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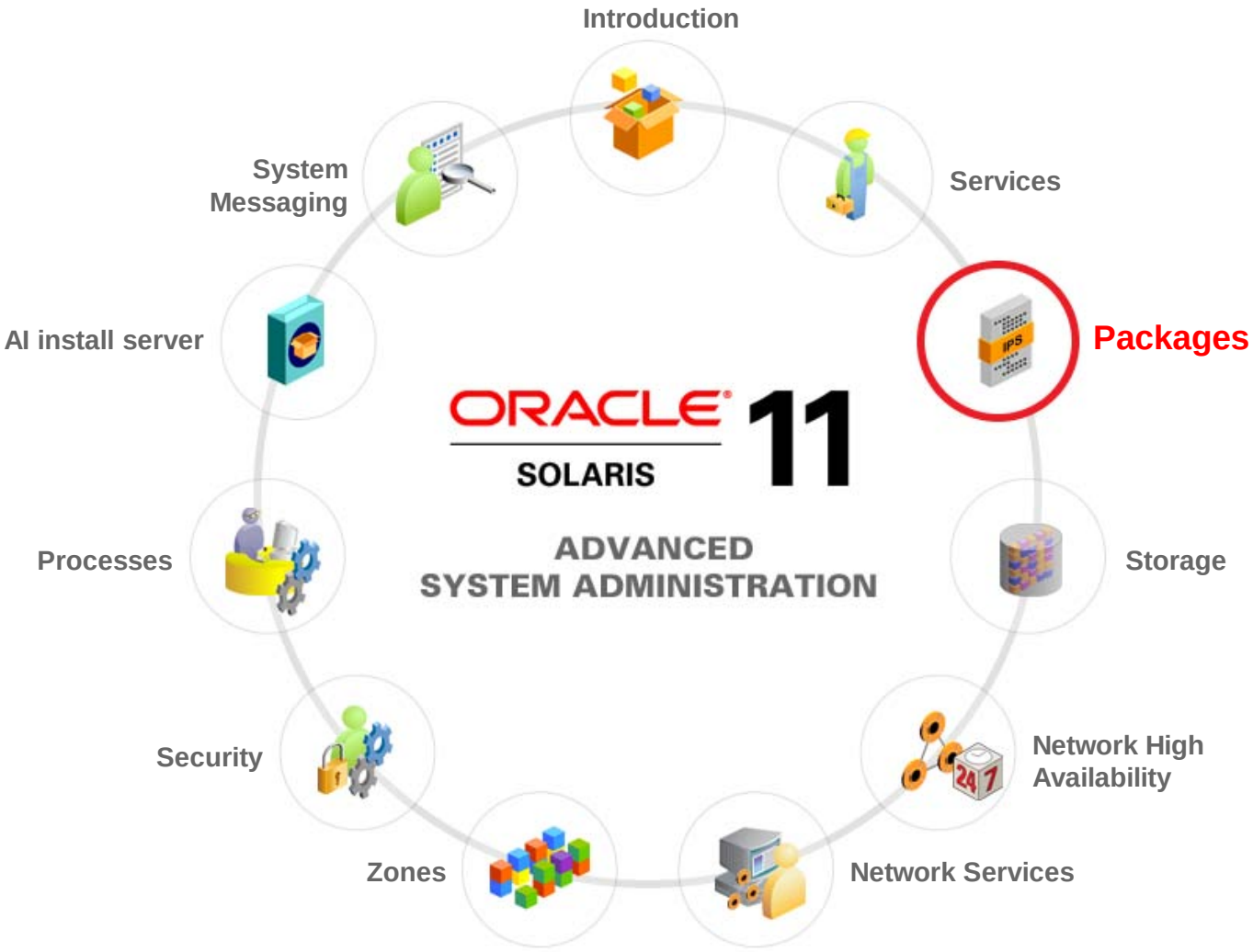
Managing Software Packages by Using IPS

Objectives

After completing this lesson, you should be able to:

- Describe Image Packaging System (IPS)
- Configure a local IPS package repository

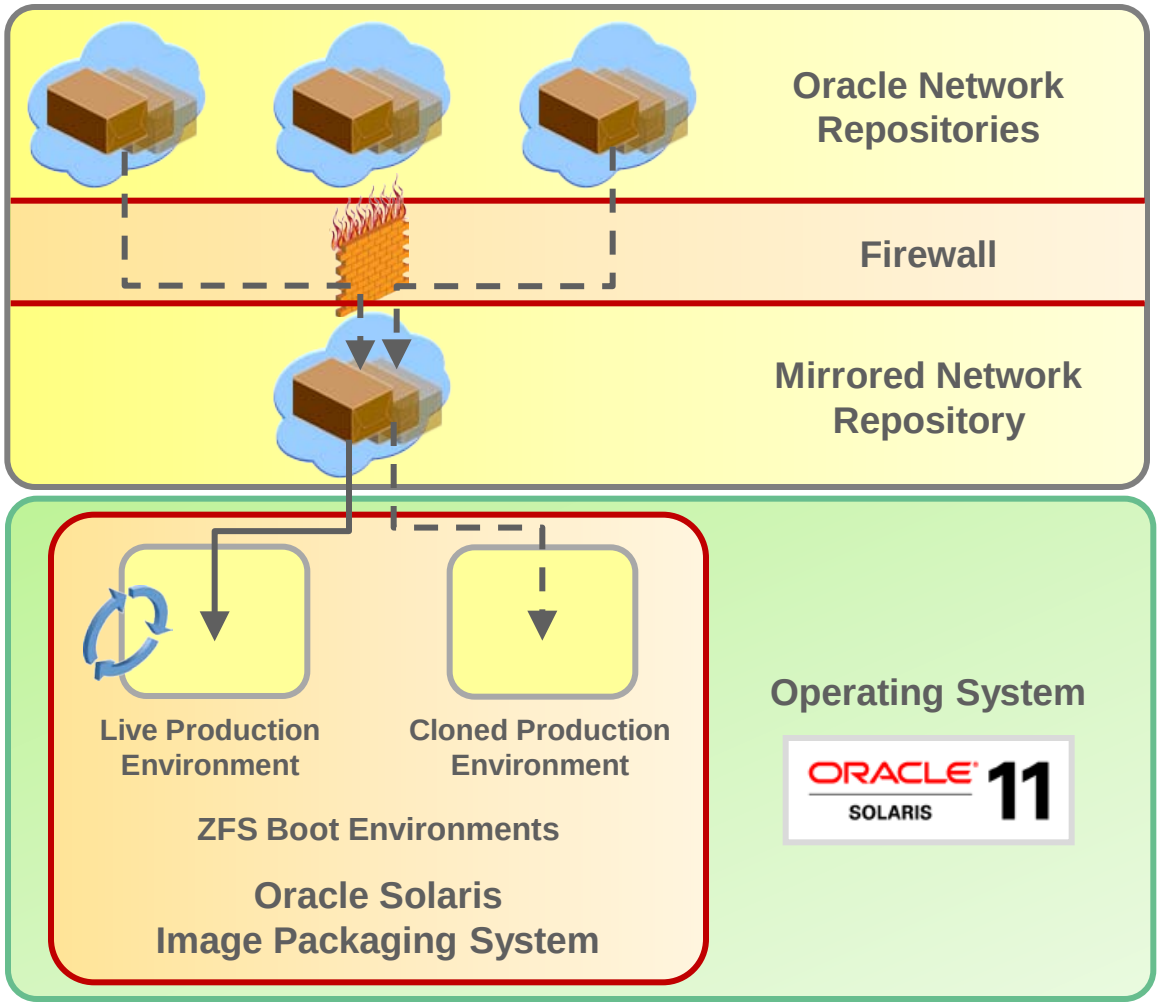
Job Workflow



Agenda

- Describing Image Packaging System (IPS)
- Configuring a local IPS package repository

IPS: Overview



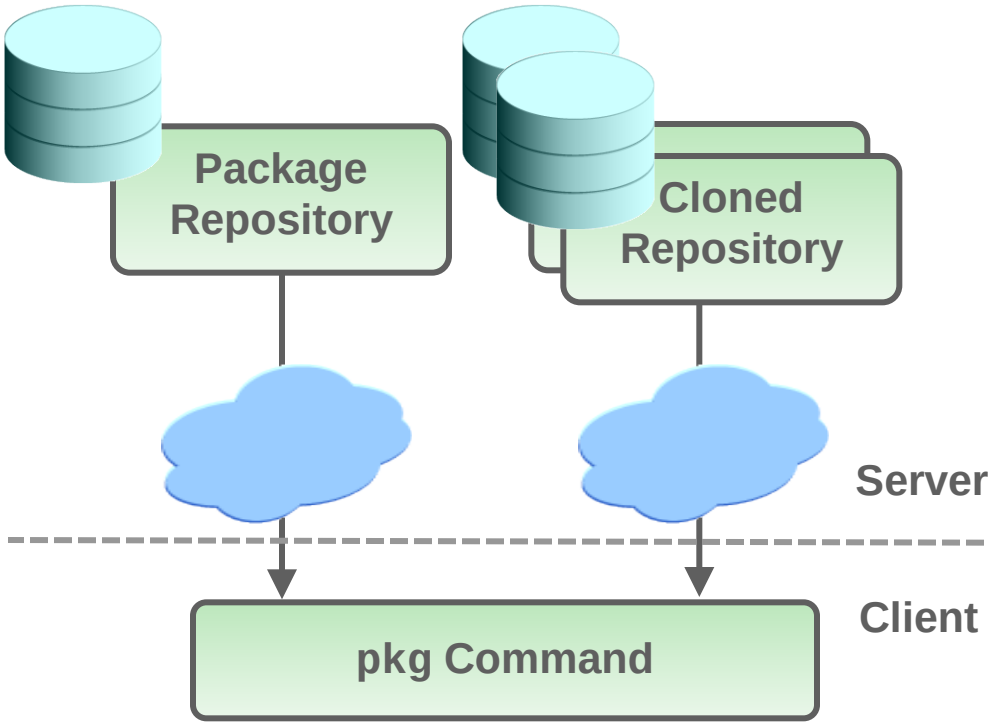
IPS: Overview

Using IPS, you can perform the following tasks:

- Create and manage images.
- Search the IPS packages on your system and in IPS repositories.
- Copy, mirror, create, and administer package repositories.
- Create and publish IPS packages to a package repository.
- Republish the content of an existing package in a package repository.
- Upgrade the system with the help of ZFS boot environments.

IPS Components

- Package
- FMRI
- Publisher
- Repository
- Package archive
- Repository origin
- Repository mirror
- Image
- Boot environment (BE)
- Facet
- Variant
- Package management utility, `pkg(1)`



Agenda

- Describing Image Packaging System (IPS)
- Configuring a local IPS package repository

Identifying IPS Server System Requirements

Hardware and Software	Requirement
System	x86 or SPARC
Operating system	Oracle Solaris 11
Disk space	16 GB of free space

Local IPS Repository

- The Oracle Solaris release repository is available at:
  http://pkg.oracle.com/solaris/release/
- Reasons for creating a local IPS repository:
  - Accessibility
  - Performance
  - Security
  - Change control
  - Custom packages

Creating a Local IPS Repository

You can create a local IPS repository by:

- Copying an IPS repository from a file
  - Copying an IPS repository from `zip` files
  - Copying an IPS repository from an `iso` file
- Copying an IPS repository from the Internet
  - Copying an IPS repository from the Internet
  - Automatically copying an IPS repository from the Internet

Copying an IPS Repository from `zip` Files

1. Create a ZFS file system for the new repository.
2. Get the Oracle Solaris IPS repository `.zip` files along with the `install-repo.ksh` script, the `README`, and checksum files.
3. Make the repository installation script executable.
4. Run the repository installation script.
5. Verify the new repository content.
6. Take a snapshot of the new repository.

Copying an IPS Repository from an `iso` File

1. Create a ZFS file system for the new repository.
2. Get the Oracle Solaris IPS repository image file.
3. Mount the image file.
4. Copy the repository content to the new location.
5. Unmount the image file.
6. Verify the new repository content.
7. Take a snapshot of the new repository.

Copying an IPS Repository from the Internet

1. Create a ZFS file system for the new repository.
2. Create the required repository infrastructure.
3. Copy the repository content to the new location.
4. Verify the new repository content.
5. Take a snapshot of the new repository.

Automatically Copying an IPS Repository from the Internet

The `svc:/application/pkg/mirror` SMF service:

- Updates the local master repository from a defined IPS repository, automatically
- Performs a periodic `pkgrecv` operation from the `solaris` publisher origins defined in the image to `/var/share/pkg/repositories/solaris`, which starts at 2:30 AM one day each month
- Refreshes the repository catalog at the end of each successful run of the service

Providing Access to Your Local IPS Repository

You can enable clients to retrieve packages in your local IPS repository by using:

- A file interface
- An HTTP interface

Enabling Users to Retrieve Packages by Using a File Interface

1. Configure an NFS share.
2. Confirm that the NFS share is published.
   - Search for the repository in the shared file system table.
   - Determine whether the repository is accessible from a remote system.
3. Set the origin of the publisher.
   - Determine the name of the publisher.
   - Check the suitability of this publisher origin.
   - Set the publisher origin.

Enabling Users to Retrieve Packages by Using an HTTP Interface

1. Create a depot server instance.
2. Set the path to the repository.
3. Set the port number (optional).
4. Start the package depot server service.
5. Test whether the repository server is working.
6. Set the origin of the publisher.
   - Determine the name of the publisher.
   - Check the suitability of this publisher origin.
   - Set the publisher origin.

Configuring a Local IPS Package Repository: Example

Required tasks:

1. Creating a ZFS file system to hold the repository
2. Obtaining software packages from the Oracle Solaris download site
3. Configuring the repository server service
4. Starting the repository service
5. Setting the local IPS publisher
6. Testing IPS on the local server

Creating a ZFS File System to Hold the Repository

Create a ZFS file system for the local package repository in the root pool.

```
# zfs create –o atime=off –o compression=on rpool/export/IPS/repo
# zfs list
NAME                              USED  AVAIL  REFER  MOUNTPOINT
rpool                            13.2G  2.20G  4.97M  /rpool
rpool/ROOT                       4.49G  2.20G    31K  legacy
rpool/ROOT/solaris               4.49G  2.20G  4.08G  /
rpool/ROOT/solaris/var            353M  2.20G   197M  /var
rpool/VARSHARE                    132K  2.20G  69.5K  /var/share
rpool/VARSHARE/pkg                 63K  2.20G    32K  /var/share/pkg
rpool/VARSHARE/pkg/repositories    31K  2.20G    31K
/var/share/pkg/repositories
rpool/dump                        792M  2.22G   768M  -
rpool/export                     6.88G  2.20G    34K  /export
rpool/export/IPS/repo            6.77G  2.20G  6.77G  /export/IPS/repo
rpool/export/home                 108M  2.20G    32K  /export/home
rpool/export/home/oracle          108M  2.20G   108M  /export/home/oracle
rpool/swap                       1.03G  2.23G  1.00G  -
```

Obtaining Software Packages from the Oracle Solaris Download Site

1. Go to the Oracle Solaris download site:
   http://www.oracle.com/technetwork/server-storage/solaris11/downloads/index.html
2. Download the following files:
   - README file (`README-zipped-repo.txt`)
   - Repository assembly script (`install-repo.ksh`)
   - MD5 checksum file
   - Five IPS repository parts (zip files)
3. Copy the files to the ZFS repository file system.
4. Make sure the script file is executable.
5. Run the repository installation script `install-repo.ksh`.
6. Verify the repository image.

Configuring the Repository Server Service

Use the SMF `svccfg` command to configure the repository server service.

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

Starting the Repository Service

Use the SMF `svcadm` command to start the repository service.

```
# svcadm refresh application/pkg/server
# svcadm enable application/pkg/server
# svcs application/pkg/server
STATE    STIME            FMRI
online   17:00:56 svc:/application/pkg/server:default
```

Setting the Local IPS Publisher

Use the `pkg set-publisher` command to set the publisher to the local IPS repository.

```
# pkg publisher
PUBLISHER                TYPE    STATUS P LOCATION
solaris                  origin  online F http://pkg.oracle.com/solaris/release
# pkg set-publisher -G '*' -g http://s11-server1.mydomain.com/ solaris
# pkg publisher
PUBLISHER                TYPE    STATUS P LOCATION
solaris                  origin  online F http://s11-server1.mydomain.com/
```

Testing IPS on the Local Server

Search for a package to verify that your IPS server is correctly set up.

```
# pkg search entire
INDEX         ACTION    VALUE              PACKAGE
pkg.fmri      set       solaris/entire     pkg:/entire@0.5.11-0.175.3.0.0.30.0
```

Maintaining Multiple Identical Local Repositories

You might want to maintain multiple copies of package repositories with the same content to meet the following goals:

- Increase the availability of the repository by maintaining copies on different nodes.
- Enhance the performance of repository accesses if you have many users or if your users are spread across a great distance.

Quiz

What benefits does a local IPS repository provide?

a. Greater capacity for more packages in the repository
b. Automatically created backup BEs
c. Increased performance for package retrieval

Summary

In this lesson, you should have learned how to:

- Describe Image Packaging System (IPS)
- Configure a local IPS package repository

Practice 3-1 Overview: Configuring a Local IPS Package Repository

This practice covers the following topics:

- Task 1: Configuring the local IPS repository
  - Verifying that the `/export/IPS` file system has been configured on the system
  - Determining whether the IPS service is available
  - Setting up the `application/pkg/server` service
  - Adding a new publisher
  - Testing IPS on the local server
- Task 2: Creating multiple local repositories on a single system (demonstration)