



An Oracle Technical Article  
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# How To Copy an Oracle Solaris 11 Express Software Package Repository

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## Introduction

Oracle Solaris 11 Express stores software packages in Image Packaging System (IPS) package repositories. Graphical and command line tools enable you to easily download and install packages from these repositories.

This paper describes how to create a local copy of an Oracle Solaris 11 Express IPS package repository. Reasons you might want to have a local copy of a package repository include:

- **Performance and security.** You do not want the client systems to go to the Internet to retrieve packages.
- **Replication.** You want to ensure that an installation that you perform next year is exactly the same as the installation you perform today.

This paper describes two ways to make a local copy of an IPS package repository: You can use the repository file from media or from the Oracle Solaris download site, or you can retrieve an entire repository from the Internet. In either case, you can serve the packages from a local web server or from a local directory.

## System Requirements

The system that hosts the IPS package repository can be either an x86-based or a SPARC-based system. The IPS repository server must be running the Oracle Solaris 11 Express operating system and must have 15 gigabytes of free space.

## Create a ZFS File System To Hold the Repository

Use a separate ZFS file system for your local package repository. Using a separate ZFS file system for your repository enables you to:

- Achieve better performance.
- Set separate file system characteristics, such as `compression` or `atime`.
- Directly snapshot and recover specified file systems.

If one system hosts more than one IPS repository, make each repository a separate ZFS snapshot so that you can rollback and recover each repository separately.

Create a new ZFS file system within `rpool`. Use the `zpool list` command to view your current ZFS pools. Use the `zfs list` command to view your current ZFS datasets.

```
$ zpool list
NAME      SIZE  ALLOC  FREE  CAP  DEDUP  HEALTH  ALTROOT
rpool    186G  12.8G  173G   6%  1.00x  ONLINE  -
$ zfs list
NAME      USED  AVAIL  REFER  MOUNTPOINT
rpool    14.7G  186G   93K    /rpool
...
```

Assume the root role:

```
$ su - root
```

Create a ZFS file system for the package repository in the root pool and set `compression` to `on`:

```
# zfs create -o compression=on rpool/export/repo2010_11
# zfs list
NAME      USED  AVAIL  REFER  MOUNTPOINT
rpool    14.7G  168G   94K    /rpool
rpool/export/repo2010_11  31K  168G   31K    /export/repo2010_11
...
```

## Copy the Repository From a File

This section describes how to make a local copy of an IPS package repository from a repository file that is on media or is available on the Oracle Solaris download site.

This section describes how to serve the local repository packages from a local web server. You could also serve the packages from a directory on your local network.

## Get the Package Repository File

Download the Oracle Solaris 11 Express IPS package repository `.iso` file from the same location where you downloaded the system installation image, or locate the repository DVD in the media packet. The repository is in two files and is approximately 5 gigabytes total.

Copy the repository files to the file system you created in the last step. Uncompress the files and concatenate them into one.

```
# unzip sol-11-exp-201011-repo-full-iso-a.zip
# unzip sol-11-exp-201011-repo-full-iso-b.zip
# cat sol-11-exp-201011-repo-full-iso-a sol-11-exp-201011-repo-full-iso-b > \
sol-11-exp-201011-repo-full.iso
# ls /export/repo2010_11
sol-11-exp-201011-repo-full.iso
# zfs list
NAME                                USED  AVAIL  REFER  MOUNTPOINT
rpool                                18.7G  164G   94K    /rpool
rpool/export/repo2010_11            3.93G  164G   3.93G  /export/repo2010_11
...
```

## Make the Contents of the Repository File Available

Make the contents of the repository `.iso` file available to the `pkg.depotd(1M)` server. Note that the `lofi(7D)` driver does not work inside a zone.

```
# lofiadm -a /export/repo2010_11/ sol-11-exp-201011-repo-full.iso
/dev/lofi/1
# lofiadm
Block Device  File                                     Options
/dev/lofi/1   /export/repo2010_11/ sol-11-exp-201011-repo-full.iso  -
# mount -F hsfs /dev/lofi/1 /mnt
```

If you receive an error message from the `mount` command, make sure you specified a full absolute path to the `.iso` file in the `lofiadm -a` option.

Check your work:

```
# df -k /mnt
Filesystem 1K-blocks  Used  Available  Use%  Mounted on
/dev/lofi/1  5138212  5138212          0  100%  /mnt
```

You can continue with the instructions to configure and start the repository server service, but you will need to remount the `.iso` image each time the repository server system restarts. To avoid the need to remount the `.iso` each time the system restarts, copy the repository files as described in the next section. Then continue with the instructions to restart the repository server service.

## Copy the Repository Files

To increase the performance of repository accesses and to avoid the need to remount the `.iso` image each time the system restarts, copy the repository files from `/mnt/repo` to a ZFS file system. Be sure to specify `/mnt/repo` and *not* `/mnt/repo/` if you want to copy the `repo` directory and not just the files and subdirectories in the `repo` directory. See the `rsync(1)` man page.

```
# rsync -aP /mnt/repo /export/repo2010_11
```

Check your work:

```
# df-k /export/repo2010_11
Filesystem            1K-blocks      Used Available  Use% Mounted on
rpool/export/repo2010_11 176548586  9103073 167445513    6% /export/repo2010_11
```

Unmount the image and deallocate the block device.

```
# umount /mnt
# lofiadm
Block Device  File                                Options
/dev/lofi/1   /export/repo2010_11/sol-11-exp-201011-repo-full.iso -
# lofiadm -d /dev/lofi/1
# lofiadm
Block Device  File                                Options
```

## Configure the Repository Server Service

Use Service Management Facility (SMF) commands to configure the repository server service.

```
# svccfg -s application/pkg/server setprop pkg/inst_root=/export/repo2010_11/repo
# svccfg -s application/pkg/server setprop pkg/readonly=true
```

Check your work:

```
# svcprop -p pkg/inst_root application/pkg/server
/export/repo2010_11/repo
```

To set multiple service properties, use the following command to open a `vi` session where you can edit all the properties at once:

```
# svccfg -s pkg/server editprop
```

Remember to remove the comment marker (`#`) from the beginning of any lines you change.

Use `pkg.depotd` to serve the repository to clients. By default, `pkg.depotd` listens for connections on port 80. You can change the port by resetting the `pkg/port` property. See the `pkg.depotd(1M)` man page.

## Start the Repository Service

Restart the `pkg.depotd` repository service.

```
# svcadm refresh application/pkg/server
# svcadm enable application/pkg/server
```

To check whether the repository server is working, open a browser window on the <http://localhost/> location. You should see a page very similar to the <http://pkg.oracle.com/solaris/release> page.

## Set the Publisher URI

The default preferred publisher for Oracle Solaris 11 Express 2010.11 systems is `solaris` and the default origin for that publisher is <http://pkg.oracle.com/solaris/release>. If you want your clients to get packages from your local repository, you need to reset the origin for the `solaris` publisher.

Execute the following command on each client:

```
# pkg set-publisher -G http://pkg.oracle.com/solaris/release/ \
-g http://localhost/ solaris
```

## Copy the Repository From the Internet

This section describes how to make a local copy of an IPS package repository by copying the repository from its default Internet location.

This section describes how to serve the local repository packages from a directory on your local network. You could also serve the packages from a local web server as shown in the previous example.

### Create the Infrastructure for the Local Repository

Create the required `pkg(5)` repository infrastructure so that you can copy the repository.

```
# pkgrepo create /export/repo2010_11
```

### Copy the Repository

This example shows copying the Oracle Solaris 11 Express support repository. To use the support repository, you should have already obtained a key and certificate and installed them on your system.

This process takes on the order of an hour or two to complete. After the repository is copied, the process does some finish work; after you see the “Completed” line, wait another few minutes to get your prompt back. If you update this repository later, only the changes are copied, and the process might take much less time.

```
# pkgrecv -s http://pkg.oracle.com/solaris/support/ -d /export/repo2010_11 \
--key path-to-key-file --cert path-to-cert-file '*'
Processing packages for publisher solaris ...
Creating Plan
Retrieving and evaluating 3941 package(s)...
PROCESS                ITEMS      GET (MB)      SEND (MB)
developer/build/cmake   446/3941   332.1/4589.7 1000.2/14511.8
...
Completed                3941/3941 4589.7/4589.7 14511.8/14511.8
```

### Build a Package Index

The repository creation commands do not build a package index by default. To enable clients to search for packages in the local repository, use the following command to build an index of the packages in the repository.

```
# pkgrepo -s /export/repo2010_11 refresh
Repository refresh initiated.
```

### Set the Publisher URI

In this example, you copied the Oracle Solaris 11 Express 2010.11 support repository. If you want your clients to get packages from your local repository, you need to reset the origin for the `solaris` publisher. Execute the following command on each client:

```
# pkg set-publisher -G http://pkg.oracle.com/solaris/release/ \  
-g file:///net/host/export/repo2010_11/ solaris
```

If the client publisher origin is already set to the default support repository, then use the following command to change the origin to the local copy:

```
# pkg set-publisher -G http://pkg.oracle.com/solaris/support/ \  
-g file:///net/host/export/repo2010_11/ solaris
```



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Software Package Repository  
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