ConvexOS and Utilities V11.5.1 Installation Procedures

Document No. 710-003530-035

September 1996

Hewlett-Packard Company
Convex Technology Center
Richardson, Texas
United States of America

ConvexOS and Utilities V11.5.1 Installation Procedures

Document No. 710-003530-035

Notice

The information contained in this document is subject to change without notice.

Hewlett-Packard makes no warranty of any kind with regard to this material, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. Hewlett-Packard shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance or use of this material.

This entire book is recyclable.

Printed in the United States of America

Contents

Figures

Tables

Before you start

1

Types of installations

There are two methods of installing ConvexOS and Utilities, only one of which is appropriate for your site:

- *upgrade*—If you are currently running ConvexOS V10.0 or later, see Chapter 3.
- *initial installation*—If this is the first installation of ConvexOS on your machine, or if you are running ConvexOS V9.1 or earlier, see Chapter 2.

With ConvexOS V11.5.1, CONVEX *no longer* supports:

- Remote installation
- Kernel upgrades from the SPU
- C1 systems

Note

CONVEX C1 systems are not supported by the ConvexOS V11.5.1 release.

With ConvexOS V11.5.1, several device drivers have been commented out of the default sysgen template to reduce VIOP memory usage by device drivers. These include:

- FDDI device driver
- user-written device drivers
- Eagle ethernet driver (C200, C3200, C3400, C3800 series only)

If you are using any of these device drivers, you will need to perform a sysgen before these devices can be used.

With ConvexOS V11.5.1, the hyperchannel device driver has been removed from the default sysgen template. Support for this device will be provided on a best-effort basis; users requiring continuing support of this device should contact the CONVEX Technical Assistance Center (TAC).

ConvexOS Utilities

ConvexOS Utilities, distributed as Root and usr Upgrades prior to ConvexOS V11.0, have been split into 13 separate subproducts that may be released separately. Splitting the Utilities enables CONVEX to quickly develop and release patch or incremental releases. There is no longer a single ConvexOS version number associated with the kernel and utilities, but there is a ConvexOS configuration denoted by the subproduct versions saved in a system's Generic Installation Procedures (GIP) database.

Table 1 shows the new subproducts.

Table 1 ConvexOS Utilities subproducts

Product name	Part number	Description
ConvexOS Accounting System	710-016215-007	Programs and files for accounting administration.
ConvexOS Contributed Utilities	710-017215-006	Contributed utilities, such as GNU EMACS, gzip and tcsh.
ConvexOS Core Utilities	710-000315-011	Basic set of utilities required to install the system. This subproduct contains all the utilities included in the mini-root.
ConvexOS Extended Utilities	710-016115-008	ConvexOS utilities not in the Core Utilities subproduct except for those associated with another specific subproduct.
ConvexOS Programming Tools	710-016315-007	Header files, libraries, and programs that support a development environment.
ConvexOS Info System	710-016415-006	The `infosys`, `learn`, and `csh-help` subsystems.
ConvexOS Line Printer System	710-016515-006	Programs and files that support the line printer subsystem.
ConvexOS Mail System	710-016615-008	Programs and files that support the mail subsystem.
ConvexOS Notes System	710-016715-006	Programs and files that support the notes subsystem.
ConvexOS Plotter Control System	710-016815-006	Programs and files used explicitly for plotter control.

Table 1 ConvexOS Utilities subproducts

Product name	Part number	Description
ConvexOS Terminal Control System	710-016915-006	Programs and files used explicitly for terminal control.
ConvexOS Text Processing System	710-017015-006	`nroff` and related binaries and files.
ConvexOS UUCP System	710-017115-006	Programs and files that support the UUCP subsystem.

Table 2 lists additional layered products that are being released with ConvexOS V11.5.1.

Table 2 Additional layered products

Product name	Part number
CONVEX Share Scheduler V11.5	710-010515-009
CONVEX Internet Services V11.5.1	710-009715-010
CONVEX NFS Utilities V11.5	710-009615-012
CONVEX Domestic Tools V11.5	710-010115-011
CONVEX FDDI V3.1	081-006115-010

The UDD Tools and MC68000 Tools products have not changed for V11.5.1 and do not need to be reinstalled.

All ConvexOS products listed above can be installed at the same time except the CONVEX FDDI Interface because it requires a sysgen.

The only layered product included with ConvexOS that requires an activation key is CONVEX Share Scheduler.

Installation menu

The GIP installation menu has several enhancements (introduced in ConvexOS V11.0) to give you more flexibilty in selecting products for installation.

Figure 1 shows the menu that is displayed when you begin the installation procedure.

Figure 1 GIP installation menu

```
Patches are auto-selected with their base product.
 -         Toggle all products              > Page forward
 n[:k]     Toggle product(s) <n> through <k>< Page backward
 pattern   Toggle all products containing   ? Display this menu
            <pattern> in the name
 -n        Remove the product from your system
 install   Begin product installation
 abort     Exit the installation

Idx  Part Number       Description            Release  Files  Offset   Flags
---  ----------        -----------            -------  -----  ------   ------
1 + 710-005415-040  ConvexOS C200-C3200       11.5.1     5      3        UK
2 + 710-000315-011  ConvexOS Core Utilities   11.5.1     4      8        U
3 + 710-016115-008  ConvexOS Extended         11.5.1     4     12        U
                    Utilities
4 + 710-016315-007  ConvexOS Programming      11.5.1     4     16        U
                    Tools
    ^ Items marked with a + will be installed.
      Items marked with a - will be de-installed.

selection?  -
```

Menu options are:

- `-  Toggle all products`

  Enter - to select (mark with +) or deselect (mark with -) all products on the list. (The list of products can be longer than one screen.)

- `> Page forward, < Page backward`

  Enter > or < to display more of the list if it is longer than one screen. The end of the available product list is signified by the message

  ```
  *** End of media. ***
  ```

- `n[:k]  Toggle product(s) <n> through <k>`

  Enter the corresponding index number or range of numbers. You can type more than one selection on a line, separating each selection with a space. To select a range, type the first number followed by the last number in the range preceded by a colon and enclosed in square brackets. For example, `5[:10]` selects items numbered 5 through 10.

- `pattern  Toggle all products containing <pattern> in the name`

  Enter a string of characters to select all products containing that string in the name.

- `? Display this menu`

  Display available commands.

- `-n  Remove the product from your system`

  Enter - followed by the number of the product you do not want to install.

The flags field contains informative flags that tell you about the product. These flags are

- R—The product is relocatable
- D—The product is deinstallable
- U—The product supports unattended installation
- C—The product is configurable
- K—The product requires an activation key
- S—The product requires a sysgen

A product can contain any or all of these flags. If a product you select supports unattended installation, you are asked whether or not you want to accept default responses, if supplied. If you respond "yes" and the product requires an activation key, you are prompted for the key which you must enter at this time.

If the product supports unattended installation and is configurable or relocatable, there may be prompts that do not have default responses. In this case the installation pauses until the prompt is answered.

Verifying your installation kit

Installation kits contain:

- A magnetic tape containing "ConvexOS and Utilities V11.5.1" with an attached list of the software products the tape contains and their installation activation keys. Tapes are provided in either 9-track round tape or DAT-format cassette.

  If you received a second tape, it may contain layered products for which you hold licenses. Refer to the packing slip to determine which layered products are included in your installation kit.

  The first file on every tape is a header file that lists the contents of the tape. If you lose the packing slip, mount the tape on the drive and display the first file on the tape by entering `cat`.

- A copy of the *ConvexOS and Utilities V11.5.1 Release Notice*, document number 710-003430-066.
- A copy of the *ConvexOS V11.5: Technical Overview and Managing ConvexOS Addendum*, document number 710-001430-215.
- These installation procedures.
- Release notices and installation procedures for layered products included on your installation tapes and 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.

Notes

Initial installations will require a "ConvexOS Miniroot" tape for booting miniroot prior to installation of ConvexOS V11.5.1. "ConvexOS Miniroot" is issued as a separate product and is not included on the ConvexOS installation tapes.

ConvexOS V11.5.1 installations performing a sysgen require CONVEX ALL V3.0 or greater for installation. This product may have been shipped previously on a separate installation tape.

Installation task summary

This section summarizes the ConvexOS and Utilities V11.5.1 initial installation procedure detailed in Chapter 2, and the upgrade installation procedure detailed in Chapter 3.

Initial installation task summary

1. Determine that you have met the prerequisites, have all the necessary information, and have the required disk space for the installation.
2. Back up the existing /root, /usr, and SPU file systems, if applicable.
3. Halt ConvexOS.
4. Install miniroot.
5. Set up the file system.
6. Mount the ConvexOS V11.5.1 install tape.
7. Run `miniinstall`.
8. Continue with Step 5 below.

Upgrade installation task summary

1. Determine that you have met the prerequisites, have all the necessary information, and have the required disk space for the installation.
2. Back up the existing /root, /usr, and SPU file systems.
3. Mount the ConvexOS V11.5.1 install tape.
4. Run `installsw`.
5. Upgrade ConvexOS and all layered products.
6. Halt ConvexOS and boot to single-user mode.
7. Merge /etc/rc.local and /etc/rc.std.
8. Boot to multi-user mode.
9. Run the `upgrade` script.

Initial installation

2

This chapter contains instructions you need to perform an initial installation. The procedure involves installing miniroot, which boots ConvexOS on the miniroot file system. After miniroot is installed and the file systems are set up, the initial installation is completed by using the upgrade procedure in Chapter 3.

This chapter describes

- Prerequisites
- Required information
- Space requirements
- Backing up file systems
- Halting ConvexOS
- Installing miniroot
- Setting up the file system
- Running `miniinstall`

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

If you are upgrading from ConvexOS and Utilities V10.0 or later, refer to Chapter 3.

Prerequisites for initial installation

This installation requires that the following conditions be met:

- The VME ethernet controller firmware must be at revision 6.4 or later. If it is not, reconfiguring the eth devices will not be supported and instability can result.
- Your system must have a tape drive.
- If you are installing any CONVEX products which require a sysgen, you must have CONVEX ALL (Assembler, Loader, and Libraries) V3.0 available for installation.
- If you are installing ConvexOS and Utilities on a CONVEX C3800 or C4600 Series system, you should enter the commands described in this document in the CONVEXOS CONSOLE window on the SPU, unless otherwise noted.
- You must be root.
- Your system must have the versions of SPU software listed in Table 3.

Table 3 SPU software dependencies

CONVEX system	SPU OS	System Diagnostics or Processor Diagnostics	I/O Diagnostics
C200, C3200 Series	V6.1 or later	V5.2 or later	1.1
C3400 Series	V6.1	V2.1.1 or later	1.1
C3800 Series	V2.0	V4.1 or later	4.2
C4600 Series	V2.0	V1.0.3 or later	1.0.3

Figure 2 shows the commands to use on a 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.

Figure 2 Determining versions of required SPU software

```
(spu)> 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
(spu)> cat /mnt/DIAG_REV
!<installsw>
Copyright 1990 CONVEX Computer Corp.
All rights are reserved.
CREATED ON Mon Nov 19 15:38:37 1990
Product:         System Diagnostics, Version: V3.5.0.2
Release date:    Oct 15, 1990
Directories:     /mnt/bin, /mnt/test, /mnt/man
```

On a C3800 or C4600 Series system, make the replacements shown in Table 4 to the command lines in Figure 2.

Table 4 Determining SPU software versions on a C3800 or C4600 system

Replace:	With:
/UNIX_REV	**/SPUOS_REV**
/mnt/DIAG_REV	**/diag/DIAG_REV**

Required information

The installation script requires you to provide several pieces of information. This section lists information you should gather before performing the installation.

You should know:

- The name of your time zone and your daylight savings rule.
- The type of disk device that contains your root partition. Figure 3 shows the command used to display this device. The root disk device is highlighted.

Figure 3 Determining root disk device

```
% df /
Filesystem            kbytes    used   avail capacity  Mounted on
/dev/du0a              45978   26804   14576    65%    /
```

Table 5 shows how to determine the device type from this output.

Table 5 Root disk device types

Device name	Device type
da*xx*	Multibus
du*xx*	IDC
dd*xx*	VMEbus
sd*xx*	QSC

According to Table 5, the root disk device in Figure 3 is an IDC disk.

- 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.
- Which partitions you have designated as swap space. The installation script will look in /mnt/os/bootcmd.local (or use the default in /mnt/os/bootcmd) for this information and you will be asked to confirm it. The first swap partition is used for the miniroot partition and should be at least 40 Mb.
- The ConvexOS password for upgrading SPU software, which you must obtain by calling the CONVEX Technical Assistance Center (TAC).

Space requirements

Table 6 lists the total amount of space required for ConvexOS V11.5.1. The total space required in /tmp is the largest amount required of all products. Use the `df` command to determine available space. Refer to Appendix A for space requirements for individual products and information on using the `df` command.

Table 6 Required space for ConvexOS V11.5.1 (initial installation)

Directory	Total kilobytes required
/	15374
/usr	94384
/tmp	21000

Backing up file systems

Before proceeding with the installation, make full backups of existing / (root), /usr, and SPU file systems 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 installation. This ensures against loss of valuable files if problems arise during installation.

To do this, complete the following procedure:

Step 1 Determine which tape device to use. You can determine the device number of the tape drive by consulting the /ioconfig file on the SPU. Ensure that the tape drive is online. (This procedure assumes you are using tape unit 0.)

Step 2 Mount a back-up tape on the tape drive.

Step 3 Back up the / (root) file system by entering the commands shown in Figure 4. This command will write to the /dev/rmt16 device; see the dump(8) man page for information on specifying other devices.

Note that the 0 in the command line is a zero, not the letter O.

Figure 4 Backing up the root file system

```
# cd /
# /etc/dump 0G /
```

The backup is complete when the system prompt returns.

Step 4 Rewind, unmount, and label the tape.

Step 5 Mount another back-up tape on the tape drive for the /usr file system backup.

Step 6 Back up the /usr file system by entering the command shown in Figure 5. This command will write to the /dev/rmt16 device; see the dump(8) man page for information on specifying other devices.

Note that the 0 in the command line is a zero, not the letter O.

Figure 5 Backing up the /usr file system

```
# /etc/dump 0G /usr
```

The backup is complete when the system prompt returns.

Step 7 Rewind, unmount, and label the tape.

Step 8 Ensure that the keyswitch is in LOCAL mode, and go to the SPU by pressing **CTRL-p** at the system prompt.

Step 9 Insert a back-up tape in the SPU tape drive.

Step 10 Back up the SPU disk by entering the command shown in Figure 6. If you are backing up the SPU on a C3800 or C4600 Series system, you must be root to execute this command.

Figure 6 Backing up the SPU disk

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

The backup is complete when the system prompt returns.

Step 11 Remove and label the tape.

Step 12 Press CTRL-d to return to the system level prompt.

Halting ConvexOS

ConvexOS must be halted before performing an initial installation. If ConvexOS is running on the system, bring the system to SPU level by following the steps in this section.

Step 1 Log in as root at the system console.

Step 2 Put the system in single-user mode by issuing the `shutdown` command, as shown in Figure 7.

Figure 7 Putting the system in single-user mode

```
# /etc/shutdown +5 "to install ConvexOS V11.5.1"
#
```

Messages warning users of the impending shutdown will be displayed for approximately five minutes.

Step 3 Unmount the file systems as shown in Figure 8.

Figure 8 Unmounting file systems

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

Step 4 Take the system to SPU level by entering the commands shown in Figure 9.

Figure 9 Halting the system

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

Output will be written to the screen and the `(spu)>` prompt will appear.

Installing miniroot

The ConvexOS miniroot file system is used to boot ConvexOS and restore the contents of the installation tape for initial installations or systems with corrupted root file systems (i.e., cannot boot ConvexOS). Follow the instructions in this section to install the miniroot from a SPU cartridge tape. It should take about 25 minutes to complete this section.

Step 1 On systems with a previous installation of ConvexOS, remove the directory /mnt/old_os with the command shown in Figure 10.

Figure 10 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 7 lists space requirements by machine type.

Table 7 SPU space requirements

System	Kilobytes required
C200, C3200 Series	4260
C3400 Series	4230
C3800 Series	5220
C4600 Series	6870

Use the `df` command to determine the available space, as shown in Figure 11.

Figure 11 Determining available space on the 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, consult Appendix B for a list of SPU files that may be deleted.

Step 3 Locate the cartridge tape containing "ConvexOS Miniroot" and insert it in the SPU tape drive.

Step 4 On systems with a previous installation of ConvexOS, terminate ConvexOS processes with the command shown in Figure 12.

Figure 12 Removing processes

```
(spu)> osclean
       .
       .
       .
(spu)> sysreset
```

Ignore messages such as

```
osclean:SIGSEGV signal
```

if they appear.

Step 5 Execute the commands in Figure 13 to begin installation.

Figure 13 Invoking `installsw`

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

Step 6 You are prompted to enter the root, miniroot, and swap disk partitions. The disk that is currently serving as the disk device is displayed. To continue using this disk, press **RETURN** at the prompt, as shown in Figure 14.

Figure 14 Root device prompt

```
--- Please enter the root disk partition [du0a]:
--- Please enter the miniroot disk partition [du0b]: du0b
--- Please enter the swap disk partition [du0b]: du0b,du1b
```

Step 7 `installsw` displays a menu of time zones, as shown in Figure 15. At the prompt, enter either the number corresponding to your time zone, or one of the abbreviations in the second column.

Figure 15 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 8 At the prompt, enter either the number corresponding to your daylight savings rule, or the corresponding abbreviation listed in the second column, as shown in Figure 16.

Figure 16 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 9 The information you supplied for disk devices and time zone is displayed and you are asked to confirm it as shown in Figure 17.

Figure 17 Verifying disk partition and time zone information

```
--- You have supplied the following information.
 root on du0a
 miniroot on du0b
 swap on du0b,du1b
 timezone cst
 dst rules us
--- Is this correct [yn]?
```

If you answer `n` at the prompt, `installsw` returns you to the beginning of the installation to reenter the root disk device. If you anwer `y`, `installsw` extracts the release contents from the SPU tape drive, puts it in /mnt/os, and edits /mnt/os/bootcmd and /mnt/os/tunables with the information you supplied.

After the system is initialized, miniroot is loaded onto the miniroot partition and ConvexOS is booted on the miniroot file system.

When the system prompt returns, continue with the instructions in the "Setting up the file systems" section below.

Setting up the file systems

To create file systems and mount them on /root, complete the steps in this section.

Step 1 Mount the tape containing "ConvexOS Core Utilities V11.5.1".

Step 2 If you are using a DAT tape, create the DAT device by entering the command shown in Figure 18.

If you are not using a DAT tape, skip this step.

Figure 18 Creating a DAT device on miniroot

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

Step 3 Create and verify the integrity of all file systems by entering the commands shown in Figure 19.

Figure 19 Creating and verifying file systems

```
# cd /
# /etc/newfs -v /dev/rvv0a unit-type
.
.
.
# /etc/newfs -v /dev/rvv0a unit-type
# /etc/fsck -f -p device_list
```

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
QSC	sd

Replace *unit-type* with the unit type for unit 0, for example, DKD-005 or DKD-001. Refer to Figure 3 on on page 12 if you do not know the unit type.

Replace *device_list* with the names of the file systems created by the `newfs` command.

Step 4 Mount the complete file system tree under /root by entering the commands in Figure 20.

Figure 20 Mounting the root file system

```
# /bin/mkdir /root
# /etc/mount /dev/vv0a /root
# /bin/mkdir /root/usr
# /etc/mount /dev/vv0g /root/usr
.
.
.
# /etc/mount /dev/vv0h /tmp
```

Continue to replace *vv* with the appropriate characters, as shown in Table 8.

Step 5 Create the fstab file as shown in Figure 21.

Figure 21 Creating the fstab file

```
# mkdir /root/etc
# cd /root/etc
# /usr/ucb/vi fstab
```

Step 6 Verify that the /etc/fstab file contains only /tmp and swap space. Enter

```
cat /etc/fstab
```

Edit the file to comment out entries other than /tmp and swap space.

Step 7 Run MAKEDEV to create device files for devices in your configuration that do not already have entries in /dev, as shown in Figure 22. Replace *devices* with the names of the devices for which you want to create entries. Refer to your /ioconfig file to see the devices in your configuration.

Figure 22 Running MAKEDEV

```
# mkdir /root/dev
# cd /root/dev
# /dev/MAKEDEV dd0 dd1 ...
cd /
```

Running `miniinstall`

The `miniinstall` program sets an environment variable that causes software to be installed under /root.

Step 1 To run `miniinstall`, enter the command shown in Figure 23.

Figure 23 Running miniinstall

```
# miniinstall -i -d /dev/rmt20
```

Step 2 You are promted to enter the path to the root file system. Press return to accept the default as shown in Figure 24.

Figure 24 Entering path to root file system

```
Enter the path to the root file system [/root]:
Starting: /etc/installsw -i -d /dev/rmt20
```

The remaining steps in the initial installation procedure are the same as for an upgrade installation. Procede to Chapter 3, "Upgrade Installation," Step 7 on page 34.

Note

Although the miniroot is not intended to be used on a system which already has ConvexOS installed, it will back up the /mnt/os directory. If you wish to preserve the original os directory on the spu, execute the following instruction at the spu> prompt after the miniroot is installed:

```
spu> cd /
spu> mv /mnt/old_os /mnt/os.save
spu> cd /mnt/os
```

Upgrade installation

3

This chapter contains information you need to perform an upgrade installation or complete an initial installation. It describes

- Prerequisites
- Required information
- Space requirements
- Backing up file systems
- Shutting down to single user mode
- Upgrading the kernel and layered products
- Restarting ConvexOS
- Installing products requiring a sysgen
- Merging the rc files and booting multiuser
- Running the upgrade script

Please read this chapter completely before attempting to upgrade ConvexOS and Utilities.

Prerequisites for upgrade

This installation requires that the following conditions be met:

- The VME ethernet controller firmware must be at revision 6.4 or later. If it is not, reconfiguring the eth devices will not be supported and instability can result.
- Your system must have a tape drive.
- Your system must be running ConvexOS and Utilities V10.0 or later. You will be unable to upgrade directly from an earlier version.
- You must have the required disk capacity (refer to the "Accounting files upgrade" section on page 29.)
- You must have the required /etc/passwd and /etc/group entries.

  UIDs and GIDs 0 through 99 are reserved for use by CONVEX. Future releases may use UIDs and GIDs in this range on an as-needed basis; do not assign them to users or groups at your site.

  Table 9 and Table 10 list required users, UIDs, GIDs, and groups for ConvexOS V11.5.1.

  Figure 25 and Figure 26 contain example /etc/passwd and /etc/group entries.

Table 9 Required users, UIDs, and GIDs

User name	UID	GID
root	0	10
daemon	1	1
convex	2	10
anon	4	8
nouser	8	8
notes	10	13
uucp	14	40
test	16	49
auth	20	20
audit	21	21
fs	22	22
lpr	23	23
cron	26	26
smarch	33	10
dce	32	32
nobody	65534	65534

Table 10 Required groups and GIDs

Group name	GID
zero	0
daemon	1
kmem	2
sys	3
tty	4
nogroup	8
bin	10
notes	13
auth	20
audit	21
fs	22
lpr	23
batch	24
backup	25
cron	26
tapeadm	27
operator	28
tapeop	29
preserve	30
guest	31
uucp	40
staff	49

Figure 25 Example entries in /etc/passwd

```
root::0:10:ConvexOS:/:/bin/csh
daemon:*:1:1:The devil himself:/:/bin/false
convex:*:2:10:Convex Computer Corp.,,,2144974000:/:/bin/false
anon:*:4:13:Anon notes:/:/bin/false
nouser:*:8:8:Generic Non-User:/:/bin/false
notes:*:10:13:Notesfile Owner:/usr/spool/notes/.utilities:/bin/csh
uucp:*:14:40:UNIX-to-UNIX Copy:/usr/spool/uucppublic:/usr/lib/uucp/uucico
test:*:16:49:System Exerciser:/tmp:/bin/csh
auth:*:20:20:Auth Admin:/:/bin/false
audit:*:21:21:Audit Admin:/:/bin/false
fs:*:22:22:Files system Admin:/:/bin/false
lpr:*:23:23:line printer spooling pseudo-user:/:/bin/false
cron:*:26:26:cron subsystem pseudo-user:/:/bin/false
smarch:*:33:10:SMarch to Unitree pseudo-user:/usr/smarch:/bin/csh
dce:*:32:32:DCE subsystem pseudo-user:/:/bin/false
nobody:*:65534:65534::/:
```

Figure 26 Example entries in /etc/group

```
daemon:*:1:daemon
kmem:*:2:
sys:*:3:
tty:*:4:
nogroup:*:8:nouser
bin:*:10:root,convex
notes:*:13:notes,anon
auth:*:20:auth
audit:*:21:audit
fs:*:22:fs
lpr:*:23:lpr
batch:*:24:
backup:*:25:
cron:*:26:cron
tapeadm:*:27:
operator:*:28:root
tapeop:*:29:
preserve:*:30:
guest:*:31:root
uucp:*:40:uucp
staff:*:49:test
dce:*:32:
```

- You must install CONVEX ALL (Assembler, Loader, and Libraries) V3.0 before installing CONVEX FDDI or other products that require a sysgen.

  To determine which version of ALL you are running, enter:

  ```
  /usr/convex/vers /bin/ld
  ```

- If you are installing ConvexOS and Utilities on a CONVEX C3800 or C4600 Series system, you should enter the commands described in this document in the CONVEXOS CONSOLE window on the SPU, unless otherwise noted.
- You must be root.

- Your system must have the versions of SPU software listed in Table 11.

Table 11 SPU software dependencies

CONVEX system	SPU OS	System Diagnostics or Processor Diagnostics	I/O Diagnostics
C200, C3200 Series	V6.1 or later	V5.2 or later	1.1
C3400 Series	V6.1	V2.1.1 or later	1.1
C3800 Series	V2.0	V4.1 or later	4.2
C4600 Series	V2.0	V1.0.3 or later	1.0.3

Figure 27 shows the commands to use on a 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 27 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: V6.1
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:       System Diagnostics, Version: V5.1.2
Release date:   Oct 15, 1990
Directories:    /mnt/bin, /mnt/test, /mnt/man
```

On a C3800 or C4600 Series system, make the replacements shown in Table 12 to the command lines in Figure 27.

Table 12 Determining SPU software versions on a C3800 or C4600 system

Replace	With
/UNIX_REV	**/SPUOS_REV**
/mnt/DIAG_REV	**/diag/DIAG_REV**

Required information

The installation script requires you to provide several pieces of information. The installation script will look in /mnt/os/bootcmd.local (or use the default in /mnt/os/bootcmd) for this information and you will be asked to confirm it. This section lists information you should gather before performing the installation.

You should know:

- The name of your time zone and your daylight savings rule.
- The type of disk device that contains your root partition. Figure 28 shows the command used to display this device. The root disk device is highlighted.

Figure 28 Determining root disk device

```
% df /
Filesystem            kbytes    used   avail capacity  Mounted on
/dev/du0a              45978   26804   14576    65%    /
```

Table 13 shows how to determine the device type from this output.

Table 13 Root disk device types

Device name	Device type
da*xx*	Multibus
du*xx*	IDC
dd*xx*	VMEbus
sd*xx*	QSC

According to Table 13, the root disk device in Figure 28 is an IDC disk.

- 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.
- Which partitions you have designated as swap space.
- The ConvexOS password for upgrading SPU software, which you must obtain by calling the CONVEX Technical Assistance Center (TAC).
- Which layered products you must install. You must upgrade all of the following products for which you hold licenses:
  - CONVEX FDDI
  - ConvexOS Internet Services
  - ConvexOS NFS Utilities
  - ConvexOS Share Scheduler
  - COVUEnet

  If you have installed CONVEX Optional Utilities Sources, you should upgrade them at this time.
- Whether you have one or more activation keys. Some layered 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.

The only layered product included with ConvexOS V11.5.1 that requires an activation key is Share Scheduler.

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

Space requirements

Table 14 lists the total amount of space required for ConvexOS V11.5.1. The total space required in /tmp is the largest amount required of all products. Use the `df` command to determine available space. Refer to Appendix A for space requirements for individual products and information on using the `df` command.

Table 14 Required space for ConvexOS V11.5.1 (upgrade installation)

Directory	Total kilobytes required
/	2528
/usr	10873
/tmp	21000

Accounting files upgrade

Due to a change in accounting file formats in ConvexOS V11.0, you must close out accounting before upgrading from ConvexOS V10.* to ConvexOS V11.5.1. Upgrades from ConvexOS V11.0 to V11.5.1 do not require this procedure.

In order to close out accounting and cleanly upgrade from ConvexOS V10.* to ConvexOS V11.5.1, please enter the commands shown in Figure 29.

Figure 29 Closing out accounting during upgrade from ConvexOS V10.*

```
# accton
# cd /usr/adm
# ./daily 'date +%w'
# ./weekly 'date +%m.%d.%y | sed -e 's/^0//' | sed -e 's/\.0/./g''
# ./monthly 'date +%m.%y | sed -e 's/^0//' | sed -e 's/\.0/./g''
```

Backing up file systems

Before proceeding with the installation, make full backups of existing / (root), /usr, and SPU file systems 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 installation. This ensures against loss of valuable files if problems arise during installation.

To do this, complete the following procedure:

Step 1 Determine which tape device to use. You can determine the device number of the tape drive by consulting the /ioconfig file on the SPU. Ensure that the tape drive is online. (This procedure assumes you are using tape unit 0.)

Step 2 Mount a back-up tape on the tape drive.

Step 3 Back up the / (root) file system by entering the commands shown in Figure 30. This command will write to the /dev/rmt16 device; see the dump(8) man page for information on specifying other devices.

Note that the 0 in the command line is a zero, not the letter O.

Figure 30 Backing up the root file system

```
# cd /
# /etc/dump 0G /
```

The backup is complete when the system prompt returns.

Step 4 Rewind, unmount, and label the tape.

Step 5 Mount another back-up tape on the tape drive for the /usr file system backup.

Step 6 Back up the /usr file system by entering the commands shown in Figure 31. This command will write to the /dev/rmt16 device; see the dump(8) man page for information on specifying other devices.

Note that the 0 in the command line is a zero, not the letter O.

Figure 31 Backing up the /usr file system

```
# /etc/dump 0G /usr
```

The backup is complete when the system prompt returns.

Step 7 Rewind, unmount, and label the tape.

Step 8 Ensure that the keyswitch is in LOCAL mode, and go to the SPU by pressing `CTRL-p` at the system prompt.

Step 9 Insert a back-up tape in the SPU tape drive.

Step 10 Back up the SPU disk by entering the command shown in Figure 32. If you are backing up the SPU on a C3800 or C4600 Series system, you must be root to execute this command.

Figure 32 Backing up the SPU disk

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

The backup is complete when the system prompt returns.

Step 11 Remove and label the tape.

Step 12 Press CTRL-d to return to the system level prompt.

Shutting down to single user mode

Bring the system to SPU level by following the steps in this section.

Step 1 Log in as root at the system console.

Step 2 Put the system in single-user mode by issuing the `shutdown` command, as shown in Figure 33.

Figure 33 Putting the system in single-user mode

```
# /etc/shutdown +5 "to install ConvexOS V11.5.1"
#
```

Messages warning users of the impending shutdown will be displayed for approximately five minutes.

Step 3 Unmount the file systems as shown in Figure 34.

Figure 34 Unmounting file systems

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

Upgrading the kernel and layered products

To upgrade the kernel and layered products, follow the procedure in this section.

Step 1 Go to the (spu)> prompt by pressing CNTRL-p. Remove the directory /mnt/old_os with the command shown in Figure 35.

Figure 35 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 15 lists space requirements by machine type.

Table 15 SPU space requirements

System	Kilobytes required
C200, C3200 Series	4260
C3400 Series	4230
C3800 Series	5220
C4600 Series	6870

Use the df command to determine the available space, as shown in Figure 36.

Figure 36 Determining available space on the 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, consult Appendix B for a list of SPU files that may be deleted.

Step 3 Return to single user-mode by pressing CNTRL-d and and mount remaining file systems as shown in Figure 37.

Figure 37 Mounting remaining file systems

```
# /etc/mount -at 4.2
```

Step 4 If you wish to have a snapshot of file permissions, owners, and groups of all installed products before installing ConvexOS V11.5.1, enter

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

Respond **yes** only when asked if you want to run `verify`.

Step 5 Locate the tape containing "ConvexOS V11.5.1" and mount it on the tape drive. You must specify a no-rewind tape device when running `installsw`. Table 16 shows some tape types and corresponding typical devices to use with `installsw`:

Table 16 Devices to use with `installsw`

Tape type	Typical device
9-track	/dev/rmt20
DAT	/dev/rdat0n

Step 6 Invoke `installsw` as shown in Figure 38.

Figure 38 Invoking `installsw` (9-track tape only)

```
# mount /tmp
# cd /
# /etc/installsw -i -d /dev/rmt20
```

Step 7 When `installsw` prompts you for the type of installation, enter **1** or **local**, as shown in Figure 39.

Figure 39 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 --> local
```

If the tape contains more than one product, a menu of ConvexOS Utilities is displayed, as shown in Figure 40. Your tape may contain different products, so the menu you see may not match Figure 40 exactly.

Step 8 Select all desired products by

- Entering the corresponding index number or range of numbers. You can type more than one selection on a line, separating each selection with a space. To select a range, type the first number followed by the last number in the range preceded by a colon and enclosed in square brackets. For example, `5[:10]` selects items numbered 5 through 10.
- Typing "-" to toggle all products listed.
- Selecting all products containing a pattern in the name.

Type > to page forward to see if more products are listed. Type < to page back.

You should at least install

- ConvexOS C*xxx*, where *xxx* designates your machine type.

- ConvexOS Core Utilities, Extended Utilities, and Accounting system
- ConvexOS Programming Tools, if you have any CONVEX compilers
- ConvexOS Text Processing Tools, if you wish to view the man pages associated with any product you install
- ConvexOS Domestic Tools, if your site is located within the United States and Canada (sites in other countries will be unable to select Domestic Tools)
- CONVEX ALL, if you have any of the CONVEX compilers or product that performs a sysgen

Figure 40 ConvexOS and Utilities menu

```
Patches are auto-selected with their base product.
 -         Toggle all products                > Page forward
 n[:k]     Toggle product(s) <n> through <k>< Page backward
 pattern   Toggle all products containing    ? Display this menu
            <pattern> in the name
 -n        Remove the product from your system
 install   Begin product installation
 abort     Exit the installation

Idx  Part Number       Description             Release  Files  Offset   Flags
---  ----------        -----------             -------  -----  ------   ------
1 + 710-005415-040  ConvexOS C200-C3200        11.5.1     5      3        UK
2 + 710-000315-011  ConvexOS Core Utilities   11.5.1     4      8        U
3 + 710-016115-008  ConvexOS Extended         11.5.1     4     12        U
                    Utilities
4 + 710-016315-007  ConvexOS Programming       11.5.1     4     16        U
                    Tools
5 + 710-010115-011  ConvexOS Domestic Tools    11.5       4     20        U
6 + 710-016215-007  ConvexOS Accounting        11.5       4     24        U
                    System
7 + 710-016415-006  ConvexOS Info System       11.5       4     28        U
8 + 710-016515-006  ConvexOS Line Printer      11.5       4     32        U
                    System
9 + 710-016615-008  ConvexOS Mail System       11.5.1     4     36        U
10+ 710-016715-006  ConvexOS Notes System      11.5       4     40        U
11+ 710-016815-006  ConvexOS Plotter Control   11.5       4     44        U
                    System
12+ 710-016915-006  ConvexOS Terminal Control  11.5       4     48        U
                    System
13+ 710-017015-006  ConvexOS Text Processing   11.5       4     52        U
                    System
14+ 710-017115-006  ConvexOS UUCP System       11.5       4     56        U
15+ 710-017215-006  ConvexOS Contributed       11.5.1     4     60        U
                    Utilities
16+ 710-010515-009  Share Scheduler            11.5       4     64        UK
17+ 710-009715-010  Internet Services          11.5.1     4     68        U
18+ 720-003515-008  CONVEX ALL (as, ld, libs)   3.0.3     5     72        U
19+ 710-009515-012  NFS Utilities              11.5       4     77        U

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

selection?  -
```

Step 9 After you have selected the products you want to install, enter **`install`** at the `selection?` prompt to begin installation.

Step 10 The products that support unattended installation are listed. At the prompt, answer whether or not you wish to install the products using defaults, as shown in Figure 41.

Figure 41 Selecting products that support unattended installation

```
You have selected the following products for installation. They
support default (unattended) installation.

Part Number        Description                    Version
-----------        -----------                    -------
710-005415-040     ConvexOS C200-C3200              11.5.1
710-000315-011     ConvexOS Core Utilities          11.5.1
710-016115-008     ConvexOS Extended Utilities      11.5.1
710-016315-007     ConvexOS Programming Tools       11.5.1
710-010115-011     ConvexOS Domestic Tools          11.5
710-016215-007     ConvexOS Accounting System       11.5
710-016415-006     ConvexOS Info System             11.5
710-016515-006     ConvexOS Line Printer System     11.5
710-016615-008     ConvexOS Mail System             11.5.1
710-016715-006     ConvexOS Notes System            11.5
710-016815-006     ConvexOS Plotter Control System  11.5
710-016915-006     ConvexOS Terminal Control System 11.5
710-017015-006     ConvexOS Text Processing System  11.5
710-017115-006     ConvexOS UUCP System             11.5
710-017215-006     ConvexOS Contributed Utilities   11.5.1
710-010515-009     Share Scheduler                  11.5
710-009715-010     Internet Services                11.5.1
720-003515-008     CONVEX ALL (as, ld, libs)         3.0.3
710-009615-012     NFS Utilities                    11.5

Do you wish to install these products using the default actions?
```

Step 11 Products that do not support unattended installation and products that require activation keys are listed. At the prompt, press **return** or enter the activation key as shown in Figure 42.

Figure 42 Selecting products that require activation keys

```
You have selected the following products for installation. They
require activation keys to install.

Part Number     Description         Version
-----------     -----------         -------
710-010515-009 Share Scheduler      11.5

You will now be prompted for the activation key for each of these
products.If you do not wish to enter the key now, press return
at each prompt. Otherwise, please enter the keys at each prompt.

710-010515-009,  Share  Scheduler,  11.5  activation  key  ?
07161-64528-0353

Beginning product installation/de-installation ...

Locating Share Scheduler v11.5
```

Notes

You can suspend installation (to free up disk space, for example) by using the csh escape command sequence `!csh`.

When installing Convex software, the installation may generate messages "./sys not a directory." These messages are caused by /bin/tar extracting a file from the tape archive which contains ./sys in its path, while ./sys is a symbolic link on the destination machine. This type of message is merely informative and can be ignored.

Products that require a sysgen must be installed after the following products:

- **ConvexOS Programming Tools V11.5.1**
- **CONVEX ALL 3.0**

Step 12 `installsw` begins installation of the first selected product (in this example, ConvexOS C200-C3200) by displaying a list of prerequisites as shown in Figure 43. At the prompt, press **RETURN** to start the installation.

Figure 43 Prerequisite confirmation

```
--- This script will install version 11.5.1 of ConvexOS
--- C200-C3200 on this machine. You should know the following
--- information before attempting this install:

--- 1. The name of your time zone and your daylight savings
---    rule.
--- 2. The type of disk device that contains your root
---    partition.
--- 3. 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 installation.
--- 4. Which partitions you have designated as swap space.
--- 5. Your ConvexOS installation password.

--- Do you wish to install the ConvexOS C200-C3200 Operating
--- System [yes]?
```

Step 13 The root disk, swap disk, and time zone information specified in bootcmd.local is displayed. You are asked to confirm this information, as shown in Figure 44. Press **RETURN** if the information is correct to continue.

Figure 44 Swap space confirmation

```
Configuration:
--- Root disk: du0a Swap disk(s): du0b
--- Installing ConvexOS in '/mnt/os' on SPU
--- Old ConvexOS will be backed up to '/mnt/old_os' on SPU
--- Reusing old 'bootcmd.local'
--- Time Zone: cst/cdt (US: Central)
--- DST Rule: United States
--- Is this correct [yes]?
```

`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 14 At the prompt shown in Figure 45, supply the ConvexOS password you obtained from the TAC.

Figure 45 Installation password prompt

```
--- Loading OS files from tape
--- What is your ConvexOS password?
```

If you have supplied a valid password, installation continues.

Step 15 You are asked if you want to install the /sys directory. /sys contains system libraries and files needed to perform sysgens. If you have any products such as FDDI that perform a sysgen, you must install /sys.

Press **RETURN** to install it.

Step 16 You are asked if you want to save the old /sys directory. Press **RETURN** to save it or type **no** if you do not want to save it as shown in Figure 46.

Figure 46 Installing /sys

```
--- Do you wish to install the ConvexOS C200-C3200 /sys
--- directory [yes]?
--- Do you wish to save off the old '/sys' directory [yes]? no
```

Installation continues as shown in Figure 47.

Figure 47 Installation output

```
--- Removing contents of old '/sys' directory
--- Extracting '/sys' from tape. This may take a few minutes
--- 11.5.1 /sys directory extraction done
--- Updating the version database for ConvexOS_sys.
--- Updating the version database for ConvexOS.
--- Adding message to /etc/motd.
--- ConvexOS C200-C3200 V11.5.1 installed.
--- Online release notes in /usr/doc.
--- Installation complete Tue Sep 10 20:23:20 CDT 1996.
```

Step 17 After you have installed all layered products except for those that perform a sysgen, restart ConvexOS as described in the "Restarting ConvexOS" section on page 45.

Examples of output from the installation of some products are shown in Figure 48 through Figure 51.

You do not need to run `makewhatis` (update the man page `makewhatis` database) at this time, because the /usr/etc/upgrade script that you run at the end of the installation procedure performs this task.

In the event that installation of any product fails, you should not attempt to abort installation of the other products you've selected. Instead, wait for installation of each product to either complete successfully or abort.

If the installation does not complete, enter

```
umount -a
```

then restart this procedure beginning with Step 6 on page 34. If the installation fails a second time, contact the CONVEX Technical Assistance Center.

Figure 48 ConvexOS Core Utilities output

```
Locating ConvexOS Core Utilities v11.5.1

-------------------------------------------------------------------
--- Production ConvexOS Core Utilities V11.5.1
--- installation commencing Tue Sep 10 20:32:47 CDT 1996.
-------------------------------------------------------------------
--- Performing consistency check.
--- Checking prerequisites.
--- Checking disk space requirements.
--- Saving local configuration files.
--- The following files are being saved to <file>.pre.11.5.1
--- .cshrc
--- .login
--- .profile
--- etc/bootparams
--- etc/fstab
--- etc/group
--- etc/hosts
--- etc/knetd.conf
--- etc/motd
--- etc/mtab
--- etc/networks
--- etc/passwd
--- etc/sbtab
--- etc/services
--- etc/stripecap
--- usr/skel/.cshrc
--- usr/skel/.exrc
--- usr/skel/.login
--- usr/skel/.logout
--- Moving possible active files:
--- Saving the following possibly active files:
--- etc/init
--- etc/installsw
--- etc/update
--- etc/utmp
--- bin/csh
--- bin/dd
--- bin/egrep
--- bin/sh
--- usr/bin/perl
--- /usr/bin/perl backed up to /usr/bin/perl-4.036.
--- Extracting ConvexOS Core Utilities V11.5.1 tar image to
--- /tmp/InsData.3254 from /dev/rmt20
--- Extracting the new tar executable.
--- Extracting ConvexOS Core Utilities V11.5.1 into / from
--- /tmp/InsData.3254.
```

Figure 50 ConvexOS Core Utilities output **(continued)**

```
--- Restoring local configuration files.
--- The 11.5.1 version of the following following files are being
--- saved to <file>.11.5.1:
--- .cshrc
--- .login
--- .profile
--- etc/bootparams
--- etc/fstab
--- etc/group
--- etc/hosts
--- etc/knetd.conf
--- etc/motd
--- etc/mtab
--- etc/networks
--- etc/passwd
--- etc/sbtab
--- etc/services
--- etc/stripecap
--- usr/skel/.cshrc
--- usr/skel/.exrc
--- usr/skel/.login
--- usr/skel/.logout
--- Updating the version database for coreutil.
--- Adding message to /etc/motd.
--- ConvexOS Core Utilities V11.5.1 installed.
--- Installation complete Tue Sep 10 20:35:49 CDT 1996.
```

Figure 49 ConvexOS Extended Utilities output

```
Locating ConvexOS Extended Utilities v11.5.1

-------------------------------------------------------------------
--- Production ConvexOS Extended Utilities V11.5.1
--- installation commencing Tue Sep 10 20:36:01 CDT 1996.
-------------------------------------------------------------------
--- Performing consistency check.
--- Checking prerequisites.
--- Checking disk space requirements.
--- Saving local configuration files.
--- The following files are being saved to <file>.pre.11.5.1
--- .crontab
--- etc/dumpdates
--- etc/gettytab
--- etc/inetd.conf
--- etc/rc.local
--- etc/rc.std
--- etc/shells
--- etc/syslog.conf
--- etc/termcap
--- etc/ttys
--- etc/uidcount
--- usr/lib/contactcap
--- usr/lib/crontab
--- usr/skel/.project
--- Saving active files.
--- Saving the following possibly active files:
--- usr/ucb/script
--- Extracting ConvexOS Extended Utilities V11.5.1 into /
--- from /dev/rmt20.
--- Restoring local configuration files.
--- The 11.5.1 version of the following following files are being
--- saved to <file>.11.5.1:
--- .crontab
--- etc/dumpdates
--- etc/gettytab
--- etc/inetd.conf
--- etc/rc.local
--- etc/rc.std
--- etc/shells
--- etc/syslog.conf
--- etc/termcap
--- etc/ttys
--- etc/uidcount
--- usr/lib/contactcap
--- usr/lib/crontab
--- usr/skel/.project
--- Updating the OS version number in /etc/gettytab.
--- Updating the version database for extended.
--- Adding message to /etc/motd.
--- ConvexOS Extended Utilities V11.5.1 installed.
--- Online release notes in /usr/doc.
--- Installation complete Tue Sep 10 20:38:38 CDT 1996.
```

Figure 50 Domestic Tools installation output

```
Locating ConvexOS Domestic Tools v11.5

------------------------------------------------------------
--- Production ConvexOS Domestic Tools V11.5
--- installation commencing Tue Sep 10 21:03:52 CDT 1996.
------------------------------------------------------------
--- Performing consistency check.
--- Checking prerequisites.
--- Checking disk space requirements.
--- Extracting ConvexOS Domestic Tools V11.5 into /
--- from /dev/rmt20.

--- Updating the version database for domestic.
--- Adding message to /etc/motd.
--- ConvexOS Domestic Tools V11.5 installed.
--- Installation complete Tue Sep 10 21:04:09 CDT 1996.
```

Figure 51 CONVEX ALL output

```
Locating CONVEX ALL (as, ld, libs) v3.0.3

        Welcome to the ALL v3.0.3 Installation Script.

ALL consist of four parts. The parts are assembler (as) and loader
(ld); ALL portion of libc; C runtime libraries; and the Fortran runt-
ime
libraries. Each part of ALL has different dependencies on when it
should or have to be installed. The installation script knows about
these different dependencies and will display helpful hints on what to
do (or not do). For more detailed information, please refer to the ALL
release notice and/or the ALL installation procedure.

The installation script will ask you various questions about which
parts of ALL you want to install and what location you want to install
them into.

Note: At any of the prompts you can escape to your user shell by typing
a '!'. To return to the installation script, exit your shell. You may
have to escape to your shell to clean up disk space or create new
directories.

You are at ConvexOS 11.5.1 level which requires the installation
of the ALL portion of libc. It is recommended that you install it.

Install the ALL portion of libc? (yn) [y]?
Install the assembler (as) and loader (ld)? (yn) [y]?
Install the C runtime libraries? (yn) [y]?
Install the Fortran runtime libraries? (yn) [y]?
Install the CXpa libraries (CXpa is not installed)? (yn) [n]?
Install the Consultant (prof) libraries (prof is not installed)? (yn)
[n]?

Is this a production install of ALL? (yn) [y]?
Enter the target install directory [/]?
Do you want to save the previous version of the Fortran and/or
the C runtime libraries? (yn) [n]?

Reading tape...
Reading logical tape 0: install scripts
Reading logical tape 1: as/ld
Reading logical tape 2: libraries
Done reading tape

Moving ALL (as, ld, libs) files
Done.
ALL v3.0.3 installation complete.
```

Restarting ConvexOS

Follow this procedure to restart ConvexOS:

Step 1 Terminate the `init` process and unmount the file systems, as shown in Figure 52.

Figure 52 Terminating `init` and unmounting file systems

```
# kill 1
erase ^H, kill ^U, intr ^C
# /etc/umount -at 4.2
```

Step 2 Bring the system to SPU level by executing the commands shown in Figure 53.

Figure 53 Returning to SPU level

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

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

Step 3 Boot to single-user mode by entering the commands shown in Figure 54.

Because of the directory caching mechanism on the C3800 or C4600 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 or C4600, you may make /mnt/os the current directory with a single command:

```
cd /mnt/os
```

Figure 54 Booting to single-user mode

```
(spu)> osclean
       .
       .
       .
(spu)> sysreset
(spu)> cd /;cd mnt;cd os
(spu)> boot single
Tue Sep 10 22:06:56 CST 1996
Beginning ConvexOS initialization
       .
       .
       .
erase ^H, kill ^U, intr ^C
#
```

Step 4 Preen, mount, and verify the local file systems, as shown in Figure 55.

Figure 55 Preening, mounting, and verifying local file systems

```
# /etc/preen -f
      .
      .
      .
# /etc/putst -a
# /etc/mount -at 4.2
```

Step 5 Clean out /tmp. Several files are copied to /tmp during the installation process. If your installation completed normally, you can remove these files with the commands in Figure 56.

Figure 56 Cleaning up /tmp

```
# /bin/rm -rf /tmp/Ins*
```

Step 6 Copy the ConvexOS system image from the SPU disk to the root file system by entering the command shown in Figure 57.

Figure 57 Copying a new system image from the SPU

```
# /usr/convex/spu -r /mnt/os/vmunix | /bin/gut > /vmunix
# /bin/chmod 644 /vmunix
```

Merging the rc files and booting multiuser

After the installation, two new files will be in the /etc directory:

- /etc/rc.local.11.5.1
- /etc/rc.std.11.5.1

You should compare these files with your own /etc/rc.local and /etc/rc.std files and merge changes you find appropriate for your site.

If you are upgrading from ConvexOS V11.*, please skip to Step 4.

The following modifications must be made to the rc.local file for STREAMS networking:

Step 1 Insert the following lines before any `ifconfig` statement or statement for any other network operation. These lines initialize the Streams stack based on the configuration file /etc/knetd.conf (refer to the *ConvexOS and Utilities V11.5.1 Release Notice* for information on the knetd.conf file):

```
# build the networking streams stack
if [ "'/etc/knetdctl -q'" = "knetd not configured" ]; then
   /etc/knetdctl -c /etc/knetd.conf
   /etc/knetdctl -r
fi
```

Step 2 Modify the `ifconfig` statements in rc.local to reflect the new device names. Table 17 lists the device names in V10.1 with the new name for V11.5.1. Best-effort support for the hyperchannel and ultranet devices will be provided for ConvexOS V11.5.1.

Table 17 New device names

Device name in ConvexOS V10.1	Device name in ConvexOS V11.5.1
ex	eth
fd	fddi
—	hippi
hy	hyper
un	un

Step 3 Remove any references to /dev/lo, including the ifconfig of lo0.

The loopback device has been incorporated into the IP driver and does not require separate initialization.

/dev/lo can still be accessed by opening a socket to localhost.

Step 4 Boot to multiuser mode by pressing CTRL-d at the system prompt. 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 V11.5.1. (refer to "Prerequisites for upgrade" section on page 24 for more information on required /etc/passwd entries.)

- Checks your /etc/group file to make sure that it contains entries required by ConvexOS V11.5.1. (refer to "Prerequisites for upgrade" section on page 24 for more information on required /etc/group entries.)
- Checks your /etc/services file to make sure that it contains entries required by ConvexOS V11.5.1. (refer to "Prerequisites for upgrade" section on page 24 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 V11.5.1 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.
- 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.

Log in as root and invoke the `upgrade` script by issuing the command in Figure 58.

Figure 58 Running `/usr/etc/upgrade`

```
login: root
password:
# /usr/etc/upgrade
```

Space requirements

A

This appendix describes space requirements for ConvexOS and Utilities V11.5.1, and layered products bundled with ConvexOS. Be sure to have adequate space available before you begin installation. You can avoid having to abort the installation procedure by reading this section before you begin.

If you are installing layered products not listed in this section, refer to the release notices and installation procedures for those products for space requirements.

Table 19 through Table 36 contains total space requirements for upgrading each product in ConvexOS and Utilities. Table 18 shows totals for all products combined.

Table 18 Required space for ConvexOS V11.5.1 (initial installation)

Directory	Total kilobytes required for upgrade installation	Total kilobytes required for initial installation
/	2528	15374
/usr	10873	94384
/tmp	21000	21000

To determine how much space you should have in /tmp, look for the product you are installing from the tables below that has the largest space requirement for /tmp.

The total amount of space required in /usr for all the products listed below is 10873 kilobytes. The total amount of space required in / for all products is 2528 kilobytes.

Table 22 contains space requirements for Domestic Tools installation, which may only be done at sites within the United States and Canada.

Table 19 ConvexOS Accounting System space requirements

Directory	Kilobytes required for upgrade	Kilobytes required for initial installation
/usr/adm	100	600
/usr/convex	435	1000
/usr/etc	180	2000
/usr/lib	20	100

Table 19 ConvexOS Accounting System space requirements **(continued)**

Directory	Kilobytes required for upgrade	Kilobytes required for initial installation
/usr/man	50	200
/usr/spool	10	10
/usr/ucb	10	500
TOTAL	805	4410
/tmp	2000	2000

Table 20 ConvexOS Core Utilities space requirements

Directory	Kilobytes required for upgrade	Kilobytes required for initial installation
/bin	1800	8000
/dev	26	50
/etc	400	4200
/lib	1	6
TOTAL	2227	12256
/usr/bin	1050	3050
/usr/convex	90	500
/usr/doc	400	400
/usr/etc	200	1100
/usr/lib	60	1000
/usr/man	50	900
/usr/skel	2	10
/usr/ucb	70	715
TOTAL	1922	7675
/tmp	21000	21000

Table 21 ConvexOS Programming Tools space requirements

Directory	Kilobytes required for upgrade	Kilobytes required for initial installation
/bin	10	90
/sys	4	4
TOTAL	14	94
/usr/bin	80	850
/usr/convex	200	2300
/usr/include	50	500
/usr/lib	500	3200
/usr/man	250	1500
/usr/ucb	30	300
TOTAL	1110	8650
/tmp	1000	1000

Table 22 ConvexOS Domestic Tools space requirements

Directory	Kilobytes required for upgrade	Kilobytes required for initial installation
/usr/lib	60	60
TOTAL	60	60

Table 23 ConvexOS Contributed Utilities space requirements

Directory	Kilobytes required for upgrade	Kilobytes required for initial installation
/etc	4	4
/usr/contrib	31000	31000
/usr/lib	50	50
/usr/man	150	150
TOTAL	31204	31204
/tmp	1000	1000

Table 24 ConvexOS Extended Utilities space requirements

Directory	Kilobytes required for upgrade	Kilobytes required for initial installation
/bin	200	2900
/etc	200	1900
TOTAL	400	4800
/usr/bin	600	2700
/usr/convex	1400	3900
/usr/doc	400	400
/usr/etc	100	1800
/usr/man	60	1250
/usr/lib	40	400
/usr/spool	4	20
/usr/ucb	200	3300
TOTAL	2804	13770
/tmp	1000	1000

Table 25 ConvexOS Info System space requirements

Directory	Kilobytes required for upgrade	Kilobytes required for initial installation
/usr/bin	14	140
/usr/convex	30	300
/usr/infosys	80	800
/usr/lib	200	2600
/usr/man	10	80
/usr/ucb	4	4
TOTAL	338	3924
/tmp	1000	1000

Table 26 ConvexOS Line Printer System space requirements

Directory	Kilobytes required for upgrade	Kilobytes required for initial installation
/bin	10	100
/etc	1	10
TOTAL	11	110
/usr/adm	4	4
/usr/convex	80	80
/usr/etc	30	300
/usr/lib	100	1200
/usr/man	13	130
/usr/spool	6	6
/usr/ucb	150	1150
TOTAL	383	2870
/tmp	1000	1000

Table 27 ConvexOS Mail System space requirements

Directory	Kilobytes required for upgrade	Kilobytes required for initial installation
/bin	334	334
TOTAL	334	334
/usr/etc	536	536
/usr/lib	2750	2750
/usr/man	160	160
/usr/spool	4	4
/usr/ucb	798	798
TOTAL	4248	4248
/tmp	5000	5000

Table 28 ConvexOS Internet Services space requirements

Directory	Kilobytes required for upgrade	Kilobytes required for initial installation
/etc	30	260
TOTAL	30	260
/usr/convex	5	10
/usr/etc	500	6140
/usr/infosys	2	20
/usr/lib	150	1220
/usr/man	50	490
/usr/spool	4	10
/usr/ucb	200	2720
TOTAL	911	10610
/tmp	1000	1000

Table 29 ConvexOS NFS Utilities space requirements

Directory	Kilobytes required for upgrade	Kilobytes required for initial installation
/bin	10	90
/etc	5	10
TOTAL	15	100
/usr/bin	100	1790
/usr/etc/yp	100	1690
/usr/etc	400	8650
/usr/infosys	10	10
/usr/lib	200	1690
/usr/man	50	450
/usr/ucb	32	380
TOTAL	892	14620
/tmp	1000	1000

Table 30 ConvexOS Notes System space requirements

Directory	Kilobytes required for upgrade	Kilobytes required for initial installation
/usr/convex	200	2100
/usr/lib	14	14
/usr/man	10	130
/usr/spool	2	2
/usr/spool/notes	200	1900
TOTAL	426	4146
/tmp	1000	1000

Table 31 ConvexOS Optional Utilities Source space requirements

Directory	Kilobytes required for upgrade	Kilobytes required for initial installation
/usr/bin/src	2000	13400
/usr/contrib	7500	7500
TOTAL	9500	20900
/tmp	1000	1000

Table 32 ConvexOS Plotter Control System space requirements

Directory	Kilobytes required for upgrade	Kilobytes required for initial installation
/usr/bin	50	540
/usr/lib	100	170
/usr/man	10	100
TOTAL	160	810
/tmp	1000	1000

Table 33 ConvexOS Share Scheduler space requirements

Directory	Kilobytes required for upgrade	Kilobytes required for initial installation
/etc	10	10
TOTAL	10	10
/usr/convex	100	1910
/usr/etc	10	460
/usr/infosys	6	10
/usr/lib	40	40
/usr/man	10	110
TOTAL	166	2530
/tmp	1000	1000

Table 34 ConvexOS Terminal Control System space requirements

Directory	Kilobytes required for upgrade	Kilobytes required for initial installation
/usr/bin	10	75
/usr/lib	10	130
/usr/man	10	110
/usr/ucb	40	450
TOTAL	70	765
/tmp	1000	1000

Table 35 ConvexOS Text Processing System space requirements

Directory	Kilobytes required for upgrade	Kilobytes required for initial installation
/etc	6	6
TOTAL	6	6
/usr/bin	100	1000
/usr/convex	10	50
/usr/dict	40	400
/usr/etc	10	10
/usr/lib	100	900
/usr/man	20	250
/usr/ucb	20	200
TOTAL	300	2810
/tmp	1000	1000

Table 36 ConvexOS UUCP System space requirements

Directory	Kilobytes required for upgrade	Kilobytes required for initial installation
/usr/adm	4	4
/usr/bin	150	1600
/usr/convex	10	10
/usr/etc	30	350
/usr/lib	100	900
/usr/man	10	160
/usr/spool	10	10
TOTAL	314	3034
/tmp	1000	1000

The `df` command displays the amount of used and available space on a disk partition. Figure 59 shows how to display this information for the partition on which the /tmp directory resides.

Figure 59 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 this installation.

If more than one of the directories listed reside 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 60.

Figure 60 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/dd0g on /usr type 4.2 (rw)
/dev/da1a on /usr/spool type 4.2 (rw)
/dev/da1f 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)
```

Figure 60 shows the directories /usr/adm, /usr/spool, and /usr/local on partitions other than /usr. Therefore, to calculate the required amount of space in /usr, subtract the requirements for /usr/adm, /usr/spool, and /usr/local from the total required for /usr.

For example, with the directory/partition distribution shown in Figure 60, the ConvexOS Accounting System shown in Table 19 requires a total of 406 kilobytes in /usr minus 110 kilobytes in /usr/adm and /usr/spool for a total /usr requirement of 296 kilobytes for an upgrade installation. (The ConvexOS Accounting System does not require space in /usr/local.)

SPU files

B

This appendix lists files that may be removed from the SPU disk to obtain the required amount of free space for the ConvexOS V11.5.1 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 you system has both a VIOP and an IOP, contact the Technical Assistance Center (TAC).

Preserved and new files

C

This appendix lists files by product that are not affected by the ConvexOS V11.5.1 installation.

New versions of the preserved files have a file name extension of .11.5.1 or .11.5, depending upon the version of the installed product. You should compare new versions of preserved files with their equivalents on your system and merge in any changes you find appropriate.

Products that have no preserved files and the new versions of the preserved files are not listed.

ConvexOS Accounting System

The following files are backed up during installation of the ConvexOS Accounting System and restored after the installation completes successfully:

- /usr/adm/acct
- /usr/adm/acctsum.awk
- /usr/adm/daily
- /usr/adm/disksum.awk
- /usr/adm/freesum.awk
- /usr/adm/lastacct
- /usr/adm/lastlog
- /usr/adm/monthly
- /usr/adm/newsyslog
- /usr/adm/weekly
- /usr/adm/savacct
- /usr/adm/shutdownlog
- /usr/adm/usracct
- /usr/adm/wtmp
- /usr/lib/diskmail
- /usr/lib/diskspace
- /usr/lib/mailuse.txt

ConvexOS Core Utilities

The following files are backed up during installation of the ConvexOS Core Utilities and restored after the installation completes successfully:

- /.cshrc
- /.login
- /.profile
- /etc/bootparams
- /etc/fstab
- /etc/group
- /etc/hosts
- /etc/knetd.conf
- /etc/motd
- /etc/mtab
- /etc/networks
- /etc/passwd
- /etc/services
- /etc/stripecap
- /usr/skel/.cshrc
- /usr/skel/.exrc
- /usr/skel/.login
- /usr/skel/.logout

The following new file is supplied. Filesystems built after installation of ConvexOS V11.5.1 will have their superblock locations recorded in this file.

- /etc/sbtab

ConvexOS Extended Utilities

The following files are backed up and restored during installation of the ConvexOS Extended Utilities:

- /.crontab
- /etc/dumpdates
- /etc/gettytab
- /etc/inetd.conf
- /etc/rc.local
- /etc/rc.std
- /etc/shells
- /etc/syslog.conf
- /etc/termcap
- /etc/ttys
- /etc/uidcount
- /usr/lib/contactcap

- /usr/lib/crontab
- /usr/skel/.project

ConvexOS Line Printer System

The /etc/printcap file is backed up and restored during installation of the ConvexOS Line Printer System.

ConvexOS Mail System

The following files are backed up and restored during installation of the ConvexOS Mail System:

- /usr/lib/Mail.rc
- /usr/lib/aliases
- /usr/lib/aliases.dir
- /usr/lib/aliases.pag
- /usr/lib/conf/sendmail
- /usr/lib/sendmail.cf
- /usr/lib/sendmail.st
- /usr/spool/mqueue

The /usr/lib/conf/sendmail.11.5.1 directory includes Berkley sendmail V8.7.5 configuration files.

CONVEX Internet Services

The following files are backed up and restored during installation of the CONVEX Internet Services:

- /etc/ftpusers
- /etc/ethers
- /etc/netgroup

CONVEX International and Domestic NFS Utilities

The /usr/etc/yp/Makefile file is preserved by both the domestic and international NFS installations.

ConvexOS Terminal Control System

The /usr/lib/tabset directory is preserved by the ConvexOS Terminal Control System.

ConvexOS Text Processing System

The /usr/dict/words file is preserved by the ConvexOS Text Processing System.

ConvexOS UUCP System

The following files are backed up and restored during installation of the ConvexOS UUCP System:

- /etc/phones
- /etc/remote
- /usr/lib/uucp/L-devices
- /usr/lib/uucp/L-dialcodes
- /usr/lib/uucp/L.cmds
- /usr/lib/uucp/L.sys
- /usr/lib/uucp/USERFILE