Installing and Connecting Solaris 2.4 to NEXTSTEP 3.3

Installing Solaris 2.4

1. Insert the Solaris CD into SCSI-CDROM drive with ID#6
2. Enter *boot cdrom* in the Sun Boot Monitor
3. Select your installation language and work through the following panels:
4. Enter host name (e.g.: *renoir*)
5. If a network connection is established, answer this question with *Yes*
6. Enter IP address (e.g.: *192.42.172.11*)
7. Confirm settings in the next panel if all settings are REALLY correct
8. Select Name Demangling (NIS+, NIS, other, none) (e.g.: *other*)
9. Subnetting: *No*
10. Confirm settings only if they are really CORRECT
11. Set time zone (e.g.: GMT = *-1*) and confirm
12. Select system type (e.g.: *Standalone*) (ignore error message in console, if there is one)
13. Select your system language
14. Select software profile for installation (modifications might be necessary)
15. Select boot drive (e.g.: *c0t4d0*)
16. Set partition layout (e.g.: *Auto-Layout*)
17. Create all partitions (especially **/var** and **/opt**)
18. Confirm partition profile
19. Mount remote file system at this point, if possible
20. Start installation
21. Restart the system (*reboot*) and log in as root (set root password)
22. */usr/openwin/bin/openwin*
23. Check installation log after successful installation
24. Install patches from second CD (see relevant documentation)

Requirements to NEXTSTEP

1. Second harddisk in SUN is NEXTSTEP

If a NEXTSTEP formatted harddisk is installed in your SUN, you must modify the `/etc/fstab` file on your NEXTSTEP system, because otherwise NEXTSTEP will try to format the Solaris disk every time you login.
(Assumption: NEXTSTEP disk (sd0a) SCSI-ID#3 - Solaris disk (sd1a) SCSI-ID#4)

/etc/fstab of NEXTSTEP drive

```
...
        /dev/sd0a / 4.3 rw,noquota,noauto 0 1
        /dev/sd1a /Solaris ignore ro,noquota 0 2
...
```

Selecting different operating systems on the SUN
(Assumption: NEXTSTEP disk (sd0a) SCSI-ID#3 - Solaris disk (sd1a) SCSI-ID#4)

Power on your SUN. Press simultaneously the keys <STOP> and <a> when your monitor gets bright.

For booting NEXTSTEP enter:
boot disk3

For booting Solaris enter:
boot /iommu/sbus/espdma@f,400000/esp@f,800000/sd@4,0

This string depends on the hardware configuration of the SUN and may be different on each system. Some systems boot perfectly when you simply enter *boot disk4*.

2. Hostmanager
Name and IP address of the SUN should be defined in the NetInfo database.
(This might not be necessary on the SUN if NEXTSTEP 3.3 or NIS(+) is installed, because NEXTSTEP may be able to notify the NIS maps, if an existing NIS domain is specified.)

3. SUN accesses NFS drives on NEXTSTEP system
If you want the SUN to access drives on the NEXTSTEP system, you have to make sure that the SUN has the required access permissions for these drives (see NFSManager).

4. SUN releases directories via NFS
These settings are not shown in the NFSManager. You have to enter them manually. (For help see *showmount -e <SUN>.*)

Configuring Solaris 2.4
The following is only true for Solaris clients **without** NIS(+).

1. Creating and modifying users:
- Log in as root
- Start *openwindows*
- Enter *admintool &* in a shell window
- Select User Account Manager
- Select Name Demangling Service
- Select Create/Modify in pull down list
- Enter settings such as user name/UID/GID etc.
- Set path for home directory to */export/...*
- Select Auto Home setup and Create Home Dir (this is optional)
- Specify MailServer (e.g.: *dali*)

Attention: This is only possible after all networking settings work correctly! (Name Demangling, Gateway, NetMask, ...)

2. Creating and modifying printers under Solaris
- Works similar to creating users

- Select Printer Manager in admintool
- Select the appropriate command form the pull down list
- Enter printer name, server, etc.
- Fill in the File Contents field according to the requirements of the printer (PostScript/Ascii/etc.)
- Select operating system for Print Server (if a NEXTSTEP system is used as print server, select BSD)
- System Default lets you define the printer as the default printer
- You can activate or deactivate the printer with the next two settings

3. Solaris for networking without configuring NIS(+)
- Enter name (without domain) and IP address of the systems that are known within the network in */etc/hosts.* You can retrieve the current hosts (nearly) directly from the NeXT system using ª*nidump hosts /.º* Almost all other parameters can be retrieved the same way. Even the output format of nidump is correct in most cases.
- Enter the net masks for the networks in */etc/netmasks* (e.g.: *192.42.172.0 255.255.255.0*)
- At this point, you should reboot the system; try to contact the SUN from any other machine in the network (ftp, telnet, ping). You should test both the name and the resolved internet address. If this works, try to contact other machines in the network from the SUN.

4. Mounting NEXTSTEP NFS drives under Solaris (without Automounter)
- Check on the SUN whether the desired drives are visible to NFS (*showmount -e <NFS-Server>*)
- **There may be a bug in the NEXTSTEP NFS protocol**: You will get an error if Solaris tries to access the NFS ports using a read-/writelen of 8192 bytes, which is the default. Therefore, you should use a read-/writelen of **1024 Bytes**.
- All mount points must exist under Solaris: If you want to use a NFS directory called */Net/dali/Development,* a local directory with this name must exist on the SUN. Virtual mounts don't work using the standard procedures. Even using the proprietary Automounter of Solaris doesn't show consistent results.
- It is possible to mount NFS drives manually, but these are lost after rebooting the system.
- Enter the mount entries you want to be made after booting in the */etc/vfstab* file.
  Example: the NFS directory ªCDº has to be mounted from the host ªpicassoº
  Entry in *vfstab*:
  picasso:/CD - /Net/picasso/CD nfs yes rw,bg,soft,rsize=1024,wsize=1024
- Check all entries and reboot the system. The NFS mounts will then be created.

5. Connect Solaris NFS drives under NEXTSTEP
- Export Solaris drives: enter the directories you want to export in the */etc/dfs/dfstab* file. There must be a *share* entry for each directory:
  share -F nfs -o root=warhol /export/home
  This command exports the */export/home* directory for NFS giving root access rights to ªwarholº. The directories will be exported after the SUN is booted the next time.
- Mounting under NEXTSTEP: The exported directories won't be listed in the NFSManager. You have to enter the Solaris server name and the exported directories manually in the *Imported Directories* panel that can be reached via the ªImport Toª command from the main menu.

6. Simple Mail connection

- Simply mount your mail folder from the server to */var/mail*
- It might be necessary to enter aliases in */etc/aliases*
- This is a quick-and-dirty solution and not fully functioning

Installing Helios OPI
- Install Helios Ethershare as explained in the documentation (preferable in */usr/local/es*)
- Install Helios OPI as explained in the documentation (preferable in */usr/local/opi*)

Configuring Helios OPI
(Assumption: Helios Ethershare and OPI are installed in */usr/local/...*)
The OPI server should have the same view to network drives containing OPI stuff as the OneVision client. If there exists a file like */Net/renoir/export/home/ethershare/tiff/test.tiff* on the client, the OPI server (in our example *renoir*) should be enabled to find it in the same path.The following modifications are necessary:

- In */usr/local/es/cont/atalk.conf:*
  atalkd: if="<network interface>" (e.g.: *le0*)
  afpsrv: name="<host name>" (e.g.: *renoir*)
  opisrv: dcssuffixes="CMYK", dpi=72
  opi: dcssuffixes="CMYK", dpi=72
- The following servers must be listed in */usr/local/es/conf/servers*:
  admsrv
  afpsrv
  opisrv
  papsrv
  lpd
- all directories that are exported for Ethershare must be listed in */usr/local/es/conf/afpvolumes*. The original data and the layout data for OPI **must** be stored in one of these volumes.
- Layout data of TIFF and EPS files should automatically be created after they are copied to an Ethershare volume. Regarding Helios Ethershare, this is only done if the data are provided via Appletalk (using *atalkd*). You have to start layout processes for the Ethershare volume to achieve automatic creation of OPI images. You can use a shell script for starting this layout process. It has to be copied into two folders, the */etc/rc2.d* folder where it is named *K41.layout* and the */etc/rc3.d* folder where it is named *S41.layout*. The scripts start and terminate the required processes when the system is booted and shut down, respectively.

S41.layout ¬<- OPI Layout Script
This script starts and terminates the layout processes for an Ethershare volume, but only for the root and the first level directories. If files are copied into these directories, the layout processes compute the layout data after a maximal delay of 30 seconds.
Example: */home/export/ethershare* is exported as Ethershare volume
The following directories exist in this volume:
tiff
eps
The *tiff* directory contains a sub directory named *my_images*. Layout processes are started for the directories */home/export/ethershare*, */home/export/ethershare/tiff* and

/home/export/ethershare/eps, but **not** for */home/export/ethershare/tiff/my_images*. No OPI data is created from the images in this directory.

Configuring NEXTSTEP for printing via Solaris (Helios OPI) on a NEXTSTEP printer

1. Setting up Solaris:

(Helios Ethershare OPI provides a BSD4.x compatible print spooler which supports the Printer Access Protocol (PAP) of Apple. But it doesn't work for printers created with admintool.)

- The printer is assumed to be named *OPI_PAP*
- Create an entry like this for the printer in */etc/printcap*

```
OPI_PAP: \
        :sd=/var/spool/lp/NeXT/OPI_PAP:\
        :lp=/usr/local/es/lprdevdir/OPI_PAP:\
        :if=/usr/local/es/if/OPI_PAP:\
        :of=/usr/local/es/psof:\
        :sh:mx#0:du#0:sf:\
        :af=/usr/local/es/printer.acct:\
        :lf=/var/spool/lp/NeXT/OPI_PAP/OPI_PAP-log:\
        :ty=NeXT 400 dpi Level II Printer:\
```

sd specifies the spool directory; this directory must exist, it also must be owned by the user *root* and the group *other*

lp is a dummy device entry for the printer demon; the printer demon won't work without it; simply create it with the shell command: *touch /usr/local/es/lprdevdir/OPI_PAP*

if is the interface application for output; Helios supports four different interfaces:

papif
psif
tcpif
shmif

For this example, the OPI system is only used as an intermediate step and the resolved data are resent to the NEXTSTEP system. Therefore *tcpif* is neeeded. For some reason Ethershare expects the interface to be named with the same name as the printer. This requires a link that point from *usr/local/es/lprdevdir/OPI_PAP* to */usr/local/es/tcpif*

of is the output filter for printing (title page, document preparation, etc.)

sh is needed for suppressing title pages

mx defines the maximum transfer size for the file (0 specifies infinite)

du is required as is

sf suppresses form feeds

af defines the accountance/log file for the output

lf defines the error log file

ty specifies the printer type; it is **important** that this entry exactly corresponds to the entry on the remote system!

- The file *atalk.conf* must exist in */usr/local/es/conf*. It has to be extended by the following two lines:

```
papsrv: name="helios_OPI", printer=OPI_PAP, resolve, lpr="/usr/local/es/lpr", nomail
```

OPI_PAP: entity="MyPrinter:NextPrinter@", resolve, host=lichtenstein, service=printer, rprinter=Fileprinter, nomail*

papsrv is the Helios printer name. A name for Macs should also be specified. *printer* names the printer to be used. *resolve* activates the OPI capability for this printer. *lpr* specifies the print command you are using. *nomail* disables sending mails for each print job.
OPI_PAP is the name of our printer. All entries relevant for Ethershare have to be made here. *entity* is important for Macs. Even if you don't use a Mac, you should make an entry for this parameter. *host* specifies the system doing the print job. *service* defines the port for TCP/IP data transfer. *rprinter* names the remote printer. All other entries correspond to the ones of the papsrv command.

- A file named *SETUP* must exist in the spool directory of the OPI printer:
  %BeginSetup: HeliosOPI
  %%HeliosOption: level2
  %%HeliosOption: hires
  %%HeliosOption: opi
  %%HeliosOption: checkimages
  %%HeliosOption: nocheckfonts
  %%HeliosOption: noreprint
  %%HeliosOption: forcecmyk
  %EndSetup: HeliosOPI
- Another file named *FONT* must exist in the spool directory of the OPI printer. This file lists all fonts that are installed on the printer you use for outputting your data. You have to create it yourself, or you can copy the default file */usr/local/es/LWPlusFonts* and rename it to *FONTS.*
- Finally you should reboot the Solaris system

2. Setting up NEXTSTEP:

- The functionality of the NEXTSTEP PrintManager is limited. Therefore, you have to modify the NetInfo database of your domain system yourself. This procedure is described below. You can also use the **RemotePrinter.app** application. If you do so, you can ignore the following description.
- Start the NetInfo Manager and open the required domain.
- Create a new sub directory in *printers* and enter your printer's NEXTSTEP name
- Open this new directory by double-clicking it.
- Create the following keys and set their values like this:

Key	Value
sd	*/usr/spool/NeXT/<name of NeXTPrinter>*
rm	*<name of Solaris host>*
rp	*<name of printer entry in printcap file of Solaris host>*
lp	*<no entry>*
ty	*<type, same as ty entry in printcap file of Solaris printer>*
note	*<any note regarding the printer>*
lo	*lock*

- Finally reboot the system in whose domain the printer has been created.