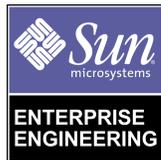# Setting Up a Solaris™ Operating Environment Install Server and the Solaris JumpStart™ Feature

By Rob Snevely - Enterprise Technology Center

Sun BluePrints™ OnLine - December 1999

Sun microsystems

ENTERPRISE ENGINEERING

`http://www.sun.com/blueprints`

Please
Recycle

Adobe PostScript™

Setting Up a Solaris™ Operating Environment Install Server and the Solaris JumpStart™ Feature

In the previous article, I covered the requirements for booting a machine off the net to install Solaris™ software, using `sysidcfg` to enable hands off installation. Some of the responses I got asked, "How do you setup an install server anyway?" So I figured that might be a good topic for this article. Perhaps I did put the cart before the horse.

You will need the following to setup an install server:

- A CD-ROM drive attached to a machine running the Solaris Operating Environment..

- Solaris 2.5.1, Solaris 2.6, or Solaris 7, Server SPARC™ Platform Editions

- Some free disk space.

  - For Solaris 2.5.1 you will need approximately 390 MB of disk space

  - For Solaris 2.6 you will need approximately 490 MB of disk space

  - For Solaris 7 you will need approximately 520 MB of disk space

Before you setup your install server, you must agree to the terms of the "Binary Code License Agreement". This agreement is contained in the documentation for the Solaris Server SPARC Platform Editions that you will be installing.

To boot a machine off of the net, your boot server must have an interface on the same network as the machine you want to boot.

For example, if you are going to install the Solaris images in the file system `/export/OS`, you will use the program `setup_install_server`, which is contained on the Solaris Software CD-ROM.

The following procedures are listed by the Solaris software release:

▼ To Setup a Solaris 2.5.1 Install Server Using a CD

1. **Insert the** *2.5.1 Hardware: 11/97* **CD into the CD-ROM. It will be automatically mounted.**

2. **Put a bootable, install image of Solaris 2.5.1 into** `/export/OS/Solaris_2.5.1`.

```
% mkdir /export/OS/Solaris_2.5.1
% cd /cdrom/solaris_2_5_1_hw1197_sparc/s0
% ./setup_install_server /export/OS/Solaris_2.5.1
```

▼ To Setup a Solaris 2.5.1 Install Server from an NFS Machine

What if you don't have a CD-ROM installed on your server? You can still setup your install server, using another machine and NFS software.

1. **Insert the Solaris software CD into a machine that has a CD-ROM. It will be automatically mounted.**

2. **Export the mounted CD-ROM file system. If the machine with the mounted CD-ROM file systems already has file systems that are shared, also known as exported, issue the following command as root.**

```
# /usr/sbin/share -F nfs -o ro,anon=0 /cdrom/solaris_2_5_1_hw1197_sparc/s0
```

3. **If the machine has no shared file systems. Put the previous line into the file** `/etc/dfs/dfstab`**. Then execute the following command as root.**

```
# /etc/init.d/nfs.server start
```

This starts the `nfsd` daemon and shares all file systems in `/etc/dfs/dfstab`.

4. Mount the file system onto the server you want to make an install server.

To mount the CD-ROM image from the machine vouge to the machine sephora, you would do the following on the machine sephora.

```
% mkdir /tmp/2.5.1_to_load
% mount vouge:/cdrom/sol_2_5_1_hw1197_sparc/s0 /tmp/2.5.1_to_load
% cd /tmp/2.5.1_to_load/Solaris_2.5.1
```

You can then run the setup_install_server script from there.

For a machine to use the Solaris images that are on your install server, those file systems must be exported as well.

5. Place the following in the /etc/dfs/dfstab **file on your install server.**

```
/usr/sbin/share -F nfs -o ro,anon=0 /export/OS/Solaris_2.5.1
```

6. Execute the following command as root.

```
# /etc/init.d/nfs.server start
```

You have now setup a Solaris install server for Solaris 2.5.1.

▼ To Setup a Solaris 2.6 Install Server Using a CD

1. Insert the *Solaris 2.6 Software* **CD into the CD-ROM. It will be automatically mounted.**

2. Put a bootable, install image of Solaris 2.5.1 into /export/OS/Solaris_2.6.

```
% mkdir /export/OS/Solaris_2.6
% cd /cdrom/sol_2_6_598_sparc_smcc_svr/s0/Solaris_2.6/Tools
% ./setup_install_server /export/OS/Solaris_2.6
```

▼ To Setup a Solaris 2.6 Install Server from an NFS Machine

1. **Insert the Solaris software CD into a machine that has a CD-ROM. It will be automatically mounted.**

2. **Export the mounted CD-ROM file system. If the machine with the mounted CD-ROM file systems already has file systems that are shared, also known as exported, issue the following command as root.**

```
# /usr/sbin/share -F nfs -o ro,anon=0 /cdrom/sol_2_6_598_sparc_smcc_svr/s0
```

3. **If the machine has no shared file systems. Put the previous line into the file** `/etc/dfs/dfstab`**. Then execute the following command as root.**

```
# /etc/init.d/nfs.server start
```

   This starts the `nfsd` daemon and shares all file systems in `/etc/dfs/dfstab`.

4. **Mount the file system onto the server you want to make an install server.**

   To mount the CD-ROM image from the machine vouge to the machine sephora, you would do the following on the machine sephora.

```
% mkdir /tmp/2.6_to_load
% mount vouge:/cdrom/sol_2_6_598_sparc_smcc_svr/s0 /tmp/2.6_to_load
% cd /tmp/2.6_to_load/Solaris_2.6/Tools
```

   You can then run the `setup_install_server` script from there.

   For a machine to use the Solaris images that are on your install server, those file systems must be exported as well.

5. **Place the following in the** `/etc/dfs/dfstab` **file on your install server.**

```
% /usr/sbin/share -F nfs -o ro,anon=0 /export/OS/Solaris_2.6
```

6. **Execute the following command as root.**

```
# /etc/init.d/nfs.server start
```

   You have now setup an install server for Solaris 2.6.

▼ To Setup a Solaris 7 Install Server Using a CD

1. **Insert the** *Solaris 7 Software* **CD into the CD-ROM. It will be automatically mounted.**

2. **Put a bootable, install image of Solaris 2.5.1 into** `/export/OS/Solaris_7.`

```
% mkdir /export/OS/Solaris_7
% cd /cdrom/sol_7_899_sparc_sun_srvr/s0/Solaris_2.7/Tools
% ./setup_install_server /export/OS/Solaris_7
```

▼ To Setup a Solaris 7 Install Server from an NFS Machine

1. **Insert the Solaris software CD into a machine that has a CD-ROM. It will be automatically mounted.**

2. **Export the mounted CD-ROM file system. If the machine with the mounted CD-ROM file systems already has file systems that are shared, also known as exported, issue the following command as root.**

```
# /usr/sbin/share -F nfs -o ro,anon=0 /cdrom/sol_7_899_sparc_sun_srvr/s0
```

3. **If the machine has no shared file systems. Put the previous line into the file** `/etc/dfs/dfstab`**. Then execute the following command as root.**

```
# /etc/init.d/nfs.server start
```

This starts the `nfsd` daemon and shares all file systems in `/etc/dfs/dfstab`.

4. **Mount the file system onto the server you want to make an install server.**

   To mount the CD-ROM image from the machine vouge to the machine sephora, you would do the following on the machine sephora.

   ```
   % mkdir /tmp/2.7_to_load
   % mount vouge:/cdrom/sol_7_899_sparc_smcc_svr/s0 /tmp/2.7_to_load
   % cd /tmp/2.7_to_load/Solaris_2.7/Tools
   ```

   You can then run the `setup_install_server` script from there.

   For a machine to use the Solaris images that are on your install server, those file systems must be exported as well.

5. **Place the following in the** `/etc/dfs/dfstab` **file on your install server.**

   ```
   /usr/sbin/share -F nfs -o ro,anon=0 /export/OS/Solaris_7
   ```

6. **Execute the following command as root.**

   ```
   # /etc/init.d/nfs.server start
   ```

   You have now setup an install server for Solaris 7.

▼ To Patch a 2.5.1 Install Image to Boot off the Net with a Quad Fast Ethernet Card.

Solaris 2.5.1 does not have the software from the CD image to use the Quad Fast Ethernet (QFE) card. However, there is a way to modify the install image for 2.5.1 on your install server to allow this. This is usually only an issue with the Enterprise 10000, as it does not have a default 10BaseT or 100BaseT interface, where as all other Sun machines do.

1. **Get the latest patch for 2.5.1 and QFE.**

   At this writing the latest patch is 105532-04.

2. **Download this patch to** `/tmp` **on the install server. The patch file will be in** `tar.Z` **format, which is tarred and compressed. So the patch file is** `/tmp/105532-04.tar.Z`**. To uncompress and untar the file do the following:**

```
% cd /tmp
% uncompress 105532-04.tar.Z
% tar xfBp 105532-04.tar
```

This creates the directory hierarchy `/tmp/105532-04`, which contains the data from this patch.

3. **Copy the** `qfe` **driver from the patch to the bootable image for Solaris 2.5.1 on the install server. This example is for the base Solaris 2.5.1 install server installation directory is** `/export/OS/Solaris_2.5.1`**.**

```
% cd /tmp/105532-04/SUNWqfed/reloc/kernel/drv
% cp qfe /export/OS/Solaris_2.5.1/export/exec/kvm/sparc.Solaris_2.5.1/kernel/drv
```

4. **Make backup files for the** `driver_aliases` **and** `name_to_major` **files.**

```
% cd /export/OS/Solaris_2.5.1/export/exec/kvm/sparc.Solaris_2.5.1/etc
% cp driver_aliases ORIG.driver_aliases
% cp name_to_major ORIG.name_to_major
```

5. **Add the following line to the** `driver_aliases` **file.**

```
qfe SUNW,qfe
```

6. **Add the following line to the** `name_to_major` **file.**

```
qfe 150
```

This allows you to boot the machine you are installing off of the net using QFE. You still must add the QFE packages to the machine being installed. After the installation is completed do not reboot the machine. The Quad Fast Ethernet CD-ROM can be mounted on another machine with a CD-ROM drive and then exported. Just as you did previously with the Solaris CD-ROMs.

For this example we will say that the Quad Fast Ethernet CD-ROM is mounted on the machine vouge.

7. **Install the QFE packages on the machine being installed:**

   Insert the Sun Quad FastEthernet software CD-ROM, it will be automatically
   mounted as `/cdrom/sun_quad_fast_2_1`

   ```
   % share -F nfs -o ro,anon=0 /cdrom/sun_quad_fast_2_1
   ```

   If the machine you are mounting the CD-ROM from has no mounted file systems.
   Place the above entry in `/etc/dfs/dfstab` on the machine you are mounting the
   CD-ROM from then execute the command.

   ```
   % /etc/init.d/nfs.server start
   ```

8. **On the machine you are installing the Sun Quad FastEthernet software do the
   following:**

```
% mkdir /tmp/qfe_mount
% mount vouge:/cdrom/sun_quad_fast_2_1 /tmp/qfe_mount
% cd /tmp/qfe_mount
% pkgadd -d . -R /a
```

▼ To Install the Solaris JumpStart™ Feature

A sample Solaris JumpStart environment is provided when you install the Solaris
install images on to your install server.

1. **Find the Solaris JumpStart sample directory.**

   If you setup your Solaris install images with the paths stated previously, you can
   find the Solaris Jumpstart sample directories in the following locations on your
   install server.

   ■ Solaris 2.5.1 software

   ```
   # /export/OS/Solaris_2.5.1/auto_install_sample
   ```

   ■ Solaris 2.6 software

   ```
   # /export/OS/Solaris_2.6/Solaris_2.6/Misc/jumpstart_sample
   ```

- Solaris 7 software

```
# /export/OS/Solaris_7/Solaris_2.7/Misc/jumpstart_sample
```

Since you may change the Solaris install images over time. It is a good idea to make your Jumpstart directory separate from any single Solaris install image. If all of your install images are located under /export/OS, place your jumpstart directory there as well. You can take the jumpstart image from any of the three installed Solaris images. For this example we will take the one from Solaris 7.

2. **Copy the contents of the jumpstart_sample directory to the** /export/OS/jumpstart **directory.**

```
% mkdir /export/OS/jumpstart
% cd /export/OS/Solaris_7/Solaris_2.7/Misc/jumpstart_sample
% tar cvfBp - . | (cd /export/OS/jumpstart; tar xvfBp -)
```

3. **Create a directory hierarchy under** /export/OS/jumpstart **for the different types of jumpstart profiles you will use.**

How you do this depends on your environment. As an example, let us say that you will divide your profiles into two groups. One for your production environment and one for your development environment. So under /export/OS/jumpstart you would create two additional directories: production and development.

The rules file in /export/OS/jumpstart defines what criteria is matched and then defines the relative path, from /export/OS/jumpstart, to the configuration file for that match. In the simplest example, you have two machines: Volstagg is in your production environment and Barda is in your development environment.

Volstagg's configuration file would be placed in /export/OS/jumpstart/production/volstagg

Barda's configuration file would be placed in /export/OS/jumpstart/development/barda.

The entries in the file /export/OS/jumpstart/rules would look like this.

```
hostname volstagg  - production/volstagg  -
hostanme barda    - development/barda    -
```

4. **To create a** `rules.ok` **file in** `/export/OS/jumpstart` **which is what the Solaris Operating Evnironment will check to see if there is a profile that it can use for the configuration of that installation. You do this by running the check command in** `/export/OS/jumpstart`**.**

```
% cd /export/OS/jumpstart
% ./check
```

This validates that the rules contained in `/export/OS/jumpstart/rules` file has the correct syntax for its entries and create the `rules.ok` file.

The machine that you are installing must also be able to mount the directory hierarchy for jumpstart so it can read the `rules.ok` file and get the correct configuration file. This means that the `/export/OS/jumpstart` directory must be exported.

5. **To export that directory, place the following in the** `/etc/dfs/dfstab` **file.**

```
/usr/sbin/share -F nfs -o ro,anon=0 /export/OS/jumpstart
```

6. **Run the following command:**

```
% /etc/init.d/nfs.server start
```

This exports your `/export/OS/jumpstart` directory hierarchy. For more information on configuring JumpStart profiles, refer to the *Solaris 2.6 System Administrator Collection Volume 1.*

Summary

You now have a Solaris Operating Environment install server and the basic configuration for the Solaris JumpStart environment. Using an install server will greatly reduce the time needed to do multiple installs, and Solaris JumpStart feature can help ensure that you get the same exact configuration every time. This will make your environment easier to manage and save you time.

Author's Bio: Rob Snevely

Rob is a member of Sun's Enterprise Technology Center technical staff. He has over 10 years experience in UNIX system administration, networking, and performance tuning. His major responsibilities include architecting and designing data center and network architectures.