310 SCSI (RAID)	X4445A QGE
	Sun StorEdge 3310 SCSI (JBOD)	X4150A-2 GE Cu
	Sun StorEdge 3320 SCSI (JBOD)	X4422A-2 Combo
	Sun StorEdge 3510 FC Array (RAID)	
	Sun StorEdge 3511 FC Array (RAID-SATA)	
Sun Fire V240	Sun StorEdge 3120 SCSI (JBOD)	On-board GE
	Sun StorEdge 3310 SCSI (RAID)	X4445A QGE
	Sun StorEdge 3310 SCSI (JBOD)	X4150A-2 GE Cu
	Sun StorEdge 3320 SCSI (RAID)	X4422A-2 Combo
	Sun StorEdge 3320 SCSI (JBOD)	
	Sun StorEdge 3510 FC Array (RAID)	
	Sun StorEdge 3511 FC Array (RAID-SATA)	
	Sun StorEdge 6130	
	Sun StorageTek 6140	
Netra 240	Sun StorEdge 3120 SCSI (JBOD)	On-board GE
	Sun StorEdge 3310 SCSI (JBOD)	X4445A QGE
	Sun StorEdge 3320 SCSI (RAID)	X4150A-2 GE Cu
	Sun StorEdge 3320 SCSI (JBOD)	X4422A-2 Combo
	Sun StorEdge 3510 FC Array (RAID)	
	Sun StorEdge 3511 FC Array (RAID-SATA)	

TABLE B–3 Sun OTP Qualified Hardware *(Continued)*

Hardware	Storage	NIC
Sun Fire V215	Sun StorEdge 3310 SCSI (RAID)	On-board GE
	Sun StorEdge 3320 SCSI (RAID)	X4150A-2 GE Cu
	Sun StorEdge 3510 FC Array (RAID)	X4445A QGE
		X4422A-2 Combo
	Sun StorageTek 6140	X7280A-2 GE Cu
Sun Fire V245	Sun StorEdge 3310 SCSI (RAID)	On-board GE
	Sun StorEdge 3320 SCSI (RAID)	X4150A-2 GE Cu
	Sun StorEdge 3510 FC Array (RAID)	X4445A QGE
		X4422A-2 Combo
	Sun StorEdge 6130	X7280A-2 GE Cu
	Sun StorageTek 6140	
Sun Fire X2100 M2	Sun StorEdge 3310 SCSI (RAID)	On-board GE
	Sun StorEdge 3310 SCSI (JBOD)	X7280A-2 GE Cu
	Sun StorEdge 3510 FC Array (RAID)	
	Sun StorEdge 3511 FC Array (RAID-SATA)	
	Sun StorEdge 6130	
	Sun StorageTek 6140	
Sun Fire X2200 M2	Sun StorEdge 3310 SCSI (RAID)	On-board GE
	Sun StorEdge 3310 SCSI (JBOD)	X7280A-2 GE Cu
	Sun StorEdge 3510 FC Array (RAID)	
	Sun StorEdge 3511 FC Array (RAID-SATA)	
	Sun StorEdge 6130	
	Sun StorageTek 6140	

TABLE B–3 Sun OTP Qualified Hardware *(Continued)*

Hardware	Storage	NIC
Sun Fire V440	Sun StorEdge 3120 SCSI (JBOD)	On-board GE
	Sun StorEdge 3310 SCSI (RAID)	X4445A QGE
	Sun StorEdge 3310 SCSI (JBOD)	X4150A-2 GE Cu
	Sun StorEdge 3320 SCSI (RAID)	X4422A-2 Combo
	Sun StorEdge 3320 SCSI (JBOD)	
	Sun StorEdge 3510 FC Array (RAID)	
	Sun StorEdge 6130	
	Sun StorageTek 6140	
Netra 440	Sun StorEdge 3310 SCSI (RAID)	On-board GE
	Sun StorEdge 3310 SCSI (JBOD)	X4445A QGE
	Sun StorEdge 3320 SCSI (RAID)	X4150A-2 GE Cu
	Sun StorEdge 3320 SCSI (JBOD)	X4422A-2 Combo
	Sun StorEdge 3510 FC Array (RAID)	
Sun Fire V490	Sun StorEdge 3310 SCSI (RAID)	On-board GE
	Sun StorEdge 3320 SCSI (RAID)	X4445A QGE
	Sun StorageTek 6140	X4150A-2 GE Cu
		X4422A-2 Combo
Sun Fire T2000	Sun StorEdge 3120 SCSI (JBOD)	On-board GE
	Sun StorEdge 3310 SCSI (RAID)	X4150A-2 GE Cu
	Sun StorEdge 3510 FC Array (RAID)	
	Sun StorEdge 6130	
	Sun StorageTek 6140	
Netra T2000	Sun StorEdge 3511 FC Array (RAID-SATA)	On-board GE
		X4150A-2 GE Cu
	Sun StorEdge 6130	
	Sun StorageTek 6140	

TABLE B–3 Sun OTP Qualified Hardware *(Continued)*

Hardware	Storage	NIC
Sun Fire V445	Sun StorEdge 3320 SCSI (RAID)	On-board GE
	Sun StorEdge 3510 FC Array (RAID)	X4150A-2 GE Cu
	Sun StorageTek 6140	X4445A QGE
		X4422A-2 Combo
		X7280A-2 GE Cu
Sun Fire X4100 M2	Sun StorEdge 3120 SCSI (JBOD)	On-board GE
	Sun StorEdge 3320 SCSI (RAID)	X7280A-2 GE Cu
	Sun StorEdge 3510 FC Array (RAID)	
	Sun StorageTek 6140	
Sun Fire X4200 M2	Sun StorEdge 3120 SCSI (JBOD)	On-board GE
	Sun StorEdge 3510 FC Array (RAID)	X7280A-2 GE Cu
	Sun StorEdge 6130	
	Sun StorageTek 6140	
Netra X4200 M2	Sun StorEdge 3510 FC Array (RAID)	On-board GE
		X7280A-2 GE Cu
	Sun StorEdge 3511 FC Array (RAID-SATA)	
	Sun StorEdge 6130	
	Sun StorageTek 6140	
Sun Fire V890	Sun StorEdge 3310 SCSI (RAID)	On-board GE
	Sun StorEdge 3320 SCSI (RAID)	X4445A QGE
	Sun StorageTek 6140	X4150A-2 GE Cu
		X4422A-2 Combo

The following table lists the storage device firmware requirements.

TABLE B–4 Sun OTP System Storage Device Firmware Requirements

Type	Patch	Requirement
StorEdge™ 3510 FC	RAID 113723-15, JBOD 113662-01	Version 2.4 of the `sccli` CLI utility must be installed first.

TABLE B–4 Sun OTP System Storage Device Firmware Requirements *(Continued)*

Type	Patch	Requirement
StorEdge 3511 FC	113724-09	Version 2.4 of the `sccli` CLI utility must be installed first.
StorEdge 3120 SCSI	113728-02 array controller firmware	Version 2.4 of the `sccli` CLI utility must be installed first.
StorEdge 3310 SCSI	113722-15	Version 2.4 of the `sccli` CLI utility must be installed first.
StorEdge 3320 SCSI	113730-01	Version 2.4 of the `sccli` CLI utility must be installed first.
StorEdge 6130 FC	118185-15 6130 services release, 117856-19 6130 baseline firmware release	StorEdge 6130 array firmware upgrader patch 118185-15 must be installed first.
StorageTek 6140 FC	120337 5.1.0.11 baseline firmware release	Available through the Common Array Manager (CAM) software package.

◆ ◆ ◆ APPENDIX C

Sun OTP Command-Line Installation

This appendix provides an example of Sun OTP installation procedure using the command-line installation method.

■ "Installing Sun OTP Using Command-Line Installation" on page 39

Installing Sun OTP Using Command-Line Installation

This section describes Sun OTP installation using the command-line installation method.

▼ To Install Sun OTP Using Command-Line Installation

Note – Instead of GUI installation, Sun OTP can be installed using the command-line scripts provided by the command-line installation method. This procedure is provided only for demonstration purposes.

Before You Begin

- Refer to Appendix B, "Sun OTP Hardware and Software Requirements" to determine which hardware is qualified and the hardware requirements.
- Review the disk drive partition requirements described in Table 2–1.
- Set up a naming service such as DNS, NIS, NIS+, or `/etc/hosts` and all host names and IP addresses must be set up on that naming service. See *System Administration Guide: Naming and Directory Services (DNS, NIS, and LDAP)*.
- Prepare the worksheet for the installation. Refer to "Stand-alone Sun OTP Host Plan Worksheet" on page 29.

1 **Install Solaris OS from the bootable OTP DVD.**

Refer to *Solaris 10 11/06 Installation Guide: Basic Installations* or *Solaris 10 11/06 Installation Guide: Solaris Flash Archives (Creation and Installation)* for more information.

- **On SPARC systems**

  a. **Insert the bootable Sun OTP DVD.**

  Note – The bootable DVD for SPARC contains the hybrid flash image that can be used for deploying the sun4v and sun4u hardware architecture platforms.

  b. **Start the installation from the bootable DVD by typing the following command:**

  ```
  boot cdrom
  ```

  This will prompt you for an interactive Solaris installation.

  c. **Respond to the system identification and configuration screens.**

  d. **From the Solaris Interactive Installation screen, select F4_Flash install.**

  e. **From the Flash Archive Retrieval Method screen, place the X symbol on Local File and press F2_Continue.**

  f. **From the Flash Archive Addition screen, provide the** `/cdrom/Solaris_10/otp_sparc.flarc` **path and then press F2_Continue.**

  Continue to respond to the remaining screens until the installation starts and completes.

  g. **When the system reboots, insert the installation DVD.**

- **On x64 systems**

Caution – Installation does not ask for the partitioning or image name. The first disk is chosen automatically and OTP default disk formatting is applied. The existing data, if any, is overwritten.

  a. **Select CDROM as a boot device in BIOS.**

  b. **Respond to the system identification and configuration screens.**

  c. **When the system reboots, insert the installation DVD.**

2 Set up the self-contained Sun OTP provisioning server on the stand-alone host.

a. Log in as root (`su - root`) to the stand-alone host.

b. Add the logical host name and the logical IP address to the `/etc/hosts` file.

c. Set up the Sun OTP provisioning server on the stand-alone host.

`/opt/SUNWotp/cli/setupExternalInstallServer -M` *mediadir* `-N single -R SSH -P` *passwordfile* `-L` *logicalhost* `-I` *logicalip*

mediadir is the fully qualified path name to the Open Telecommunications Platform installation source directory. The media directory is the path where the installation DVD is mounted.

logicalhost and *logicalip* are unused logical host names and logical IP addresses.

passwordfile is the absolute path of the password file. You can create this file in your home directory. The password file must contain a line with a valid password for the Sun OTP provisioning server. The password can be 8 to 12 alphanumeric characters.

Note – Once you set up the Sun OTP provisioning server with this password, the user name to access the Sun OTP provisioning server is `otpadmin` and the password is the password in the password file.

The password specified in this step and the password that will be specified during the Setup Configuration plan must be the same.

---

3 Prepare the Sun OTP hosts.

a. Install the remote agent on the Sun OTP host.

`/opt/SUNWotp/cli/setupRemoteAgent -c SSH` *mediadir*

mediadir is the fully qualified path name to the Open Telecommunications Platform installation source directory. The media directory is the path where the installation DVD is mounted.

b. Configure SSH for the remote agent.

```
/usr/bin/passwd n1spsotp
```

c. Initialize the SSH keys.

```
su - spsotp
```

```
cat /var/otp/.ssh/id_rsa.pub | ssh n1spsotp@hostname "tee >>
/export/home/n1spsotp/.ssh/authorized_keys2"
```

hostname is the host name of Sun OTP host.

4 Install Sun OTP services.

a. Copy the `input_otp.dat` file to a local non-temporary directory.

```
cp /opt/SUNWotp/cli/templates/input_otp.dat /export/
```

b. Edit the `/export/input_otp.dat` file according to your configuration.

Type the values for the appropriate plan variables in the text fields. Refer to Appendix A, "Sun OTP Plan Worksheet" to determine the values.

c. Set up the Sun OTP configuration on the Sun OTP host.

```
/opt/SUNWotp/cli/deploy_otp -i S -f /export/input_otp.dat -o "-P passwordfile"
```

This command specifies the Sun OTP deployment parameters and validates these parameters provided in the `input_otp.dat` file.

d. Install the OS patches on the Sun OTP host.

```
/opt/SUNWotp/cli/deploy_otp -i P -f /export/input_otp.dat
```

When the command completes, wait for the Sun OTP host to boot into multi-user mode.

e. Install and configure the Sun OTP high availability service in the global zone on the Sun OTP host.

```
/opt/SUNWotp/cli/deploy_otp -i a -f /export/input_otp.dat -o "-N single"
```

When the command completes, wait for the Sun OTP host to reboot completely and then type the following command:

```
/opt/SUNWotp/cli/deploy_otp -c a -f /export/input_otp.dat -o "-N single"
```

f. Install and configure the Sun OTP system management service in the global zone on the Sun OTP host.

```
/opt/SUNWotp/cli/deploy_otp -i m -f /export/input_otp.dat
```

g. Install and configure the Sun OTP application provisioning service in the global zone on the Sun OTP host.

```
/opt/SUNWotp/cli/deploy_otp -i p -f /export/input_otp.dat
```

h. Install and configure the Sun OTP security service in the global zone on the Sun OTP host.

```
/opt/SUNWotp/cli/deploy_otp -i s -f /export/input_otp.dat
```

i. Configure and enable high availability for Sun OTP services.

```
/opt/SUNWotp/cli/deploy_otp -c h -f /export/input_otp.dat
```

This command creates and starts resource groups for Sun OTP system management service, Sun OTP application provisioning service, and Sun OTP security service. This command also configures and starts master-to-master replication (MMR).

Note – Self-contained Sun OTP provisioning server uses a specific logical host name and IP address defined at the beginning of the Sun OTP installation. However, to make Sun OTP application provisioning service highly available, the logical hostname that was previously used will be released upon successful completion of the Configure and Enable HA service plan, and the Sun OTP application provisioning service will be accessible through the Management and Provisioning logical hostname and IP address.

---

j. Install Web SSO.

```
/opt/SUNWotp/cli/deploy_otp -i o -f /export/input_otp.dat
```

Note – Monitor the `/var/OTP/SUNWotp-debug.log` file to check whether the resource group `otp-system-rg` has been restarted. If the resource group has not been restarted, restart the resource group manually by typing the following command on any host of the cluster.

```
/usr/cluster/bin/clrg online otp-system-rg
```

The installation log files, input files generated for the plans, installation registry information, and the debug log files are stored in the `/var/OTP` directory.

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