
ConvexOS and Utilities V10.1

Remote Initial Installation

Procedures



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ConvexOS and Utilities V10.1 Remote Initial Installation Procedures

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Types of installations

There are four different methods of installing ConvexOS and Utilities, only one of which is appropriate for your site. If you are currently running V10.0 or V9.1 of ConvexOS, you will be performing an *upgrade*. If this is the first installation of ConvexOS on your machine, you will be performing an *initial installation*.

If your machine has a tape drive, you will be doing a *local* installation; if you will be using the tape drive on another machine, you will be doing a *remote* installation.

Optional products may also be installed locally or remotely.

This document contains instructions for performing an initial installation on a system without a tape drive.

Verifying your installation kit

Installation kits for remote initial installations should contain the following:

- A tape containing "ConvexOS V10.1". This tape may be in one of three formats depending on the type of machine, the type of installation, and the format of your SPU tape drive. This tape may be:
 - A ct-format cartridge, for a full-height SPU tape drive. This tape has a white label.
 - An mt-format cartridge, for a half-height SPU tape drive. This tape has a yellow label.
 - A DAT-format cassette, for a SPU equipped with a digital audio tape drive.

If you received a cartridge tape, be certain that it is appropriate for the drive on your SPU.

- A magnetic tape containing “ConvexOS Utilities V10.1”. Check the packing slip to be certain that this tape also contains:

- CONVEX C V4.0 or V4.1

- CONVEX ALL V10.0

If the ConvexOS V10.1 Utilities tape does not contain these products, you should have received these products on two separate round magnetic tapes.

- You may have a second tape containing optional products for which you hold licenses. Refer to the packing slip to determine which optional products are included on this tape.
- Installation activation keys specific for your machine. These activation keys are in an envelope attached to each tape.
- The ConvexOS password for upgrading SPU software, which you must obtain by calling the CONVEX Technical Assistance Center (TAC).
- A copy of the *ConvexOS and Utilities V10.1 Release Notice*.
- These installation procedures.
- Release notices for optional products for which you hold licenses.

If you are missing any of these items, contact the CONVEX Technical Assistance Center (TAC) or a CONVEX field representative.

Installing ConvexOS and Utilities

2

This chapter contains information that you need to know to perform a remote initial installation correctly and expediently.

Please read this chapter completely before attempting installation of ConvexOS and Utilities V10.1.

Remote initial installations are performed on machines that are not currently running ConvexOS V10.0 or V9.1 and that do not have a local tape drive. The installation is done over Ethernet from a CONVEX machine that has a local tape drive.

You may also be required to do a remote initial installation to recover from failure of a root disk.

Throughout this chapter, the system with the tape drive is referred to as the *local* system; the system to be upgraded is the *remote* system.

In screen examples in this chapter, system prompts on the remote machine will appear as

`remote#`

and system prompts on the local system will appear as

`local#`

The system prompts at your site may not appear this way.

Prerequisites

This installation requires that the following conditions be met on the remote and local systems:

Local system prerequisites

- CONVEX Internet Services must be installed and properly configured to communicate with the remote system. (See the *CONVEX Internet Services System Manager's Guide* for more information.)
- The `/rhosts` file must contain the name of the remote system.

Remote system prerequisites

- You must have V4.0 or later of the CONVEX C Compiler available for installation. This may be included on the tape containing "ConvexOS V10.1 Utilities" or it may be on a separate tape.
- Your system must have CONVEX ALL (Assembler, Loader, and Libraries) V1.0 available for installation. This may be included on the "ConvexOS V10.1 Utilities" tape or may be on a separate tape.
- Your system must have the versions of SPU software listed in Table 1. C1 Series machines have both System Diagnostics and a Diagnostic Database. For other machines, the system diagnostics and database have been combined into a single product called Processor Diagnostics.

Table 1 SPU software dependencies

CONVEX system	SPU OS	System Diagnostics or Processor Diagnostics	Diagnostic Database
C120	V5.2	V6.6 or later	V2.7 or later
C200, C3200 Series	V6.1	V5.0 or later	-
C3400 Series	V6.1	V1.2 or later	-
C3800 Series	V2.0	V2.1 or later	-

Figure 1 shows the commands to use on a C120, C200 Series, C3200 Series, or C3400 Series system to determine which

versions you are running. Relevant information is highlighted; commands you enter are in bold type. You must be root to execute these commands.

Figure 1 Determining versions of required SPU software

```
# /usr/convex/spucmd cat /UNIX_REV
+ cat /UNIX_REV
!<installsw>
Copyright 1990 CONVEX Computer Corp.
All rights are reserved.
CREATED ON Fri Jan 12 14:36:22 1990
Product:      SPU UNIX, Version: V5.2
Release date: Jan 8, 1990
Installation date:      Mon Jan 22 11:57:56 CST 1990
# /usr/convex/spucmd cat /mnt/DIAG_REV
+ cat /mnt/DIAG_REV
!<installsw>
Copyright 1990 CONVEX Computer Corp.
All rights are reserved.
CREATED ON Mon Nov 19 15:38:37 1990
Product:      Processor Diagnostics, Version: V5.0
Release date: Oct 15, 1990
Directories:  /mnt/bin, /mnt/test, /mnt/man
```

On a C3800 Series system, make the replacements shown in Table 2 to the command lines in Figure 1:

Table 2 Determining SPU software versions on a C3800

Replace:	With:
/UNIX_REV	/SPU_OS
/mnt/DIAG_REV	/diag/DIAG_REV

If you have a C1 Series system, enter the command in Figure 2 to determine your version of the Diagnostic Database.

Figure 2 Determining Diagnostic Database version (C1 Series only)

```
# /usr/convex/spucmd cat /mnt/DIAG_DB_REV
+ cat /mnt/DIAG_DB_REV
!<installsw>
Copyright 1990 CONVEX Computer Corp.
All rights are reserved.
CREATED ON Mon Nov 19 15:55:52 1990
Product:      Diagnostics Data Base, Version: V3.7
Release date: Oct 19, 1990
Directories:  /mnt/usr, /hw/cputest, /hw/field
```

Required information

The installation script requires you to provide several pieces of information, many of which you may not know offhand.

You can avoid having to abort the installation procedure by reading this section before you begin.

You should know:

- The name of your time zone and your daylight savings rule. Refer to Figure 20 on page 19 for a list of available time zones.
- The type of disk device that contains your root partition. Figure 3 shows the command used to display this device if your system is already at SPU level. If your system is in multiuser or single-user mode, use the command

```
spucmd cat /ioconfig | more
```

The root disk device is highlighted.

Figure 3 Determining root disk device

```
(spu)> cat /ioconfig | more
iop 6
mbus 0
  ctrl DKC-001 csr 0x3f8 int 3
    unit 0 type DKD-005
    unit 1 type DKD-005
  ctrl ACM-001 csr 0x3c8 int 6
    unit 0 type TTY
    unit 1 type TTY
    unit 2 type TTY
    (additional output not shown)
```

Table 3 shows how to determine the device type from this output..

Table 3 Root disk device types

Device name	Device type
mbus	Multibus
ipi	IDC
vme	VMEbus

According to Table 3, the root disk device in Figure 3 is a Multibus.

If you have more than one disk, you must know their device names as well.

For more information on the contents of the `/ioconfig` file, refer to Chapter 3, "Adding Devices" in *Managing ConvexOS: Configuration Guide*.

- The type of device unit 0 is on the root disk device. In Figure 4, this device is highlighted, and is a DKD-005.

Figure 4 Determining root device unit

```
(spu)> cat /ioconfig | more
iop 6
  mbus 0
    ctrl DKC-001 csr 0x3f8 int 3
      unit 0 type DKD-005
      unit 1 type DKD-005
    ctrl ACM-001 csr 0x3c8 int 6
      unit 0 type TTY
      unit 1 type TTY
      unit 2 type TTY
      (additional output not shown)
```

- Whether or not you have a `/mnt/os/bootcmd.local` file on the SPU, and whether or not you wish to continue to use it after the installation.
- The IP addresses for both the local and remote systems.
- The ConvexOS password, which you must obtain by calling the Technical Assistance Center.
- The root password for the remote machine.
- How to use the `/bin/ed` editor.
- Which partitions you have designated as swap space. The installation script will look in `/mnt/os/bootcmd.local` for this information, and you will be asked to confirm it.
- Which optional products you must install. If you are currently running ConvexOS V9.1, you must upgrade all of the following products for which you hold licenses:
 - CONVEX Internet Services
 - CONVEX NFS (Domestic or International)
 - CONVEX Share Scheduler
 - CONVEX MC68000 Tools
 - CONVEX User-Written Device Driver (UDD) Tools

If you have installed CONVEX Optional Utilities Sources, you should upgrade them at this time.

If you are running ConvexOS V10.0 and you hold a license for Domestic NFS, you must reinstall the V10.0 version of Domestic NFS immediately after upgrading ConvexOS. If you have installed the CONVEX Optional Utilities Sources, you should also upgrade them now. You are not required to upgrade any other products at this time.

Space requirements

This section describes space requirements for ConvexOS and Utilities V10.1. You should be sure to have adequate space available before you begin the installation.

You can avoid having to abort the installation procedure by reading this section before you begin.

Table 4 contains space requirements for the root and /usr upgrade. Table 5 contains space requirements for Domestic Tools installation, which may only be done at sites within the United States and Canada.

Table 4 Root and /usr upgrade space requirements

Directory	Kilobytes required
/tmp	8100
/bin	6988
/dev	21
/etc	4739
/lib	3
/usr/adm	293
/usr/bin	8854
/usr/convex	12125
/usr/dict	356
/usr/doc	257
/usr/etc	5241
/usr/include	348
/usr/infosys	595
/usr/lib	25086
/usr/man	3330
/usr/preserve	1
/usr/public	1
/usr/skel	6
/usr/spool	1713

Table 4 (continued) Root and /usr upgrade space requirements

Directory	Kilobytes required
/usr/src	1
/usr/sys	49
/usr/ucb	7240
/usr TOTAL	65496
root TOTAL (bin, dev, etc, lib)	11751

Table 5 Domestic Tools space requirements

Directory	Kilobytes required
/tmp	366
/usr/bin	90
/usr/ucb	306
/usr/lib	260

If you will be installing optional products, you should also consult the section titled "Space requirements" on page 50 to determine additional space requirements.

Putting the remote system in single-user mode

The remote system must be in single-user mode for this installation.

To do this, complete the following procedure:

- Step 1** Log in as root at the remote system console.
- Step 2** Put the system in single-user mode by issuing the shutdown command, as shown in Figure 5.

Figure 5 Putting the system in single-user mode

```
remote# /etc/shutdown +5 "to install ConvexOS V10.1"  
#
```

Messages warning users of the impending shutdown will be displayed for approximately five minutes. The single-user system prompt appears as in Figure 6.

Figure 6 Single-user mode

```
# erase ^H, kill ^U, intr ^C  
#
```

Backing up file systems

Before proceeding with the installation, it is important to make full backups of existing / (root), /usr, and SPU file systems on the remote system using the dump utility and the SPU /etc/backup utility.

Caution

Obtain full backups of the / (root), /usr, and SPU file systems before you begin the installation. This ensures against loss of valuable files if problems arise during the installation.

To do this, complete the following procedure:

- Step 1** Ensure that tape unit 0 on the local system is online. If you have more than one tape drive, you can determine which one is unit 0 by consulting the /ioconfig file on the SPU. Tape unit 0 is the first unit listed in this file.
- Step 2** Mount a back-up tape on tape unit 0 on the local system.
- Step 3** Log in as root at the remote system console.
- Step 4** On the remote machine, back up the / (root) file system by entering the commands shown in Figure 7. Note that the 0 in the command line is a zero, not the letter O.

Figure 7 Backing up the root file system

```
remote# cd /
remote# /usr/ucb/rsh localhost /usr/convex/tpmount -R -a device-name
remote# /etc/rdump 0Gf localhost:device-name /
```

Replace *localhost* with the name of the local system. Replace *device-name* with the name of the tape device you are using on the local system (/dev/rmt20 or /dev/rdat0n, for example).

`rdump` will prompt you to unmount the file system before proceeding with the dump. Answer "n" at the prompt; the root file system cannot be unmounted.

Output from the `rdump` command will appear on the screen. The backup is complete when the system prompt returns.

- Step 5** Rewind, remove, and label the tape.
- Step 6** Mount another back-up tape on tape unit 0 of the local system for the /usr file system backup.

- Step 7** Back up the /usr file system by entering the command shown in Figure 8. Note that the 0 in the command line is a zero, not the letter O.

Figure 8 Backing up the /usr file system

```
remote# /etc/rdump 0Gf localhost:device-name /usr
remote# /usr/ucb/rsh localhost /usr/convex/tpunmount
```

Replace *localhost* with the name of the local system; replace *device-name* with the name of the tape device you are using on the local system.

Output from the `rdump` command will appear on the screen. The backup is complete when the system prompt returns.

- Step 8** Unmount the tape and go to single-user mode by entering the command shown in Figure 9.

Figure 9 Unmounting the back-up tape

```
remote# /usr/ucb/rsh localhost /usr/convex/tpunmount
remote# kill 1
# erase ^H, kill ^U, intr ^C
```

- Step 9** Rewind, unmount, and label the tape.

- Step 10** Make backup copies of /usr/etc/inetd and /usr/ucb/rsh by executing the commands in Figure 10.

Figure 10 Copying /usr/etc/inetd and /usr/ucb/rsh

```
remote# cd /
remote# /bin/cp /usr/etc/inetd /etc/inetd.old
remote# /bin/cp /usr/ucb/rsh /bin/rsh.old
```

- Step 11** Unmount all file systems with the command shown in Figure 11.

Figure 11 Unmounting file systems

```
remote# /etc/umount -a
```

- Step 12** Ensure that the keyswitch is in LOCAL mode, and go to the SPU by pressing **CTRL-p** at the system prompt. The `(spu) >` prompt will appear.
- Step 13** Insert a back-up cartridge tape in the SPU tape drive.
- Step 14** If your machine is a C120 and you have a ct-format (full height) tape drive, enter the command in Figure 12.

Caution

Skip this step if your machine is a C2, C3200, C3400, or C3800 Series or if you have a C120 with any other kind of SPU tape drive.

Figure 12 Formatting the SPU cartridge tape (C120s only)

```
(spu)> ctutil fmt
```

- Step 15** Back up the SPU disk by entering the command shown in Figure 13.

Figure 13 Backing up the SPU disk

```
(spu)> /etc/backup
```

The backup is complete when the system prompt returns.

- Step 16** Remove and label the tape.

Halting ConvexOS

Perform the steps in this section to halt ConvexOS.

- Step 1** If you are at SPU level, return to the system prompt by pressing CTRL-d. The system must still be in single-user mode.
- Step 2** Unmount the file systems as shown in Figure 14.

Figure 14 Unmounting file systems

```
remote# kill 1
# erase ^H, kill ^U, intr ^C
remote# /etc/umount -a
```

- Step 3** Take the system to SPU level by entering the commands shown in Figure 15.

Figure 15 Returning to the SPU (cartridge tape only)

```
remote# /bin/sync;/bin/sync;/bin/sync
remote# /etc/halt
```

Output will be written to the screen, and the SPU prompt will appear.

Installing SPU software

Follow the instructions in this section to upgrade the SPU software. It should take about ten minutes to complete this section.

- Step 1** Remove the directory `/mnt/old_os` with the command shown in Figure 16.

Figure 16 Removing `/mnt/old_os`

```
(spu)> rm -rf /mnt/old_os
(spu)>
```

- Step 2** Verify that there is a sufficient amount of free space in `/mnt` on the SPU disk. Table 6 lists space requirements by machine type.

Table 6 SPU space requirements

System	Kilobytes required
C120 Series	3230
C200, C3200 Series	3610
C3400 Series	3430
C3800 Series	3970

Use the `df` command to determine the available space, as shown in Figure 17.

Figure 17 Determining available space on SPU disk

```
(spu)> df /mnt
Filesystem Mounted on kbytes used free % used
/dev/dk0d /mnt 81174 75999 5175 93%
```

In this example, there are 5175 kilobytes free, which is adequate for this installation.

If you do not have enough available space, refer to Appendix A for a list of SPU files that may be deleted.

- Step 3** Locate the tape labeled “ConvexOS V10.1” and insert it in the SPU tape drive.

Step 4 Terminate unnecessary SPU processes with the command shown in Figure 18.

Figure 18 Removing unnecessary SPU processes

```
(spu)> osclean  
(spu)>
```

Ignore messages such as

```
osclean:SIGSEV signal
```

if they appear.

Step 5 Load ConvexOS onto the SPU.

Execute the commands in Figure 19. Note that you should only enter the `mt rew` command if you have an `mt-format` cartridge tape with a yellow label.

Figure 19 Invoking `installsw`

```
(spu)> cd /  
(spu)> mt rew          (mt-format only)  
(spu)> /etc/installsw -i
```

Step 6 `installsw` displays a menu of time zones, as shown in Figure 20. At the prompt, enter either the number corresponding to your time zone, or one of the abbreviations in the second column.

Figure 20 Time zone menu

```
--- Time zone settings
 0   ast/adt      US: Atlantic
 1   est/edt      US: Eastern
 2   cst/cdt      US: Central
 3   mst/mdt      US: Mountain
 4   pst/pdt      US: Pacific
 5   eet/eetdst   Eastern European
 6   met/metdst   Middle European
 7   wet/wetdst   Western European
 8   aest/aedt    Australia: Eastern
 9   acst/acdt    Australia: Central
10   awst/awdt    Australia: Western
11                   None of the above
--- What is your local time zone?
```

If you enter 11 (None of the above), you will be prompted for your time zone offset (in minutes) from GMT.

Step 7 Enter your daylight savings rule at the prompt, as shown in Figure 21.

Figure 21 Daylight savings rule menu

```
--- Daylight Savings rule
 0   none         No DST rule
 1   us           United States
 2   aus          Australia
 3   wet          Western European
 4   met          Middle European
 5   eet          Eastern European
 6   can          Canada
--- Which daylight savings rule do you use?
```

Step 8 The disk that is currently serving as the root disk device is displayed. To continue using this disk as the root disk, press RETURN at the prompt, as shown in Figure 22

Figure 22 Root device prompt

```
-- The root disk is currently da0.  
-- Which disk do you wish to use as the root disk?  
-- Enter a DISK, not a partition [da0]
```

Step 9 If you have a bootcmd.local file, you are asked if you want to continue to use it. Answer y if you do, n if you do not.

Figure 23 bootcmd.local prompt

```
--- You have your own boot commands file "bootcmd.local"  
--- Do you wish to use it for this release also? [yn]
```

Step 10 If you have a bootcmd.local file and have specified a root partition in this file, this information is displayed. You are asked to confirm this information, as shown in Figure 24.

Figure 24 Root partition confirmation

```
--- You have specified the following root partition  
in /mnt/os/bootcmd.local  
  
root on          da0b  
  
--- Is this information correct? [yn]
```

Step 11 If you have a bootcmd.local file and have specified additional swap partitions in this file, this information is displayed. You are asked to confirm this information, as shown in Figure 25.

Figure 25 Swap space confirmation

```
--- You have specified the following swap partitions  
in /mnt/os/bootcmd.local  
  
swap on         da5c  
  
--- Is this information correct? [yn]
```

installsw loads the release contents and moves the SPU directory /mnt/os to /mnt/old_os. If the installation fails, the old files are returned to /mnt/os.

Step 12 Supply the ConvexOS password you obtained from the CONVEX Technical Assistance Center (TAC) at the prompt shown in Figure 26.

Figure 26 Installation password prompt

```
--- Extracting V10.1 release from /dev/rmt0 into /mnt/os.  
--- /mnt/os already exists. Moving to /mnt/old_os.  
--- Loading /mnt/os from /dev/rmt0  
--- Please enter your ConvexOS password:
```

If you have supplied a valid password, the installation continues. The installation of SPU software is complete when the (spu) > prompt returns.

Extracting the mini-root file system

The ConvexOS mini-root file system is used to boot ConvexOS and restore the contents of the installation tape.

If your tape cartridge has a white label, follow the instructions in the section titled "Extracting mini-root from a ct-format tape" on page 22.

If your tape cartridge has a yellow label, follow the instructions in the section titled "Extracting mini-root from an mt-format tape" on page 24.

If your SPU drive is a DAT drive, follow the instructions in the section titled "Extracting mini-root from a DAT tape" on page 25.

Extracting mini-root from a ct-format tape

To extract mini-root from a ct-format tape, complete the following steps:

Step 1 Enter the commands shown in Figure 27.

Figure 27 Extracting mini-root from a ct-format tape

```
(spu)> initall
(spu)> cd /mnt/os
(spu)> scn_util -b > /mnt/boot_db
(spu)> pqutil -I
(spu)> cpfs ct0d vv0b 12288
```

Because of the directory caching mechanism on the C3800 Series SPU, you must enter three separate `cd` commands to get to the `/mnt/os` directory. If you are installing on any C Series machine other than the C3800, you may make `/mnt/os` the current directory with a single command:

```
cd /mnt/os
```

Replace `vv` with the appropriate letters for your root disk device, as shown in Table 7.

Table 7 Root disk device types

Device type	Replace vv with:
Multibus	da
IDC	du
VMEbus	dd

Step 2 When asked to confirm the copy, answer *y*.

Caret (^) characters appear to indicate that the copy is proceeding.
The procedure is complete when the `(spu) >` prompt returns.

Extracting mini-root from an mt-format tape

To extract mini-root from an mt-format tape, complete the following steps:

Step 1 Enter the commands shown in Figure 28.

Figure 28 Extracting mini-root from an mt-format tape

```
(spu)> initall
(spu)> cd /;cd mnt;cd os
(spu)> scn_util -b > /mnt/boot_db
(spu)> pqutil -I
(spu)> mt rew
(spu)> mt fsf 3
(spu)> cpfs mt0 vv0b 12288
```

Because of the directory caching mechanism on the C3800 Series SPU, you must enter three separate `cd` commands to get to the `/mnt/os` directory. If you are installing on any C Series machine other than the C3800, you may make `/mnt/os` the current directory with a single command:

```
cd /mnt/os
```

Replace `vv` with the appropriate letters for your root disk device, as shown in Table 8.

Table 8 Root disk device types

Device type	Replace vv with:
Multibus	da
IDC	du
VMEbus	dd

Step 2 When asked to confirm the copy, answer `y`.

A block countdown will appear to indicate that the copy is proceeding. The procedure is complete when the `(spu)>` prompt returns.

Extracting mini-root from a DAT tape

To extract mini-root from a DAT tape, complete the following steps:

Step 1 Enter the commands shown in Figure 29.

Figure 29 Extracting mini-root from a DAT tape

```
(spu)> initall
(spu)> cd /mnt/os
(spu)> scn_util -b > /mnt/boot_db
(spu)> pqutil -I
(spu)> mnt rew
(spu)> mt fsf 4
(spu)> cpfs mt0 vv0b 12288
```

Replace *vv* with the appropriate letters for your root disk device, as shown in Table 9.

Table 9 Root disk devices

Device type	Replace vv with:
Multibus	da
IDC	du
VMEbus	dd

Step 2 When asked to confirm the copy, answer *y*.

A block countdown will appear to indicate that the copy is proceeding. The procedure is complete when the (*spu*) > prompt returns.

Booting ConvexOS

You must reboot ConvexOS to single-user mode to load the newly-installed software.

Reboot ConvexOS to single-user mode using the command shown in Figure 30.

Figure 30 Rebooting ConvexOS

```
(spu)> boot mini
```

Information about the boot process is displayed. After approximately five minutes, the system prompt is displayed, as shown in Figure 31.

Ignore warning messages about changing the date and time if they appear.

Figure 31 System prompt

```
# erase ^H, kill ^U, intr ^C  
#
```

Setting up the root file system

To create the root (/) file system, complete the steps in this section.

- Step 1** Mount the tape labeled "ConvexOS Utilities V10.1".
- Step 2** If you are using a DAT tape, create the DAT device by entering the command shown in Figure 32.
- If you are not using a DAT tape, skip this step.

Figure 32 Creating a DAT device

```
remote# cd /dev
remote# MAKEDEV dat0
```

- Step 3** Create the root file system by entering the commands shown in Figure 33.

Figure 33 Creating the root file system

```
remote# cd /
remote# /etc/newfs -v /dev/rvv0a unit-type
```

Replace *vv* with the appropriate letters for your root disk device, as shown in Table 10.

Table 10 Root disk device types

Device type	Replace <i>vv</i> with:
Multibus	da
IDC	du
VMEbus	dd

Replace *unit-type* with the unit type for unit 0, for example, DKD-005 or DKD-001. Refer to Figure 4 on page 8 if you do not know the unit type.

- Step 4** Verify the integrity of the new file system by executing the command in Figure 34.

Figure 34 Running fsck

```
remote# /etc/fsck -f -p /dev/rvv0a
/dev/rvv0a:277 files,8517 used,11428 free(36 frags,1424 blocks)(8k/1k)
/dev/rvv0a: File system marked clean
```

Continue to replace *vv* with the appropriate characters, as shown in Table 10.

Output similar to Figure 34 will be displayed.

Step 5 Mount the file system by entering the commands in Figure 35.

Figure 35 Mounting the root file system

```
remote# /etc/mount /dev/vv0a /root
remote# hostname remotehost
```

Continue to replace *vv* with the appropriate characters, as shown in Table 10.

Replace *remotehost* with the name of the remote machine.

Step 6 Using the `/bin/ed` editor, edit the `/etc/hosts` file on the remote machine. Make the following changes:

- Replace `XXX` on the line containing the word `remote` with the IP address of the remote system.
- Replace both occurrences of `remote` with the name of the remote system.
- Replace `XXX` on the line containing `host` with the IP address of the local system (the system with the tape drive that you will be using.)
- Replace both occurrences of `host` with the name of the system with the local tape drive.

Step 7 Configure the Ethernet by entering the commands shown in Figure 36.

Figure 36 Configuring the network

```
remote# /etc/ifconfig ex0 remotehost arp trailers up
```

Replace *remotehost* with the name of the remote machine.

- Step 8** Log in to the local system from the console of the remote system, as shown in Figure 37.

Figure 37 Logging in to the local system

```
remote# /usr/ucb/rsh localhost
```

- Step 9** Mount the tape containing ConvexOS V10.1 and Utilities on the tape drive on the local system and enter the commands shown in Figure 38.

Figure 38 Mounting the ConvexOS V10.1 Utilities tape

```
local# /usr/convex/tpmount -R -a device-name  
local# /bin/mt -f device-name rew  
local# /bin/mt -f device-name fsf 5  
local# exit
```

Replace *device-name* with the name the tape device you are using.

- Step 10** Restore the root (/) file system to the remote system by entering the commands in Figure 39.

Figure 39 Restoring the root file system

```
remote# cd /root  
remote# /etc/rrestore xGf localhost:device-name
```

- Step 11** When you are prompted for a volume number, enter 1.

- Step 12** When you are prompted to change the owner and mode on ".", enter *y*.

If this extraction fails, attempt it a second time by re-entering the commands in Figure 39. If it fails again, contact the CONVEX Technical Assistance Center.

Step 13 Deallocate the tape drive by entering the command in Figure 40.

Figure 40 Deallocating the tape drive

```
remote# /usr/ucb/rsh localhost /usr/convex/tpunmount -k
```

Step 14 Copy files from the mini-root to the root (/) file system by entering the commands in Figure 41.

Figure 41 Copying files from mini-root

```
remote# cd /root
remote# /bin/copyfiles
```

Step 15 Copy the file /etc/hosts to the file /root/etc/hosts, as shown in Figure 42.

Figure 42 Copying /etc/hosts to /root/etc/hosts

```
remote# cp /etc/hosts /root/etc/hosts
```

Step 16 Bring the system to SPU level by executing the commands shown in Figure 43.

Figure 43 Returning to SPU level

```
remote# cd /
remote# /etc/umount -a
remote# /bin/sync;/bin/sync;/bin/sync
remote# /etc/halt
```

Output is printed to the screen, and the system returns to the (spu)> prompt.

Step 17 Boot to single-user mode by entering the commands shown in Figure 44.

Figure 44 Booting to single-user mode

```
(spu)> osclean
(spu)> boot single
Mon Oct 21 07:25:56 CST 1991
Beginning ConvexOS initialization
.
.
#erase ^H, kill ^U, intr ^C
#
```

Ignore messages such as

```
osclean:SIGSEV signal
```

if they appear.

Step 18 Verify the integrity of the new file system a second time by executing the command in Figure 45.

Figure 45 Running fsck

```
remote# /etc/fsck -f -p /dev/vv0a
/dev/rvv0a:277 files,8517 used,11428 free(36 frags,1424 blocks)(8k/1k)
/dev/rvv0a: File system marked clean
```

Replace *vv* with the appropriate characters, as shown in Table 10.

Output similar to Figure 45 will be displayed.

If any errors occur, contact the Technical Assistance Center (TAC).

Step 19 If you have VME or IDC devices on your remote system, you must edit the `/etc/fstab` file using the `/bin/ed` editor. All of the device names in the default `/etc/fstab` specify Multibus devices in the form of

```
/dev/daxx
```

where *xx* defines the file partition. For VME devices, change this to:

```
/dev/ddxx
```

and for IDC devices:

```
/dev/duxx
```

Step 20 Create an entry for the root file system in the `/etc/mtab` file by entering the commands in Figure 46.

Figure 46 Creating an entry in `/etc/mtab`

```
remote# cp /dev/null /etc/mtab
remote# /etc/mount -f /
```

Setting up the /usr and /tmp file systems

The commands in this section will create /usr on the e partition of disk 0 and /tmp on the f partition of disk 0. You may choose to specify different partitions or disks, but be certain to read Chapter 4, "Setting Up the Disk System," in *Managing ConvexOS: Configuration Guide* first.

- Step 1** Create the /usr file system by entering the commands shown in Figure 47.

Figure 47 Creating the /usr file system

```
remote# cd /
remote# /etc/newfs -v /dev/rvv0e unit-type
```

Replace *vv* with the appropriate letters for your root disk device, as shown in Table 11.

Table 11 Root disk device types

Device type	Replace vv with:
Multibus	da
IDC	du
VMEbus	dd

Replace *unit-type* with the unit type for unit 0, for example, DKD-005 or DKD-001. Refer to Figure 4 on page 8 if you do not know the unit type.

- Step 2** Create the /tmp file system by entering the commands shown in Figure 48.

Figure 48 Creating the /tmp file system

```
remote# /etc/newfs -v /dev/rvv0f unit-type
```

Replace *unit-type* and *vv* as you did in Figure 47.

Step 3 Verify the integrity of the new file system by executing the command shown in Figure 49.

Figure 49 Running fsck

```
remote# /etc/fsck -f -p /dev/rvv0e /dev/rvv0f
/dev/rvv0e: 277 files, 8517 used, 11428 free (36 frags, 1424 blocks) (8k/1k)
/dev/rvv0e: File system marked clean
/dev/rvv0f: 13 files, 402 used, 935 free (3 frags, 139 blocks) (8k/1k)
/dev/rvv0f: File system marked clean
```

Replace *vv* with the appropriate characters, as shown in Table 11.

Output similar to Figure 49 will be displayed.

Step 4 Start the network interface, as shown in Figure 50.

Figure 50 Starting the network interface

```
remote# hostname remotehost
remote# /etc/ifconfig ex0 remotehost arp trailers up
```

Step 5 Make sure the tape containing ConvexOS V10.1 Utilities is on the tape drive of the local machine. Allocate the tape device on the local machine and position the tape correctly by entering the commands in Figure 51.

Figure 51 Mounting and positioning the ConvexOS V10.1 Utilities tape

```
local# /usr/convex/tpmount -R -a device-name
local# /bin/mt -f device-name rew
local# /bin/mt -f device-name fsf 8
```

Step 6 Mount the new file systems by entering the commands in Figure 52.

Figure 52 Mounting the /usr and /tmp file systems

```
remote# /etc/mount /dev/vv0e /usr
remote# /etc/mount /dev/vv0f /tmp
remote# cd /usr
remote# /etc/rrestore xGf localhost:device-name
```

Continue to replace *vv* with the appropriate characters, as shown in Table 11.

Replace *device-name* with the name of the tape device you are using.

Ignore all warning messages if they appear.

- Step 7** When prompted for a volume number, enter 1.
- Step 8** When prompted to change the owner and mode of the current directory, enter *y*.
- Step 9** Change the access modes for the root (/), /usr, and /tmp file systems by entering the commands in Figure 53.

Figure 53 Changing modes on root (/), /usr and /tmp file systems

```
remote# cd /
remote# /bin/chmod 755 / /usr
remote# /bin/chmod 777 /tmp
```

- Step 10** Unmount the /usr file system by entering the command in Figure 54.

Figure 54 Unmounting /usr

```
remote# /etc/umount /usr
```

- Step 11** Verify the integrity of the new file system a second time by executing the command in Figure 55.

Figure 55 Running *fsck*

```
remote# /etc/fsck -f -p /dev/rvv0e
/dev/rvv0e:277 files,8517 used,11428 free(36 frags,1424 blocks)(8k/1k)
/dev/rvv0e: File system marked clean
```

Replace *vv* with the appropriate characters, as shown in Table 11.

Output similar to Figure 55 will be displayed.

If any errors occur, contact the Technical Assistance Center (TAC).

- Step 12** Mount the /usr file system by entering the command in Figure 56.

Figure 56 Mounting /usr

```
remote# /etc/mount /usr
```

Extracting the /sys directory

This section describes how to extract the /sys directory from the ConvexOS V10.1 cartridge tape.

- Step 1** The extraction script will prompt you for a directory in which to save the old /sys directory. To determine the disk space needed for this, execute the commands in Figure 57.

Figure 57 Determining space requirements for old /sys

```
remote# cd /sys
remote# /bin/du -s .
10389
```

In this example, the directory you choose to save the old /sys directory in must have at least 10389 kilobytes of free space.

- Step 1** Ensure that the ConvexOS V10.1 cartridge tape is in the SPU drive.

- Step 2** If you are using a ct-format tape with a white label, read the subsection titled "Extracting /sys from a ct-format tape" on page 37.

If you are using an mt-format tape with a yellow label, read the subsection titled "Extracting /sys from an mt-format tape" on page 38.

If you are using a DAT tape, read the subsection titled "Extracting /sys from a DAT tape" on page 38.

Extracting /sys from a ct-format tape

Execute the commands in Figure 58 to extract /sys from a ct-format tape, then continue with the instructions in the next section, "Using the /sys extraction script" on page 39.

Figure 58 Extracting /sys (ct-format only)

```
remote# cd /tmp
remote# /usr/convex/ctar xvpf /dev/rct0b extract_script
remote# ./extract_script
```

Extracting /sys from an mt-format tape

Execute the commands in Figure 59 to extract /sys from an mt-format tape, then continue with the instructions in the next section, "Using the /sys extraction script" on page 39.

Figure 59 Extracting /sys (mt-format only)

```
remote# cd /tmp
remote# /usr/convex/spucmd mt rew
remote# /usr/convex/spucmd mt fsf 2
remote# /usr/convex/ctar xvpf /dev/rmt0 extract_script
remote# ./extract_script
```

Extracting /sys from a DAT tape

Execute the commands in Figure 60 to extract /sys from a DAT tape, then continue with the instructions in the next section, "Using the /sys extraction script" on page 39.

Figure 60 Extracting /sys (DAT only)

```
remote# cd /tmp
remote# /usr/convex/spucmd mt rew
remote# /usr/convex/spucmd mt fsf 3
remote# /usr/convex/ctar xvpf /dev/rmt0 extract_script
remote# ./extract_script
```

Using the /sys extraction script

Step 1 As shown in Figure 61, you will be prompted to enter a file name for a tar image of the current /sys directory. If you do not supply a file name, the default shown will be used.

If you have more than one tape drive and would like to save the old /sys directory directly onto tape, enter the name of the tape device at the prompt.

Figure 61/sys file name prompt

```
--- Filename of where you would like to save the /sys directory
(via tar)? (The default is /tmp/sys.tar.10.1, and an answer
of "nowhere" will cause /sys not to be saved if, for example,
you have already saved it)
--
--- Please enter filename [/tmp/sys.tar.10.1]:
```

The installation continues as shown in Figure 62.

Figure 62 Installation output

```
--- tar'ing existing /sys directory to /tmp/sys.tar.10.1
--- Removing old /sys directory
--- Extracting /sys from /dev/rmt20. This may take a few minutes.
--- Running ranlib on the CPU_OBJ libraries
--- 10.1 /sys directory extraction Done
--- 10.1 Operating System installation Done
```

Step 2 Rewind and remove the tape from the SPU drive.

Copying the ConvexOS system image

Follow the instructions in this section to copy the ConvexOS system image from the SPU.

- Step 1** Copy the ConvexOS system image from the SPU disk to the root file system by entering the command shown in Figure 63.

Figure 63 Copying a new system image from the SPU

```
remote# /usr/convex/spu -r /mnt/os/vmunix | /bin/gut > /vmunix
remote#
```

Setting up a file system for user directories

Follow the instructions in this section to create a file system for user directories.

Step 1 Select the disk partition on the remote machine to use for the /mnt partition.

If you have only one disk, you should consider using the h partition. If you have two or more disks, you should consider using the g partition of disk unit 1.

If you will be using disk unit 1, you must invoke the commands in Figure 64 to create a new device entry.

Figure 64 Creating a device for disk unit 1

```
remote# cd /dev
remote# MAKEDEV vn
```

Replace *vn* with

- da for Multibus devices
- dd for VME devices
- du for IDC devices

Replace *n* with the number of the disk you are using, either 0 or 1.

Step 2 If you have VME or IDC devices on your system, you must edit the /etc/fstab file using either /bin/ed or /usr/ucb/vi. All of the device names in the default /etc/fstab specify Multibus devices in the form of:

/dev/daxx

where *xx* defines the file partition. For VME devices, change this to:

/dev/ddxx

and for IDC devices:

/dev/duxx

For example, Figure 65 shows an example of /etc/fstab for VME devices.

Figure 65 /etc/fstab file for VME devices

```
/dev/dd0a    /          4.2    rw 1 1
/dev/dd0e    /usr      4.2    rw 1 1
/dev/dd0h    /mnt      4.2    rw 1 1
/dev/dd0f    /tmp      4.2    rw 1 1
```

Step 3 Create the /mnt file system with the command in Figure 66.

Figure 66 Creating the /mnt file system

```
remote# /etc/newfs -v /dev/rvvp unit-type
```

Replace *vv* with the appropriate letters for the device type: du, da, or dd.

Replace *pp* with the partition you have chosen to use, 0g or 1h, for example.

Replace *unit-type* with the unit type, for example, DKD-005 or DKD-001. Refer to Figure 4 on page 8 if you do not know the unit type.

Step 4 Verify the integrity of the new file system by running `fsck`, as shown in Figure 67.

Figure 67 Running `fsck`

```
remote# /etc/fsck -f -p /dev/rvvp
/dev/rvvp: 277 files, 8517 used, 11428 free (36 frags, 1424 blocks) (8k/1k)
/dev/rvvp: File system marked clean
```

Replace *vv* with the appropriate letters for the device type, du, da, or dd.

Replace *pp* with the partition you have chosen to use, 0g or 1h, for example.

Step 5 Mount the file system and set its access mode using the commands in Figure 68.

Figure 68 Mounting the /mnt file system

```
remote# /etc/mount /dev/vvpp /mnt
remote# chmod 755 /mnt
```

Replace *vv* and *pp* as you did for the commands shown in Figure 67.

- Step 6** Set the host name of the remote machine by entering the command in Figure 69.

Figure 69 Setting the host name

```
remote# hostname name
```

Replace *name* with the host name of the machine.

- Step 7** Unmount all file systems by entering the command in Figure 70.

Figure 70 Unmounting file systems

```
remote# /etc/umount -a
```

Caution

If you are installing optional products, do not boot to multiuser mode at this time.

If you are installing optional products on your system, you *must* upgrade them at this time. Skip to Chapter 3, "Installing optional products" on page 45.

If you are *not* installing optional products, complete the following steps:

- Step 8** Boot to multiuser mode by entering **CTRL-d** at the system prompt. The boot procedure is complete when the standard login prompt appears.

Step 9 Refer to the section titled "Running the upgrade script" on page 69.

Installing optional products

3

This chapter contains instructions for installing optional CONVEX products on a system without a local tape drive. The installation is done over Ethernet from a CONVEX machine that has a local tape drive.

This chapter contains information that you will need to perform the installation correctly and expediently.

Please read this chapter completely before attempting installation of optional products.

Throughout this chapter, the system with the tape drive is referred to as the *local* system, the system the optional products will be installed on is the *remote* system.

In screen examples in this chapter, system prompts on the remote machine will appear as

```
remote#
```

and system prompts on the local system will appear as

```
local#
```

The system prompts at your site may not appear this way.

Optional products

Table 12 lists the optional products that are bundled with the release of ConvexOS V10.1.

Table 12 Optional products

Product	Part number
Share Scheduler V10.0	710-010515-002
Internet Services V10.0	710-009715-002
NFS (Domestic) V10.0	710-009615-003
NFS (International) V10.0	710-009515-003
UDD Tools V10.0	710-010415-002
MC68000 Tools V10.0	710-010315-002
Optional Utilities Sources V10.1	710-010215-004

If you are upgrading from ConvexOS V9.1, every product in Table 12 that you have currently installed must be upgraded to the V10.0 version.

If you are upgrading from ConvexOS V10.0, you must re-install the V10.0 version of Domestic NFS. It is recommended that you upgrade CONVEX Optional Utilities Sources at this time if you have the V10.0 version currently installed.

Activation keys

Some optional products require a special password, called an *activation key*, to be supplied during installation. Activation keys are machine-specific and are included on a single sheet of paper in an envelope attached to each tape in your installation kit.

Activation keys are *not* required for:

- MC68000 Tools
- UDD Tools
- ConvexOS Optional Sources

If you will be installing optional products other than these and do not have your activation keys, contact the CONVEX Technical Assistance Center (TAC).

Prerequisites

To install optional products, you must have ConvexOS V10.1 running on your system. If you have not yet installed ConvexOS V10.1, please refer to the chapter titled "Before you start".

All the prerequisites for the ConvexOS and Utilities V10.1 remote installation also apply to remote optional products installations.

Local system prerequisites

- The local system must be running ConvexOS V10.0 or V10.1.
- CONVEX Internet Services must be installed and properly configured to communicate with the remote system. (See the *CONVEX Internet Services System Manager's Guide* for more information.)
- The `/.rhosts` file must contain the name of the remote system.

Remote system prerequisites

- The `/.rhosts` file must contain the name of the local system.
- The login shell for root must be `cs`.
- Your system must have V4.0 or later of the CONVEX C Compiler installed and it must be in `/bin/cc`.
- Your system must have CONVEX ALL (Assembler, Loader, and Libraries) V1.0 installed.

You should also note that:

- The Domestic NFS installation will create a new kernel via `sysgen`. If you are installing this product, you should be certain that:
 - You completed the steps in the section titled "Extracting the `/sys` directory" on page 37.
 - You have installed ConvexOS Domestic Tools V10.1.

Domestic NFS is only available to sites located in the United States and Canada.

- CONVEX Share Scheduler requires that you edit `/etc/rc`, `/etc/rc.std` and `/etc/rc.local` files. If you are installing this product, please refer to the *CONVEX Share Scheduler Release Notice* and the *CONVEX Share System Manager's Guide* for additional configuration information.

- The ConvexOS Optional Source product will install:
 - Complete source for GNU Emacs and Perl in the /usr/src directory
 - C source for the nu program in the /usr/src/convex directory
 - C source for the accounting program in the /usr/src/convex/accounting directory

Space requirements

Table 13 lists space requirements for the optional products that are bundled with ConvexOS. Your installation tape may contain additional products; please refer to the installation instructions for those products to determine space requirements.

Refer to the column labeled "Upgrade" if you are replacing a previous version of an optional product. If this is the first time you are installing an optional product, refer to the column labeled "Initial."

Table 13 Optional products space requirements in kilobytes

Product	Directory	Initial	Upgrade
Internet Services	/tmp	6000	6600
	/etc	200	20
	/usr/convex	5	1
	/usr/doc	5	1
	/usr/etc	3800	380
	/usr/infosys	20	2
	/usr/lib	50	5
	/usr/spool	5	1
	/usr/ucb	2200	220
	/usr TOTAL		6085

Table 13 (continued) Optional products space requirements in kilobytes

Product	Directory	Initial	Upgrade
Domestic NFS	/bin	680	68
	/etc	10	1
	/usr/bin	1500	150
	/usr/etc/yp	1300	130
	/usr/etc/install	360	36
	/usr/lib/verify	20	2
	/usr/lib	70	7
	/usr/ucb	310	31
	/usr/doc	10	1
	/usr/infosys/optscreens	10	1
	/usr/infosys/optfscreens	10	1
	/usr TOTAL	3590	359
	SPU /mnt	3000	3000
	International NFS	/bin	70
/etc		10	1
/usr/bin		940	94
/usr/etc/yp		1400	140
/usr/etc/install		310	31
/usr/lib/verify		10	1
/usr/doc		10	1
/usr/infosys/optscreens		6	1
/usr/infosys/optfscreens		6	1
/usr TOTAL		2692	269

Table 13 (continued) Optional products space requirements in kilobytes

Product	Directory	Initial	Upgrade
Share	/tmp	2000	2000
	/usr/convex	1600	160
	/usr/doc	10	1
	/usr/etc	100	10
	/usr/infosys	10	1
	/usr/lib	40	4
	/usr TOTAL	1760	176
MC6800 Tools	/tmp	3000	3000
	/usr/68k	3000	300
	/usr/lib	10	1
	/usr TOTAL	3010	301
UDD Tools	/tmp	500	500
	/usr/doc	10	1
	/usr/lib	400	40
	/usr TOTAL	410	41
Optional Utilities Sources	/tmp	9000	9000
	/usr/lib	1000	100
	/usr/src	8000	800
	/usr TOTAL	9000	900

Determining available space

The `df` command displays the amount of used and available space on a disk partition. Figure 71 shows how to display this information for the partition on which the `/tmp` directory resides.

Figure 71 Determining available space

```
% df /tmp
Filesystem          kbytes    used  avail capacity  Mounted on
/dev/du3a           45978    3550   37830      9%    /tmp
```

In this example, `df` indicates that there are over 37000 kilobytes available, which is more than enough for installation of all of these products.

When an optional product installation completes normally, the files it placed in `/tmp` are automatically removed. If you are installing multiple products, you only need enough free space in `/tmp` to satisfy the largest `/tmp` requirement. In other words, if you are installing *Optional Sources and Share*, you only need 9000 kilobytes of space in `/tmp`, not 11000.

If more than one of the directories listed in Table 13 resides on a single partition, you should sum the requirements and verify that the total amount of space is available. The `mount` command can be used to find out how directories are distributed among partitions, as shown in Figure 72.

Figure 72 Determining directory/partition distribution

```
% mount | grep 4.2
/dev/da0a on / type 4.2 (rw)
/dev/da0g on /mnt type 4.2 (rw)
/dev/dd0b on /export type 4.2 (rw)
/dev/dd1g on /export/Frame type 4.2 (rw)
/dev/dd0g on /usr type 4.2 (rw)
/dev/dala on /usr/spool type 4.2 (rw)
/dev/dalf on /tmp type 4.2 (rw)
/dev/da2g on /usr/local type 4.2 (rw)
/dev/da2h on /test type 4.2 (rw)
/dev/da3c on /doc type 4.2 (rw)
/dev/dd0a on /usr/adm type 4.2 (rw)
```

In this example, the directories `/usr/adm`, `/usr/spool`, and `/usr/local` are on partitions other than `/usr`. For example, if you are installing an upgrade of *Internet Services*, `/usr` must contain 609 kilobytes of free space, which is the sum of the space requirements for all the `/usr` directories listed in Table 13 *except for* `/usr/spool`. (`/usr/local` and `/usr/adm` do not appear under “Internet Services” in Table 13.)

Determining available space on the SPU disk

Domestic NFS installation requires 3000 kilobytes of free space in the /mnt directory on the SPU disk. To check the amount of available space, execute the command in Figure 73 on the console of the remote system.

Figure 73 Determining available space on SPU disk

```
# /usr/convex/spucmd df /mnt
+ df /mnt
Filesystem  Mounted on  kbytes    used    free  % used
/dev/dk0d   /mnt        81174    75999   5175   93%
```

In this example, there are 5175 kilobytes free, which is adequate for this installation.

If you do not have enough available space, consult Appendix A for a list of SPU files that may be deleted.

Halting ConvexOS

If you have just completed the upgrade or initial installation of ConvexOS and Utilities V10.1, your system is already in single-user mode and you should skip to the section titled "Installing a product" on page 58.

All optional product installations must be done while the system is in single user mode. To do this, complete the following procedure:

- Step 1** Log in as root at the system console of the remote machine.
- Step 2** Put the system in single-user mode by issuing the shutdown command, as shown in Figure 74.

Figure 74 Putting the system in single-user mode

```
remote# /etc/shutdown +5 "to install ConvexOS V10.1"
```

Messages warning users of the impending shutdown will be displayed for approximately five minutes. The single-user system prompt appears as shown in Figure 75.

Figure 75 Single-user mode

```
# erase ^H, kill ^U, intr ^C
```

Configuring the remote system

Configure the remote system by completing the steps in this section.

Step 1 Enter the commands in Figure 76.

Figure 76 Configuring the remote system

```
remote# /bin/hostname remotehost
remote# /etc/ifconfig controller remotehost arp trailers up
remote# /etc/inetd.old
```

Replace *remotehost* with the name of the remote system. Replace *controller* with the name of the Ethernet controller on the remote system. This is typically *ex0*.

Step 2 Verify that the network is running by executing the command in Figure 77 on the remote machine. This command will return the name of the local system.

Figure 77 Verifying the network

```
remote# /bin/rsh.old localhost /bin/hostname
localhost
```

Step 3 Log in to the local machine and execute the command in Figure 78. This command will return the name of the remote system.

Figure 78 Verifying the network (continued)

```
local# /usr/ucb/rsh remotehost /bin/hostname
remotehost
```

Step 4 Ensure that tape unit 0 on the local system is online.

Step 5 If tape queuing is enabled on the local machine, it must be disabled by executing the commands in Figure 79.

Figure 79 Disabling tape queuing

```
local# /usr/convex/tpconfig set queue dis
```

Before proceeding, wait 10 seconds for this command to take effect.

Installing a product

Follow the instructions in this section to install any of the optional products on the "ConvexOS V10.1 Utilities" tape.

Step 1 Mount the tape labeled "ConvexOS V10.1 Utilities" on tape unit 0 on the local system.

Step 2 Mount only the 4.2 file systems, as shown in Figure 80.

Figure 80 Mounting 4.2 file systems

```
remote# /etc/umount -a
remote# /etc/mount -at 4.2
```

Step 3 If you haven't already, start `inetd`, as shown in Figure 81.

Figure 81 Starting `inetd`

```
remote# /etc/inetd.old
```

Step 4 Invoke `installsw` on the local system, as shown in Figure 82.

Figure 82 Invoking `installsw`

```
local# mt rew
local# /etc/installsw -i -d device-name
```

Step 5 When `installsw` prompts you for the type of installation, enter `remote`, as shown in Figure 83.

Figure 83 Installation prompt

```
Choose the type of installation you want to perform:

          LOCAL          --> install on this machine
          REMOTE         --> install on a remote machine
          ABORT          --> abort installation

Enter your selection now --> remote
```

Step 6 At the prompt, enter the name of the remote system, as shown in Figure 84.

Figure 84 Remote system name prompt

```
If the remote machine HAS been configured for a remote
installation, enter the host name of the remote machine
as you would refer to it when using networking commands
(such as rlogin) from this machine.

Enter your selection now --> remotehost
```

A message verifying the network connection will appear on the screen.

If the network connection cannot be verified, the prompt in Figure 84 will again be displayed. If the network connection cannot be verified after two attempts, contact the Technical Assistance Center.

Step 7 A menu of ConvexOS Utilities is displayed, as shown in Figure 85. Note that your tape may contain different products, so the menu you see may not match Figure 85 exactly.

Figure 85 ConvexOS Utilities menu

Idx	Part Number	Description	Release	Files	Offset
1	710-009915-006	Root Upgrade	10.1	3	3
2	710-010015-005	Usr Upgrade	10.1	3	6
3	710-010115-004	Domestic Tools	10.1	3	9
4	710-009615-003	Domestic NFS Utilities	10.0.3	3	12
5	710-010215-004	Optional Utilities	10.1	3	15
		Sources			
6	710-009715-000	Internet Services	10.0.3	3	18
7	710-010515-000	Share Scheduler	10.0.3	3	21
8	710-010315-000	MC68000 Tools	10.0.3	3	24
9	710-010415-000	UDD Tools	10.0.3	3	27

^ Items marked with a + will be installed.
Items marked with a - will be de-installed.

To toggle selection on an item, type its number or part of its description. Patches auto-select with their base product. Use negative numbers to choose to de-install and remove it from your system. Use a - by itself to toggle all items. Use "install" to quit this menu and do the install.

selection?

Step 8 Select the products you wish to install by entering either the index number or the name of the product. In this example, to select Share Scheduler, enter either the number 6 or the word share. "+" signs indicate selected products, as shown in Figure 86.

Caution Do not install Root Upgrade, /usr Upgrade, or Domestic Tools at this time.

Figure 86 ConvexOS Utilities menu with items selected

```
Idx Part Number      Description      Release      Files Offset
1   710-009915-006   Root Upgrade   10.1         3     3
2   710-010015-005   Usr Upgrade   10.1         3     6
3   710-010115-004   Domestic Tools 10.1         3     9
4 + 710-009615-003   Domestic NFS Utilities 10.0.3       3    12
5 + 710-010215-004   Optional Utilities 10.1         3    15
                        Sources
6 + 710-009715-000   Internet Services 10.0.3       3    18
7 + 710-010515-000   Share Scheduler 10.0.3       3    21
8 + 710-010315-000   MC68000 Tools   10.0.3       3    24
9 + 710-010415-000   UDD Tools       10.0.3       3    27

^ Items marked with a + will be installed.
  Items marked with a - will be de-installed.

To toggle selection on an item, type its number or part of its
description. Patches auto-select with their base product. Use
negative numbers to choose to de-install and remove it from
your system . Use a - by itself to toggle all items.
Use "install" to quit this menu and do the install.

selection? 4 5 6 7 8 9
selection?
```

Step 9 Enter `install` to install the selected products, as shown in Figure 87.

Figure 87 Selection prompt

```
selection? install
```

Figure 88 contains the output of the Internet Services installation. Figure 89 contains output of the Domestic NFS Utilities installation. Figure 90 contains output of the Share Scheduler installation. All of these installation scripts will prompt you for an activation key as well as other information.

The MC68000, UDD, and Optional Utilities Sources installations are shown in Figure 91, Figure 92, and Figure 93. These products do not require activation keys or additional information.

In the event that installation of any product fails, you should not attempt to abort or suspend installation of the other products you've selected by entering `CTRL-c` or `CTRL-z`. Instead, you must wait

for the installation of each product to either complete successfully or abort.

These installation procedures continue with Step 10 on page 66.

Figure 88 CONVEX Internet Services installation output

```
{Installing Internet Services v10.0}
-----
--- CONVEX V10.0 Production Internet Services
-----
--- Installation commencing Sat Nov 23 21:03:31 CST 1991.
--- Performing consistency check.
--- Checking disk space requirements.
--- Saving local database files.
--- Extracting CONVEX V10.0 Internet Services from tape.
--- Adding links in /etc for internet utilities
--- Restoring local database files.
--- Setting correct ownership and permissions of restored files.
--- Activation key required.

Enter Internet Services activation key? activation key

--- Stamping executables
--- Testing activation of Internet Services
--- Updating the version database.
--- Adding message to /etc/motd.
--- Internet Services V10.0 installed.
--- Online release notes in /usr/doc.
--- Installation complete Sat Nov 23 21:05:08 CST 1991.
```

Figure 89 CONVEX Domestic NFS installation output

```
[Installing Domestic NFS Utilities v10.0]
-----
--- CONVEX V10.0 Production Domestic NFS Utilities
-----
--- Installation commencing Sat Nov 23 21:05:12 CST 1991.
--- Performing consistency check.
--- Checking disk space requirements.
--- Checking free space in /sys.
--- Installation of des_soft.o commencing Sat Nov 23 21:05:43 CST 1991.
--- Enter the configuration file to use or ABORT.

    Press return alone to use REL_C2: ?

--- Enter the output configuration file name to use or ABORT.

    Press return alone to use REL_C2.SECURE: ?
--- Getting des_soft.o from /usr/lib/libc.a.
--- Loading des_soft.o into /sys/CPU_OBJ/lib_rpc.a.
--- Performing consistency check.
--- Inserting des_soft.o into system.
--- Performing sysgen (this step will take a few minutes)
--- make: REL_C2.SECURE.
--- make install: REL_C2.SECURE.--- Backing up old system on the SPU.

--- Moving the new system to the SPU.
--- Remember to spu up /mnt/os/vmunix after you reboot.
--- Installation of des_soft.o complete Sat Nov 23 21:09:38 CST 1991.
--- Extracting CONVEX V10.0 Domestic NFS Utilities from tape.
--- Adding links in /etc for Domestic NFS utilities
--- Turning on the rpc daemons in /etc/inetd.conf

*** >>> BE SURE TO START /usr/etc/portmap IN YOUR /etc/rc.local FILE
<<< ***

--- Activation key required.

    Enter Domestic NFS Utilities activation key? activation key

--- Stamping executables
--- Testing activation of Domestic NFS Utilities
--- Updating the version database.
--- Adding message to /etc/motd.
--- Domestic NFS Utilities V10.0 installed.
--- Online release notes in /usr/doc.
--- Installation complete Sat Nov 23 21:11:24 CST 1991.
```

Figure 90 CONVEX Share Scheduler installation output

```
[Installing Share Scheduler v10.0]
-----
--- CONVEX V10.0 Production Share Scheduler
-----
--- Installation commencing Sat Nov 23 21:11:29 CST 1991.
--- Performing consistency check.
--- Checking disk space requirements.
--- Extracting CONVEX V10.0 Share Scheduler from tape.
--- Adding links for share utilities moved from /etc to /usr/etc.
--- Checking share database for shared groups
--- Activation key required.

    Enter Share Scheduler activation key? activation key

--- Stamping executables
--- Testing activation of Share Scheduler
--- Updating the version database.
--- Adding message to /etc/motd.
--- Share Scheduler V10.0 installed.
--- Online release notes in /usr/doc.
--- Installation complete Sat Nov 23 21:12:06 CST 1991.
```

Figure 91 CONVEX MC68000 installation output

```
[Installing MC68000 Tools v10.0.]  
  
-----  
--- CONVEX V10.0 Production MC68000 Tools  
-----  
--- Installation commencing Sat Nov 23 21:12:09 CST 1991.  
--- Performing consistency check.  
--- Checking disk space requirements.  
--- Extracting CONVEX V10.0 MC68000 Tools from tape.  
--- Updating the version database.  
--- Adding message to /etc/motd.  
--- MC68000 Tools V10.0 installed.  
--- Online release notes in /usr/doc.  
--- Installation complete Sat Nov 23 21:12:26 CST 1991.
```

Figure 92 CONVEX UDD installation output

```
[Installing UDD Tools v10.0]  
  
-----  
--- CONVEX v10.0 Production UDD Tools  
-----  
--- Installation commencing Sat Nov 23 21:12:29 CST 1991.  
--- Performing consistency check.  
--- Checking disk space requirements.  
--- Extracting CONVEX V10.0 UDD Tools from tape.  
  
--- Updating the version database.  
--- Adding message to /etc/motd.  
--- UDD Tools V10.0 installed.  
--- Online release notes in /usr/doc.  
--- Installation complete Sat Nov 23 21:12:32 CST 1991.
```

Figure 93 CONVEX Optional Source installation output

```
[Installing Optional Utilities Source v10.1]

-----
--- CONVEX V10.1 Production Optional Utilities Source
-----
--- Installation commencing Sat Nov 23 21:12:35 CST 1991.
--- Performing consistency check.
--- Checking disk space requirements.
--- Extracting CONVEX V10.1 Optional Utilities Source from tape.
--- Updating the version database.
--- Adding message to /etc/motd.
--- Optional Utilities Source V10.1 installed.
--- Online release notes in /usr/doc.
--- Installation complete Sat Nov 23 21:14:16 CST 1991.
```

Step 10 Deallocate the tape drive on the local system with the command in Figure 94.

Figure 94 Deallocating the tape drive

```
local# /usr/convex/tpunmount
```

Booting multiuser

If you have just installed Domestic NFS, follow the instructions in the section titled "Booting with Domestic NFS" on page 67. If you have *not* installed Domestic NFS, follow the instructions in "Booting without Domestic NFS" on page 67.

Booting without Domestic NFS

- Step 1** Terminate the init process and unmount the file systems, as shown in Figure 95.

Figure 95 Terminating init

```
remote# kill 1
# erase ^H, kill ^U, intr ^C
remote# /etc/umount -a
```

- Step 2** Press **CTRL-d** at the system prompt. The boot procedure is complete when the standard login prompt appears.

Booting with Domestic NFS

The Domestic NFS installation modifies the kernel via *sysgen*. To use the new kernel, complete the following steps:

- Step 1** Terminate the *init* process as shown in Figure 96.

Figure 96 Terminating init

```
remote# kill 1
# erase ^H, kill ^U, intr ^C
```

- Step 2** Copy the new system image from the SPU disk with the command shown in Figure 97.

Figure 97 Copying a new system image from the SPU

```
remote# /usr/convex/spu -r /mnt/os/vmunix | /bin/gut > /vmunix
```

Step 3 Bring the system to SPU level by executing the commands shown in Figure 98.

Figure 98 Returning to SPU level

```
# /etc/umount -a  
# /bin/sync;/bin/sync;/bin/sync  
# /etc/halt
```

Output is printed to the screen, and the system returns to the (spu)> prompt.

Step 4 Boot to multiuser mode by entering boot at the SPU prompt, as shown in Figure 99.

Figure 99 Rebooting ConvexOS

```
(spu)> osclean  
(spu)> sysreset  
(spu)> boot
```

The boot procedure is complete when the standard login prompt appears.

Running the upgrade script

`/usr/etc/upgrade` is an interactive Perl script that does the following:

- Checks your `/etc/passwd` file to make sure that it contains entries required by ConvexOS V10.1. (See the *ConvexOS and Utilities V10.1 Release Notice* for more information on required `/etc/passwd` entries.)
- Checks your `/etc/group` file to make sure that it contains entries required by ConvexOS V10.1. (See the *ConvexOS and Utilities V10.1 Release Notice* for more information on required `/etc/group` entries.)
- Checks your `/etc/services` file to make sure that it contains entries required by ConvexOS V10.1. (See the *ConvexOS and Utilities V10.1 Release Notice* for more information on required `/etc/services` entries.)
- Ensures that the permissions on users' `.crontab` and `.cronrc` files are set to 644. (See the *ConvexOS and Utilities V10.1 Release Notice* for more information about `cron`.)
- Moves the contents of `/usr/msgs` to `/usr/spool/msgs`.
- Merges new words into your `/usr/dict/words` file.
- Rebuilds the `makewhatis` database. (See the `makewhatis(8)` man page for more information.)
- Builds formatted man pages. (See the `catman(8)` man page for more information.)
- Copies `/vmunix` from the SPU disk. If you have followed these installation procedures completely, you have already completed this step.
- Creates a frozen `sendmail` configuration file.
- Runs `verify`.

You will be prompted before each step. If you do not want some of these tasks done, simply enter `n` in response to the appropriate prompt.

The upgrade script automatically creates a file of its output, `/tmp/install.txt`, via the `tee` utility.

You should invoke `/usr/etc/upgrade` while the system is in multiuser mode. The script will offer to create an `/etc/nologin` file, which will prevent users from logging in. If you choose to create this file, it will be removed when the script terminates.

Invoke the upgrade script by issuing the command in Figure 100.

Figure 100 Running /usr/etc/upgrade

```
# /usr/etc/upgrade
```

SPU files

A

This appendix lists files that may be removed from the SPU disk in order to obtain the required amount of free space for the ConvexOS V10.1 installation.

Do not remove files listed here unless you are unable to create enough free space to install ConvexOS.

IOP systems

If your system has only an IOP, the following files may be removed:

- The jptest directory
- /mnt/test/io5000
- The /mnt/test/dev5 directory and its contents

This should provide 2.6 megabytes of space.

VIOP systems

If your system has only a VIOP, the following files may be removed:

- The jptest directory
- /mnt/test/io4000
- The /mnt/test/dev4 directory and its contents

This should provide 3.8 megabytes of space.

VIOP and IOP systems

If your system has both a VIOP and an IOP, contact the Technical Assistance Center (TAC).

Restoring individual utilities

B

This appendix describes how to restore individual products from the ConvexOS Utilities V10.1 tape.

Caution

Some programs in CONVEX Internet Services, CONVEX Share Scheduler, and both international and domestic NFS require activation keys to run. You will be unable to restore working versions of these products using the procedure outlined here. Please follow the procedures in Chapter 3, or contact the CONVEX Technical Assistance Center (TAC).

Also, you should not restore the root file system using these procedures. If you find it necessary to restore root, contact the CONVEX Technical Assistance Center (TAC).

Positioning the tape

Because your ConvexOS V10.1 Utilities tape may contain many products, the exact location of each product on the tape is variable. However, the first nine files are always in the same position. These are listed in Table 14.

Table 14 ConvexOS Utilities distribution tape contents

Position	File	Format
0	Master header	text
1	Master script	text
2	gip support	tar
3	Root header	text
4	Root script	text
5	Root data	data
6	Usr header	text
7	Usr script	text
8	Usr data	dump

Optional products begin in position 9. Each optional product consists of at least three files, which are always in the same order:

- Header, in text format
- Script, in text format
- At least one data file, in tar format

To determine the exact position of an optional product on the tape, look at the `installsw` menu, as shown in Figure 101.

Figure 101 ConvexOS Utilities menu

Idx	Part Number	Description	Release	Files
1	710-009915-000	Root Upgrade	10.1	3
2	710-010015-000	/usr Upgrade	10.1	3
3	710-010115-000	Domestic Tools	10.0	3
4	710-009715-000	Internet Services	10.0	3
5	710-009615-000	Domestic NFS Utilities	10.0	3
6	710-010515-000	Share Scheduler	10.0	3
7	710-010315-000	MC68000 Tools	10.0	3
8	710-010415-000	UDD Tools	10.0	3
9	710-010215-000	Optional Utilities Source	10.0	3

^ Items marked with a + will be installed.
Items marked with a - will be de-installed.

To toggle selection on an item, type its number or part of its description. Patches auto-select with their base product. Use negative numbers to choose to disinstall. Use - to toggle all items.
Use "install" to quit this menu and do the install.

selection?

Note that your tape may contain different products, so the menu you see may not match Figure 101 exactly.

Step 1 Determine the position of the product you wish to retrieve. To do this, sum the number of files (shown in the left column of Figure 101) for each product that appears before the product you want, then add 3 (for the files in positions 0, 1, and 2 that do not appear on this menu). For example, the MC68000 tools product begins at position 21. The header is at 21, the script is at 22, and the data is at 23.

Step 2 Mount the tape on the tape drive of the local system and position it correctly by entering the commands shown in Figure 102.

Figure 102 Mounting the ConvexOS V10.1 Utilities tape

```
# /bin/mt -f device-name rew  
# /bin/mt -f device-name fsf position-number
```

Replace *device-name* with the name of the tape device you are using (for example, /dev/rmt20 or /dev/rdat0n). Replace *position-number* with the position of the first file of the optional product.

Restoring a cat format utility

The header and script files for an optional product are always in cat format. To retrieve these from the tape, execute the command in Figure 103 after you have correctly positioned the tape.

Figure 103 Restoring a cat format utility

```
# cat < device-name > filename
```

Replace *device-name* with the name of the tape device you are using (for example, /dev/rmt20 or /dev/rdat0n). Replace *filename* with the name of the file to which the utility is restored.

Restoring a dump format utility

The /usr data is in dump format. To restore it, enter the commands in Figure 104, after you have positioned the tape at position 8.

Figure 104 Restoring a dump format utility

```
# /etc/restore xGbf 64 device-name
```

Replace *device-name* with the name of the tape device you are using (for example, /dev/rmt20 or /dev/rdat0n).

Restoring a tar format utility

To restore a tar format utility, follow the steps in this section after you have correctly positioned the tape.

- Step 1** Read the tar image into /tmp on the local machine, as shown in Figure 105.

Figure 105 Reading a tar image into /tmp

```
# /bin/dd if=device-name of=/tmp/filename bs=64k
```

Replace *device-name* with the name of the tape device you are using. Replace *filename* with any name you find appropriate.

- Step 2** List the files in the tar image by entering the command in Figure 106.

Figure 106 Listing the contents of a tar image

```
# cd /tmp
# tar tvf filename
```

Replace *filename* with the file name you supplied in Figure 105.

- Step 3** Extract the desired file from the tar image as shown in Figure 107.

Figure 107 Extracting a file from a tar image

```
# cd /tmp
# tar xvf filename
```

Replace *filename* with the name of the file as it appears in the output of the command in Figure 106.



