

Convergent Technologies

RELEASE NOTICE

for

5.25.1 S/640 CTIX
(SAC-10Fx,SAC-11Fx)

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1. Contents of the Software Package

The 5.25.1 S/640 CTIX ordered by (SAC-10Fx,SAC-11Fx) ¹ contains Release Notices:

- 5.25.1 S/640 CTIX (Part Number B-09-01412-01-E)
- CTIX Document Update (Part Number B-09-01414-01-B)
- Programmer's Notes for C Cross-Compilation & Flexnames (Part Number B-09-00689-01-B)
- 1.10 S/MT Remote I/O Processor Document (Part Number B-09-02054-01-B)

The 5.25.1 S/640 CTIX software release is on two tapes:

- Raw/Update Installation Tape (Part Number 71-03196-01)
- 64 User Upgrade Tape² (Part Number 71-03198-01)

The S/640 Diagnostic Package is a separate product which is packaged with the Operating System release. It contains a Release Notice and bootable tape:

- 6.00 S/640 Diagnostic (Part Number B-09-01206-01-C)
- 6.00 S/640 Diagnostic Tape (Part Number 71-01686-01)

Included S/640 CTIX documentation:

- DAC-110 MightyFrame Series Administrator Ref.
- DAC-100 CTIX Operating System, Version B, Vol. 1 & 2

Additional S/640 CTIX documentation, order as:

- DAC-180 CTIX Programmers Guide

1. SAC-10Fx is for 1-32 users and SAC-11Fx is for 64 user upgrade.
2. There is an additional cost for the upgrade tape.

2. General Description Of the Release

This is a "bug fix" and minor enhancement update to the previous releases of CTIX.

- Support for the newest revision of the Interphase Half Inch tape board has been provided, along with enhanced support for the RIOP.
- Some new ioctls have been added to allow the user access to some external tty control bits, for the purpose of extended modem capabilities.
- Support for SCSI disk drives is included in this release. As shipped, the /dev/dsk/c1dNsN devices are SCSI.
- The functionality of the Maintenance tape has been integrated into the Raw Install/Update tape. To access the maintenance file system, boot the Raw Install tape and hit the interrupt (delete) key on the console.

3. Changes from the Previous Release

3.1 SPR's Fixed in this Release

- The game *advent* was not functional in previous releases. (#10663)
- *Hypot(3m)* now correctly handles arguments equal to zero. (#11892)
- *Strip -r* would corrupt an archive containing an object file with a 14 character name. (#11907)
- When a printing job was canceled, *lpsched* failed to continue with other queued jobs. (#12197)
- An *ioctl* flag should be added to suppress the formfeeds emitted by the parallel printer driver upon open and close. (#11306)
- *Ipcs(1)* could be confused after *ipcrm(1)* was run. (#12688)
- *Memset(3)* failed when called with an odd address, and a count of 0. (#12752)
- A *write(1)* will work correctly when the person being written to is using shell layers. "Correctly" means that you will be able to write if you have write permission for the current layer. (#2787)
- An error which could, under unusual circumstances, cause a process to hang forever was corrected. (#13644)
- The curses library did not always properly reset SIGALRM. (#12509)
- A problem with the exclude files feature of the *adman* backup script was fixed. (#12699)
- *Raw Install* used to fail if done immediately after initializing the disk with the diagnostic. This has been corrected. (#13563)
- An instruction that attempts to write data into shared memory never completes. (#13125)
- The entry for Kennedy tape drives in */etc/tapedrives* has been corrected. (#11024)

3.2 New Functionality in this Release

- If the keyword **preserve** is added to the */usr/lib/acct/startup* command in the */etc/rc* file, then the daily accounting files will be preserved across reboots.
- A new flag, **noopenff**, has been added to *lpset(1)* which suppresses the form feeds normally issued whenever a parallel printer is opened or closed.
- Date and time functions now use the new Daylight Savings Time rules.
- Three new *ioctl()*s were added to provide additional control over the RS232 control lines. The status of CD, CTS, DSR, and RI can be determined, and the RTS and DTR lines can be set or cleared.

These *ioctl()*s have the following format:

```
ioctl(fildev, command, arg)
```

The new commands are:

TCGEXT Get the parameters associated with the terminal. The parameters are passed back as the return value from the *ioctl()* function. The return value is defined as follows (see */usr/include/sys/tty.h*):

```
#define CDBIT    0x04    (CD is present)
#define CTSBIT   0x08    (CTS is present)
#define DSRBIT   0x10    (DSR is present)
#define RIBIT    0x20    (RI is present)
```

TCSEXT Set the parameters associated with the terminal from *arg*. The bits in *arg* are defined as follows:

```
#define RTSBIT   0x08    (set/clear RTS)
#define DTRBIT   0x10    (set/clear DTR)
#define SETEXT   0x80    (1 = set, 0 = clear)
```

If the **SETEXT** bit is set, then the RTS and/or DTR line may be turned on. If the **SETEXT** bit is cleared, then either or both of these lines may be turned off.

TCSEXTW

Wait for the output to drain before setting
the new parameters as in TCSEXT.

4. Contents of the Distribution Media

4.1 Raw/Update Installation Tape

The Raw/Update Installation Tape contains 42 tape files. Files 5 through 41 are *cpio* archives in *-cQ* format.

<i>File #</i>	<i>Description</i>
0	VHB and loader
1	stand-alone UNIX kernel
2	stand-alone file system (reserved area 1)
3	minimum file system (reserved area 2)
4	download images
5	installation tools
6	installation control files for CORE group
7	customizable files for CORE group
8	required files for CORE group
9	installation control files for MISC group
10	customizable files for MISC group
11	required files for MISC group
12	installation control files for BCE group
13	required files for BCE group
14	installation control files for ACE group
15	required files for ACE group
16	installation control files for LP group
17	required files for LP group
18	installation control files for UUCP group
19	customizable files for UUCP group
20	required files for UUCP group
21	installation control files for DOC group
22	required files for DOC group
23	installation control files for SYSM group
24	customizable files for SYSM group
25	required files for SYSM group
26	installation control files for KFIG group
27	required files for KFIG group
28	installation control files for GAMES group
29	required files for GAMES group
30	installation control files for ACCT group
31	required files for ACCT group
32	installation control files for TINFO group
33	required files for TINFO group

<i>File #</i>	<i>Description (continued)</i>
34	installation control files for CROSS group
35	optional files for CROSS group
36	required files for CROSS group
37	installation control files for INET group
38	customizable files for INET group
39	required files for INET group
40	installation control files for ADMAN group
41	required files for ADMAN group

This release is structured to allow installation of one or more selected subsystems, or groups of commands. A brief description of each of the 15 groups follows.

<i>Group</i>	<i>Description</i>
CORE	required CTIX CORE commands. This group is mandatory and is treated specially in that the system is automatically rebooted upon installation completion.
MISC	MISCellaneous CTIX commands.
BCE	Basic 'C' Environment, including the 'C' compiler, loader, assembler, libraries. This suite is configured to generate code for a 68020 CPU with software floating point.
ACE	Advanced 'C' Environment: SCCS, lex, yacc, awk, profiling, lint, etc.
LP	Line Printer spooling system.
UUCP	CTIX system to CTIX system CoPy programs.
DOC	DOCumentation and text formatting tools: nroff, spell, terminal filters, fonts, etc.
SYSM	SYSTEM Maintenance commands including system profiling and file system repair.
KFIG	Kernel conFIGuration files and commands.
GAMES	CTIX GAMES.
ACCT	ACCounTing system which reports CPU usage, user disk usage, command usage and more.
TINFO	Terminal INFOrmation files in /usr/lib/terminfo.

<i>Group</i>	<i>Description (continued)</i>
CROSS	68010-68020-68881 CROSS-development environment used to generate code for the 68881 floating point hardware on your own machine, if you have it; or to generate code for machines other than your own.
INET	InterNET network commands.
ADMAN	Menu-oriented System Administration tools.

To obtain an actual list of the contents of the cpio archives on the Raw/Update Installation Tape, execute:

```
tsioctl -c rewind /dev/rmt0
tsioctl -c skip /dev/rmt4 5
while true
do
    /bin/cpio -icvtQ < /dev/rmt4
    if [ $? = 2 ]
    then
        break
    fi
done
```

4.2 Maintenance Mode

The S/640 CTIX Maintenance Mode provides access to some essential system files and programs in a stand-alone file system.

The CTIX Raw/Update Installation tape provides the maintenance tape function of previous releases. Maintenance mode is entered by hitting the delete or interrupt key, rather than choosing an installation mode, when the tape is booted.

5. Update Installation Requirements

5.1 Files for an Update Installation

The following files are required for an update installation. If they do not exist on the currently running CTIX system, the installation will fail.

/bin/basename	/bin/cat
/bin/chmod	/bin/cp
/bin/cpio	/bin/df
/bin/dirname	/bin/echo
/bin/expr	/bin/grep
/bin/ln	/bin/ls
/bin/mkdir	/bin/mv
/bin/pwd	/bin/rm
/bin/sh	/bin/sync
/bin/uname	/bin/who
/etc/devnm	/etc/fsck
/etc/hinv	/etc/mountable
/etc/rc	/etc/mount
/etc/setmnt	/etc/umount
/usr/local/bin/fsize	/usr/local/bin/tsioctl
/etc/init	(CORE only)
/etc/labelit	(CORE only)
/usr/bin/cut	(CORE only)

5.2 Space for an Update Installation

Installation of the CORE group requires approximately 1024 free blocks on the root file system at the time of installation script invocation. The command

df /

RETURN

reports the number of free blocks on the root file system. If there are not 1024 free blocks, clean up the file system to obtain them before executing the installation script. This space is required to save the files listed above and to read in the customizable files. **Installing without adequate free space may result in a system with no /unix.**

The following table shows the total blocks required for each group, and for the entire system, broken down by those which

are used under /usr, and the rest.

Group	root	usr	total
CORE	6708	3070	9778
MISC	6	1380	1386
BCE	2768	1794	4562
ACE	754	2864	3618
LP	0	718	718
UUCP	0	1666	1666
DOC	0	2822	2822
SYSM	680	1446	2126
KFIG	114	2588	2702
GAMES	0	1474	1474
ACCT	78	614	692
TINFO	0	1004	1004
CROSS	5950	0	5950
INET	1104	846	1950
ADMAN	0	1154	1154
TOTAL	18162	23440	41602

6. Installation Procedures

There are three types of installation procedures described here: Raw, Update, Silent Update. These correspond to the *ctinstall* options *install*, *update* and *silent*, respectively. It is necessary that your disk be formatted prior to beginning an installation. All Convergent supplied disks are formatted. If you must format a new disk, use the diagnostic or the maintenance mode of the Raw Install tape.

- If your disk does not already have a running CTIX system on it, perform a raw install.
- If your system is already running CTIX, perform an *update* install.
- If your system is already running CTIX and you don't care if all existing customizable files (such as */etc/passwd*) are replaced with the release versions, perform a *silent* update install which won't ask you any questions. It will replace all customizable files. (Each old customizable file will be saved in *OLDfile* and replaced with the new file.)

Note that a list of installed files does not appear on the screen for optionally installed files.

6.1 Raw Installation

- The drive to be installed must be formatted and have a valid bad block table and Volume Home Block. If you have a new drive, perform the following steps:

1. Boot the Installation tape, and hit delete or interrupt to enter the maintenance mode. A message is printed suggesting that you remove some files which are not needed to obtain additional space.
2. A group of description files for supported drives is contained in the cpio archive */etc/iv.desc.cpio*. A list of the description files in this archive will be obtained by the following command:

```
cpio -ivt < /etc/iv.desc.cpio
```

RETURN

3. Extract the file for your drive by typing:

```
cpio -iv desc.XXXX < /etc/iv.desc.cpio RETURN
```

where XXXX is the drive type.

4. Remove the cpio archive to create some space:

```
rm /etc/iv.desc.cpio RETURN
```

5. Edit the description file to remove the loader and download information:

```
ed desc.XXXX  
/loader/d  
g/ws/d  
w  
q
```

6. Write the modified description file to the VHB.

```
iv -uv /dev/rdisk/c0d0s0 desc.XXXX RETURN
```

- If at least three partitions have been set up on the disk prior to the Raw Install, the installation will provide the option of keeping or changing the current partitioning. If you do not use the CT default partition sizes, be sure that you have adequate space in the root and usr areas for the groups you are installing. There is a table of sizes in the previous section.

S/640 CTIX 5.25.1 can be installed on either ST506 or SMD disks. Northern Telecom and Priam SMD disks are supported. Installation on SMD disks requires several preliminary steps.

Adding SMD disks to an existing 5.25.1 CTIX system is covered in Chapter 7 **CTIX DEVICE DRIVERS**, of the *MightyFrame Series Administrator's Reference Manual* in the section **CONFIGURING NONLOADABLE DRIVERS**.

6.1.1 Preparation for SMD Disks

Before S/640 CTIX 5.25.1 can be installed for the very first time on an SMD disk, the following preparatory steps must be performed.

1. Enter maintenance mode after booting the Raw Install tape. Refer to Section 9, "Using Maintenance Mode" for

directions.

2. Edit the ram disk file `/etc/system`. If you want to place the SMD controller at an address other than `C1000200`, change the corresponding SMD entry and the board address. (On the controller board itself, this corresponds to base address switch where 1 is off and all others on.)
3. Execute the `/etc/deeprom` command to load the electrically erasable programmable read-only memory on the VME interface card. This command will incorporate the address just written in `/etc/system`, and may take up to 10 minutes to complete.
4. Execute the hardware inventory command:

```
hinv -p
```

RETURN
to verify that controller number 1 exists and has your drive on it.
5. Installation of CTIX 5.25.1 requires a valid Volume Home Block in slice 0 of the disk drive. Perform an:

```
iv -t /dev/rdisk/c1d0s0
```

RETURN
to determine the validity of the Volume Home Block on SMD drive 0. If the drive does not contain a valid Volume Home Block, contact your Convergent Technologies Field Service Representative.
6. Having verified that a valid Volume Home Block exists on the drive, continue with the Raw Installation steps outlined below.
7. Optional: if your system has an existing CTIX on an ST506 disk, you may want to save any important files from that system then re-initialize the ST506.

Note that to boot off the SMD disk requires a boot prom with a revision level of 1.2 or above. The loader attempts to boot off the following devices in order:

1. Quarter-inch tape
2. ST506 disk

3. SMD disk

Please refer to the section **INITIALIZING AND CONFIGURING DISKS** in Chapter 8, **DISKS**, of the *MightyFrame Series Administrator's Reference Manual* if you want to add disks other than those shipped with the system.

6.1.2 Raw Installation to Disks

To raw install 5.25.1 CTIX perform the following steps.
WARNING: THIS PROCEDURE DESTROYS ALL EXISTING DATA ON THE DISK. If you do not have an SMD controller, ignore any messages to that effect.

1. The raw installation requires an RS232 terminal @ 9600 baud on channel 0 or an RS422 terminal on line 0 (with no 232 connected).
2. Insert the distribution quarter-inch tape into the drive.
3. Open the front door on the S/MT enclosure and press the reset button.
4. The following output will appear on the screen. User supplied responses are shown in **boldface type**; a carriage return is implied after every user input. The example presented here is taken from an SMD disk installation on a system having both SMD and ST506 disks. The corresponding ST506 messages are bracketed.

WELCOME TO MIGHTYFRAME CTIX

You have an onboard ST506 drive 0.

You have an SMD drive 0.

Please enter the type of drive on which to install the software (ST506, SMD, or SCSI) **SMD**

Do you wish to continue and install the CTIX software on SMD drive 0 ?

Type 'yes' to confirm/continue: **yes**

5. The installation will continue:
Checking Partitions.

You have a NN Mbyte hard disk drive

Description file for controller NN drive NN

Drive /dev/rdisk/cNdNsN has N user slices.

Slice	Size
1	NN
2	NN

...

Are these partition sizes satisfactory?

Type 'yes' to confirm/continue:

If you do not confirm you will be prompted for new sizes, default being the remainder of the disk, except that you must leave a minimal number of blocks (2048) for swap (slice 2). A carriage return accepting the default will terminate the addition of new partitions. You will then be given the opportunity to retain the sizes selected, or to start over. The size specified for each slice must be a multiple of 16 or the *iv* will fail. Note that 1000 is a multiple of 8, but not 16.

After the setting of partition sizes is complete, the description file will be displayed, and an *iv* of the disk will be done using it.

Following the *iv* output, you will see the following messages:

```
SMD [ST506] disk drive #0 is setup
Adding a swap area
some information on swap area size, etc.
```

```
Making file system for root.
WARNING!! - mounting <> as </mnt>
```

You are asked whether slice 3 should be used as partition for a mountable /usr.

If you respond yes, there will be about a one minute pause while the file system is created, and related files are setup.

Warning: The */etc/checklist* and */etc/mountable* files which are installed as part of the CORE group have configured slice 3 as the /usr file system. If you respond **n** to the

question above, you will have to correct these files when the system is first brought up. If your slice 3 has a file system, you can expect to find it mounted on top of your newly installed /usr files. Otherwise, the system will come up in Administrator mode because the fsck of slice 3 failed.

Cpioing in minimum installation file system
[list of files here]

Cpioing in installation tools
[list of files here]

You are asked whether your terminal requires carriage return delays. Answering no will eliminate the pause at the end of each output line.

6. The raw install script asks for user input at this point. The usual response in a raw install is 'all'; however, the only required choice is 'CORE'. If you are installing on a small (40 Mb) disk, then you should not use 'all'. For a small system, eliminate unnecessary groups such as CROSS. (Refer to Section 12.5 of this release notice for information on the CROSS group).

Please enter the names of the CTIX software groups you would like to install, using upper case letters for group names.

Your choices are:

CORE MISC BCE ACE LP UUCP DOC SYSM
KFIG GAMES ACCT TINFO CROSS INET ADMAN

If you'd like all of the groups, type 'all'; if you'd like some of the groups, enter them in the above order, separated by blanks.

Groups: all

7. The *ctinstall* script is now executed from the raw install script:

@(#)ctinstall.sh 1.36

Positioning the Tape for Product Installation

Running fsck on root file system.

File System: Volume:

** Phase 1 - Check Blocks and Sizes
** Phase 2 - Check Pathnames
** Phase 3 - Check Connectivity
** Phase 4 - Check Reference Counts
** Phase 5 - Check Free List and Bitmap
FS STATE SET TO OK
NNN files NNNN blocks NNNN free

*** IN USE FILE SYSTEM WAS MODIFIED ***
*** FILESYSTEM RESYNCD ***

Unmounting /usr.

Running fsck on /usr file system.

File System:usr Volume:usr

** Phase 1 - Check Blocks and Sizes
** Phase 2 - Check Pathnames
** Phase 3 - Check Connectivity
** Phase 4 - Check Reference Counts
** Phase 5 - Check Free List and Bitmap
NNN files NNNN blocks NNNN free

This procedure will install the following CTIX 5.25.1 groups
on your system:

CORE MISC BCE ACE LP UUCP DOC SYSM
KFIG GAMES ACCT TINFO CROSS INET
ADMAN

Starting to Install Group(s) CORE MISC BCE ACE LP
UUCP DOC SYSM KFIG GAMES ACCT TINFO CROSS
INET ADMAN

Installing Group CORE.

Calculating size required for group CORE.

Installation will require an additional NNN root Blocks
(512 Byte Blocks).

(Currently NNNN 512 Byte Blocks are available on root.)

Installation will require an additional NNN /usr Blocks
(512 Byte Blocks).

(Currently NNNN 512 Byte Blocks are available on /usr.)

Reading Customizable CORE files.

Installing Customizable CORE files.

[list of files here]

CORE Customizable files installed.

Installing required CORE files.

8. You will then see a list of the files being copied appear on the screen, with the following messages at completion:

Creating 0 length files.

Checking permissions, modes and omissions on new
CORE commands.

Completed Installation of Group CORE.

CORE installation cleanup ...

[The /lost+ found directory will already exist, so that *mklost+found*
will issue a diagnostic that it cannot create the directory.
The other requested groups will now be installed.]

Rewinding tape.

Installation Complete.

9. When the installation has completed, the installation script will prompt:

Remove the tape and press return:

10. After pressing RETURN, the system will reboot.
Installation is complete.

6.2 Update Installation

To update an existing CTIX system to CTIX 5.25.1 perform the following steps:

1. Log in as root. Provide a password if necessary. The system will respond with a # prompt and leave you in "/".

2. Bring the system into single-user mode by entering:

```
/etc/shutdown RETURN
```

Before installing the product wait for the system to prompt with the message:

```
ok to stop or reset processor
```

3. Re-mount /usr if it is a mounted file system:

```
mount /dev/dsk/c0d0s3 /usr RETURN
```

4. Insert the distribution quarter-inch tape into the drive.

5. Rewind the tape with the following command:

```
tsioctl -c rewind /dev/rmt0 RETURN
```

6. Extract the installation tools off the tape with the following commands:

```
tsioctl -c skip /dev/rmt4 5 RETURN
```

```
cpio -ivQcdum < /dev/rmt0 RETURN
```

7. Execute the installation script:

```
/install/ctinstall RETURN
```

8. The following output will appear on the screen. User supplied responses are shown in **boldface** type; a carriage return is implied after every user input.

```
@(#)ctinstall.sh 1.36
```

Positioning the Tape for Product Installation

```
Update, silent update or new installation of CTIX 5.25.1  
(‘update’ ‘silent’ or ‘install’)?: update
```

9. The installation will continue with:

Running fsck on root file system.

File System: Volume:

** Phase 1 - Check Blocks and Sizes
** Phase 2 - Check Pathnames
** Phase 3 - Check Connectivity
** Phase 4 - Check Reference Counts
** Phase 5 - Check Free List and Bitmap

FS STATE SET TO OK

NNN files NNNN blocks NNNN free

*** IN USE FILE SYSTEM WAS MODIFIED ***

*** FILESYSTEM RESYNCD ***

Unmounting /usr.

Running fsck on /usr file system.

File System:usr Volume:usr

** Phase 1 - Check Blocks and Sizes
** Phase 2 - Check Pathnames
** Phase 3 - Check Connectivity
** Phase 4 - Check Reference Counts
** Phase 5 - Check Free List and Bitmap

NNN files NNNN blocks NNNN free

[It is important to fix any problems that arise before continuing.]

Re-mounting /usr.

Please enter your group choices for CTIX separated by blanks.

Your choices are:

CORE MISC BCE ACE LP UUCP DOC SYSM
KFIG GAMES ACCT TINFO CROSS INET
ADMAN

If you'd like all of the groups, type 'all';
if you'd like none of the groups, type 'none': < X >

10. The installation will continue with:

This procedure will install the following CTIX 5.25.1 groups
on your system:

Group(s) X

BE SURE YOU BACK UP ANYTHING YOU HAVE
CHANGED BEFORE PROCEEDING.

Type 'yes' to continue: yes

Starting to Install Group(s) X.
Installing Group X.

Calculating size required for group X.
Installation will require an additional NNN root Blocks
(512 Byte Blocks).
(Currently NNNN 512 Byte Blocks are available on root.)
Installation will require an additional NNN /usr Blocks
(512 Byte Blocks).
(Currently NNNN 512 Byte Blocks are available on /usr.)

Reading Customizable X files.

Installing Customizable X files.

11. You will then be queried for each customizable file as to
whether you would like to:

[r] replace the old with the new
[s] save the old as **OLD file** and install the new
[i] ignore the new
[d] perform an sdiff(1) between the old and the new
[rd] replace the old with the previous diff.

If you do not want to destroy an old version, save the old
one and replace with the new. Then, after the installation

is complete, compare the two and update the new one with your changes.

12. The installation will continue:

X Customizable files installed.

Installing required X files.

13. You will then see a list of the files being copied appear on the screen, with the following messages at completion:

Creating 0 length files.

Checking permissions, modes and omissions on new X commands.

Completed Installation of Group X.

[The other requested groups will now be installed.]

Rewinding tape.

Installation Complete.

14. If CROSS is one of the groups chosen to be updated, decide which cross development libraries, if any, are to be installed. If your machine has floating point hardware, decide whether to install 2fp in the root file system replacing the default 2sw libraries. If 2fp is installed in the root file system, it will later be removed from /cross. The following messages will appear on the screen:

Installing Optional CROSS files.

The cross development libraries available for installation are:

68010	(1sw)
68020 with software floating point	(2sw)
68020 with 68881 hardware floating point	(2fp)

A problem sometimes occurs if CROSS is included in the silent install groups. The installation can fail because the number of blocks required has been

incorrectly computed. After the installation fails, /install/restart will also fail. To recover from this situation, boot the Raw Install tape and enter maintenance mode by hitting delete and In /CTIX5.25.1??? /unix. You can reboot the system and continue with /install/restart after entering SINGLE USER MODE.

15. If the machine has software floating point, the installation script will echo:

This 68020 machine has software floating point.

16. If the machine has hardware floating point, the script will echo:

This 68020 machine has a 68881 chip (hardware floating point).

Type 'y' if you'd like to install 2fp into the ROOT file system: y

Changing CENVIRON in /etc/profile to
CENVIRON="CPU= 68020,FPU= 68881"

17. The installation will continue:

Please enter your choices separated by blanks.
Possible choices are:

all none 1sw 2sw 2fp

Please enter 'all' for all three; 'none' for none; or,
any combination of '1sw 2sw 2fp' separated by blanks: all

18. If CORE was one of the updated groups, upon completion the installation script will prompt:

Remove the tape and press return:

19. After pressing RETURN, the system will reboot. Installation is complete.

6.3 Silent Update Installation

To non-interactively update your system, follow these instructions.

1. Perform steps 1 through 6 listed in Section 6.2, "Update Installation", above.
2. Execute the installation script:

```
/install/ctinstall silent [GROUPS] RETURN
```

where 'GROUPS' can be any or all of:

```
CORE MISC BCE ACE LP UUCP DOC SYSM  
KFIG GAMES ACCT TINFO CROSS INET  
ADMAN
```

The groups must be specified in the above order, uppercase, and separated by blanks. No questions will be asked by the installation script. Each old customizable file will be saved in *OLDfile* and replaced with the new file. After the installation is complete you may wish to compare your old customizable files with the newly installed ones and update the new ones with your customizations.

A problem sometimes occurs if CROSS is included in the silent install groups. The installation can fail because the number of blocks required has been incorrectly computed. After the installation fails, `/install/restart` will also fail. To recover from this situation, boot the Raw Install tape and enter maintenance mode by hitting delete and `ln /CTIX5.25.1??? /unix`. You can reboot the system and continue with `/install/restart` after entering SINGLE USER MODE.

The problem may be avoided entirely if CROSS is not included in the silent install groups. It is easily added as a single group as part of a later update installation.

7. Deleting a Group's Files from the System

To delete a group of CTIX release files from your system, follow these directions. Groups which may be deleted are:

MISC BCE ACE LP UUCP DOC SYSM KFIG
GAMES ACCT TINFO CROSS INET ADMAN

WARNING: DO NOT REMOVE THE CORE GROUP OF COMMANDS.

1. Insert the distribution quarter-inch tape into the drive.
2. Log in as root. Provide a password if necessary. The system will respond with a # prompt and leave you in "/".
3. Make sure the tape is rewound by typing:

```
tsioctl -c rewind /dev/rmt0          RETURN
```

4. Skip to the installation control files for the group you wish to delete. To do this, type:

```
tsioctl -c skip /dev/rmt4 [arg]      RETURN
```

where *arg* is the *File #* listed in Section 4.1 of this release notice.

5. Change your current directory to /:

```
cd / RETURN
```

6. Extract the installation control files for the group:

```
cpio -ivQcum < /dev/rmt0            RETURN
```

7. Do an *ls* to see which file lists exist for this group:

```
ls GROUP*                            RETURN
```

8. Remove the files (but not the directories) in this group:

```
cat [GROUP file lists] | xargs rm -f RETURN
```

where the GROUP file lists can be:

```
GROUP GROUP.cust GROUP.noup
```

```
GROUP.noqu GROUP.fopt
```

9. Remove the file lists.

rm GROUP*

RETURN

For example, to delete the GAMES group from the system, execute:

tsioctl -c rewind /dev/rmt0

RETURN

tsioctl -c skip /dev/rmt4 28

RETURN

cd /

RETURN

cpio -ivQcum < /dev/rmt0

RETURN

cat GAMES | xargs rm -f

RETURN

rm GAMES*

RETURN

8. Reconfiguring the System for 64 Users

S/640 CTIX 5.25.1 as distributed is a 32 user system. An optional 64 User Upgrade Tape (Part Number 71-03198-01) is available (at additional cost) which allows you to reconfigure your system for up to 64 users. If you would never have more than say, 48 users on your system at a time, do the reconfiguration for 48 users rather than 64. This will maximize available user memory. (Refer to Appendix C in the *MightyFrame Series Administrator's Reference Manual* for information about which configuration parameters are affected by the number of users specified).

1. Insert the 64 User Upgrade Tape into the drive.
2. Log in as root. Provide a password if necessary. The system will respond with a # prompt and leave you in "/".
3. Rewind tape and extract `/etc/muser`.

```
tsioctl -c rewind /dev/rmt0          RETURN
```

```
cpio -ivQcdum < /dev/rmt0          RETURN
```

4. Reconfigure the kernel for a maximum of 64 users by specifying the file name of the bootable kernel and the desired number of users between 2 and 64:

```
/etc/muser unix 64                  RETURN
```

5. Turn on the entries in `/etc/inittab` for any additional gettys required. Refer to Chapter 5 and Appendix B in the *MightyFrame Series Administrator's Reference Manual* for instructions on how to configure `/etc/inittab`. Also see earlier section 8.1.1, *Enhanced Cluster Driver*.
6. Next, take the system into single-user mode by entering:

```
/etc/shutdown                        RETURN
```

Wait for the system to prompt with the message:

```
ok to stop or reset processor
```

Then, reboot the system:

```
/etc/reboot                          RETURN
```

9. Using the Maintenance Mode File System

If you press the delete key, at the first prompt, after booting the S/640 CTIX raw installation tape you gain access to a file system containing some essential system files and programs. When you are locked out of the system (for example, because you have forgotten root's password and you cannot modify the password table without being root), maintenance mode file system allows you to

- boot CTIX
- investigate the cause of the lock out
- fix the problem that locked you out
- loading or correcting the eeprom

A list of some files included in the maintenance file system follows.

/bin/cat		/bin/chmod
/bin/cpio		/bin/cp
/bin/ed		/bin/ln
/bin/ls		/bin/mv
/bin/mkdir		/bin/rm
/bin/sh		/bin/stty
/bin/swap		/bin/sync
/dev/console		/dev/vme/a16
/dev/vme/a24		/dev/vme/a32l
/dev/vme/a32h		/dev/vme/eeprom
/dev/dsk/c0d0s0	-	/dev/dsk/c0d0sf
/dev/dsk/c0d1s0	-	/dev/dsk/c0d1sf
/dev/dsk/c0d2s0	-	/dev/dsk/c0d2sf
/dev/dsk/c1d0s0	-	/dev/dsk/c1d0sf
/dev/dsk/c1d1s0	-	/dev/dsk/c1d1sf
/dev/dsk/c1d2s0	-	/dev/dsk/c1d2sf
/dev/dsk/c2d0s0	-	/dev/dsk/c2d0sf
/dev/dsk/c2d1s0	-	/dev/dsk/c2d1sf
/dev/dsk/c2d2s0	-	/dev/dsk/c2d2sf
/dev/rdisk/c0d0s0	-	/dev/rdisk/c0d0sf
/dev/rdisk/c0d1s0	-	/dev/rdisk/c0d1sf
/dev/rdisk/c0d2s0	-	/dev/rdisk/c0d2sf
/dev/rdisk/c1d0s0	-	/dev/rdisk/c1d0sf
/dev/rdisk/c1d1s0	-	/dev/rdisk/c1d1sf
/dev/rdisk/c1d2s0	-	/dev/rdisk/c1d2sf

/dev/rdisk/c2d0s0	-	/dev/rdisk/c2d0sf
/dev/rdisk/c2d1s0	-	/dev/rdisk/c2d1sf
/dev/rdisk/c2d2s0	-	/dev/rdisk/c2d2sf
/dev/kmem		/dev/mem
/dev/null		/dev/prf
/dev/rmt0		/dev/rmt4
/dev/tty000		/dev/tty256
/dev/tty		/etc/fsck
/etc/icode		/etc/icode1
/etc/iv		/etc/mkfs
/etc/mnttab		/etc/mount
/etc/passwd		/etc/reboot
/etc/splocate		/etc/umount
/etc/system		/etc/ldeeprom
/etc/hinv		/etc/iv.desc.cpio

The file */etc/iv.desc.cpio* is a *cpio* archive. A list of the description files in this archive will be obtained by the following command:

```
cpio -ivt < /etc/iv.desc.cpio          RETURN
```

If you need to use one of these files, it must be extracted from the archive; first clear some space by removing something, then from the / directory type:

```
cpio -iv desc.XXXX < /etc/iv.desc.cpio    RETURN
```

When maintenance mode is entered, disk controller 0 is the ST506 controller; disk controller 1 is the first SMD controller. The corresponding device names for the first disk drive on each of these controllers are */dev/rdsk/c0d0s0* and */dev/rdsk/c1d0s0*, respectively.

Note: Access to bootable tapes should be restricted, since it poses an obvious security risk.

Please refer to "USING THE MAINTENANCE TAPE" in Chapter 13 of the *MightyFrame Series Administrator's Reference Manual* for complete instructions. These directions apply to the maintenance mode of the Raw Install tape.

10. Known Errors and Restrictions

10.1 Known Errors

- **Slattach(1N) DOES NOT WORK WITH 2.2 S/MT TCP/IP.**
- On some systems, the following (harmless) message will be seen during the boot sequence:

Tapeset: TTPassthru ioctl failed.

Whether the message is seen depends upon the revision of the QIC tape controller in the system. If it is seen, it may be eliminated by commenting out the `tapeset` command in the `/etc/drvload` file.

- The system crashes when swap space is gone, or when an I/O error occurs during a read or write of the swap area. Please see Section 11.2, below.
- `Csh(1)` will fail with a segmentation fault if given an extremely long string as the value of a shell variable, or given the following command:

```
awk '{print $1}' < /dev/null          RETURN
```

10.2 Restrictions

- **WARNING:** Be careful using the `iv(1)` command. `iv -i` of `/dev/rdisk/c0d0s0` re-initializes drive 0 which implies destroying the existing CTIX system.
- Raw installations should not be attempted on disks that have more than 127 bad blocks, as the list of bad blocks for the drive will get truncated by the raw install script.
- If `uugetty(1M)` is running at 1200 baud, you can't call in at another baud rate.
- `shl(1)` and RS422 use multiplex line discipline, they cannot both be active on a terminal.
- `uucico(1)` has a site name limit of 9 characters.
- The `-d` option of `acctcom(1)` does not exist.

- The **-r** option of the *sar(1)* command does not reliably report the average free memory and free swap space correctly. This should not present a problem since the **minimum** values of these parameters over the interval covered by the report is what should be of most use to system administrators.
- *crash(1M)* cannot produce a stack trace when analyzing the running system.
- The graphics commands *graphics(1G)*, *ged(1G)* and *gutil(1G)* are not included in this release.
- *sysdef(1M)* is not supported in this release.
- *adman* does not support half-inch tape or SMD disk drives.
- *adman* does not support the the RIOP.
- *tar* does not correctly append to a tar tape.
- The Televideo TVI 925 and 950 terminals are not fully supported in this release. OA products won't work properly with the terminals.
- On page 1 of the Manual entry for *cs(1)*, a sentence reads: Within pairs of " or characters a newline ...". The sentence should read: Within pairs of " or ` characters a newline ...".
- When a power fail has been detected for at least ten seconds, the system will continue through shutdown even though power is restored.
- Tapes written on a 150Mb Quarter-inch Tape drive can't be read on a 60Mb drive.
- Some very old 0410 objects which run on the S/1280, can not be run on other S series machines.

10.3 C Compiler and Tools Restrictions

- S/1280 with 3.31 CTIX 'C' produces a binary marked "0410" which is not S/MT compatible.
- *lex(1)* **-t** option writes to standard out; **-r** option will core dump, **-rt** outputs okay.
- The user profiling, *cc -p ...* , option can not be set if \$LIBROOT is used for cross compiling. Use the **-L** option

instead of \$LIBROOT if user profiling is required.

- Profiling has problems with names longer than eight characters.
- The "core clock" feature of *profil(2)* is not supported.
- *profil(2)* called with a scale of 02 does not result in a non-interruptible core clock.
- *sdb(1)* can fail to print all the calling subroutines in a stack backtrace. It fails to find 'a()' in the following:

```
main()
{
    a();
}
a()
{
    pause();
}
```

- *adb(1)* does not always print the arguments to function calls correctly. It cannot work out how many args are present with the following calling sequence:

```
push args(s)
jsr fred
mov.l "some address", %esp
```

- The following system calls when called with an illegal address will cause the calling process to memory fault rather than returning EFAULT: *wait*, *pipe*, *signal*, *time*.
- There is a C compiler bug when making embedded assignment statements to arrays of doubles, causing a compile-time error. Example:

```
double d[10];
...
printf("d is: %d\n", d[i] = 123);
```

- With software floating point math, divide by zero does not generate a trap.
- The optimizer does not recognize some 68020 instructions which may be used in *asm()* windows.

- Functions which return pointers return that value in both registers d0 and a0. The calling routine may pick up the value from either d0 or a0, and as such any assembler routine which returns a pointer must put the value in both. A problem arises in some statements using such a call, where some manipulation is performed on the return value before using it as a pointer. The following program demonstrates this error:

```
char *pf();
main ()
{
    char *cp;
    *(cp = pf()+ 4) = 'a';
}
```

A workaround would be to split such a statement up into 2 statements:

```
cp = pf() + 4;
*cp = 'a';
```

- The following piece of code will not compile:

```
void f();
if ( f() ) .....
```

The compiler will output:

"compiler error: cfix problem"

The solution: since f() is declared as void, it can be taken out of the 'if' statement, and the code will then compile.

- The register short pointer will not be incremented when the following code is executed:

```
main()
{
    register short *sp;
    extern short *x;
    int f();
    up = x;
    do {
        f(*sp+ );
    } while (*sp);
}
```

The problem is not seen for integer, character, or unsigned pointers. The workaround is to separate the increment from the function call:

```
f(*sp);  
sp+ + ;
```

- The compiler errors when `sizeof` is used in a signed compare.

```
main()  
{  
    int i;  
    if ((i - = sizeof(char)) <= 0)  
  
        ;  
}
```

The problem occurs because `sizeof` yields an unsigned integer as its value. This causes the compiler to mistakenly think that the type of `i` is unsigned, and generates a 'branch not equal', rather than a 'branch less than or equal'. A workaround is to cast the value of `sizeof` to integer (i.e., `(int)sizeof(char)`).

- The following program will cause a compiler error:

```
f (a,b,c)  
double *a, *b, *c;  
{  
    *a = *b = *c;  
}
```

A workaround is to split the statement into 2 statements.

11. Documentation Carried from Previous 5.2x Release Notices

11.1 Changes from CTIX 5.22 to 5.23

This section briefly states the differences between S/640 CTIX release 5.23/5.24 and release 5.25.1.

11.1.1 Installation Partition Flexibility

The installation procedure has been expanded to allow sizing the partitions during a raw install. Refer to earlier section 6.1, *Raw Installation to Disks*.

11.1.2 Enhanced Cluster Driver

The first change is in the way `/dev/tty n n` numbers are assigned to RS-422 lines. In `/etc/inittab` in CTIX 5.2x, there are eight `/dev/tty`'s per RS-422 line.

line	0	1	2	3
<code>/etc/inittab</code>	256-263	264-271	272-279	280-287
<code>cl_defdrops= 8</code>	256-263	264-271	272-279	280-287

Prior to this release, if you change `cl_defdrops` (drops per line) in `/etc/system`, the `/dev/tty n n` numbers were not correct. If you had changed the drops in `/etc/system` to two, the `/dev/tty n n` numbers would have assigned as follows:

line	0	1	2	3
<code>cl_defdrops= 2</code>	256-257	258-259	260-261	262-263

The new assignments are as follows:

line	0	1	2	3
<code>cl_defdrops= 1-8</code>	256-263	264-271	272-279	280-287
<code>cl_defdrops= 9-15</code>	256-263 288-294	264-271 296-302	272-279 304-310	280-287 312-318

Note: `tty`s numbers 295, 303, 311, and 319 cannot be assigned or opened.

Note: the administrator will have to add entries to `/etc/inittab` when `cl_defdrops > 8`.

The second change is for support of RS-422 high speed devices such as PC Exchange/Vines. These run at 1.8M baud versus the PT/GT rate of 307K baud.

Note: Each line on the RS-422 board will auto-configure to the first speed requested. DO NOT MIX HIGH AND LOW SPEED DEVICES.

11.1.3 More Open Files Per Process

The number of open files per process has become configurable in the range of 20 to 100. The default is 20. To generate a kernel with a larger number of open files specify `nofile` in your `usr/sys/cf/dfile`, and do a `make`; refer to the *MightyFrame Series Administrator's Reference Manual*, DAC-110.

Note: Any program which looks at fields of the user structure which occur after the open file table (such as `u_arg[]`, `u_signal[]`, or `u_ar0`) will have to be recompiled, since their offsets in the user struct have changed.

Note: The `stdio` library still has a limit of 20 open files. This means that although you may have 100 file descriptors for open files, at most 20 of them can be acquired using `fopen(3)`.

11.1.4 Changes to the `iv` Command

`iv(1)` has been enhanced to include the preassigned alternate block as part of description file produced by the `-d` option. This information will be used when the description file is given to `iv` for an update. In the new format, each bad sector descriptor is followed by the symbol `'|'` which is in turn followed by the track number of the replacement sector. For example, an entry of the form `'14908 | 876'` says that physical sector 14908 has been replaced by the last sector on track 876. An entry of the form `'14908 | 0'` says that sector 14908 is a delayed bad block, which will be mapped by the kernel at the appropriate time. For SCSI disks, the only entries in the bad block table will be delayed bad blocks, since mapping is handled by the controller rather than the kernel.

The new information is only needed if the bad block table in your disk volume home block has been corrupted. This change permits the exact reconstruction of the bad block table in the volume home block of the disk. **If you have stored description files for your disks, they should be replaced with new ones using the current version of *iv*.** It is only rarely that you would wish to repair a corrupted bad block table, and continue to use the data on the disk.

The *iv(1)* has an undocumented option, **-p**, which allows changing partition sizes. The format is:

```
iv -p"0 1360 17360 25360 ..." /dev/rdisk/cNdNs0          RETURN
```

WARNING: The arguments to **-p** must immediately follow, place in quotes to protect from the shell. **THE FIRST VALUE MUST BE ZERO (0)** since this is where the Volume Home Block is kept.

11.1.5 RS232 Hardware Flow Control(CTSCD)

Full port hardware flow control is NOT supported; yet "ctscd" is supported. Add a similar command to your "lp" interface file to enable your port:

```
stty 1200 ctscd ; stty 9600
```

11.1.6 Kernel Debugger Changes

The ability to load symbols into the kernel debugger has been added. To enable debugger symbols, first load the driver "debugger", second load "dbsym", finally run the `mkdbsym` command. See the *mkdbsym(1M)* manual page for more information.

11.1.7 Other Changes from 5.22 to 5.23/5.24

- The ST-506 driver has been modified to clear write fault condition so bad block assignment can be made.
- The *lddrv(4)* system call has an additional argument to support Telecluster and Remote I/O Processor.
- A new *ulimit(2)* option has been added. *ulimit(4)* will return the current allowed number of open files per process. This should be used in place of NOFILE when writing programs which need to know the limit.

- The internal process table used by *init(1M)* has been increased to support a larger number of processes.
- *slattach(1N)* was modified to default to 1 stop bit. *Slattach -b* will restore the old default of two stop bits.
- The value of the VME protection register is now saved and restored upon a context switch.
- *cu(1)* has a new option, *-S*. It sets full 8 bit (non parity) receive from the remote connection.
- The ability to send a break has been added to *tiop* (code for I/O Processor (IOP)).
- Truth values for various machines have been added in */bin* (linked to */bin/false*). The new truth values are *u370*, *u3b*, and *u3b5*.

11.2 Helpful Hints

- *init(1M)* going from level 's' to level '2' does not restart everything, use *reboot(1M)* to ensure a complete startup.
- The zero-length file */usr/lib/cron/cron.allow* is installed during an update installation of the CORE group if the file did not previously exist. If *cron.allow* exists and is empty, no usage of *crontab* is permitted. Thus the system administrator may want to remove *cron.allow* after installation. The administrator may also want to remove */usr/lib/cron/cron.deny* if it has just been installed as a zero-length file, because if *cron.deny* alone exists and is empty, global usage of *crontab* is permitted. Please refer to *crontab(1)* in the *CTIX Operating System Manual, Volume 1*.
- *shl(1)* should not be run from the system console. If it is used, exit from shell layers before running *halt(1M)* or *shutdown(1M)*.
- In the event that a disk goes off line temporarily, and comes back online, it is possible for a "dirty" file system to be marked "clean".
- In *cu(1)*, copy file command, *~%take* from [to], the full pathname, including the file name, must be used for the [to] argument.

- While running *cu(1)* use `~% break` rather than the "break" key on your terminal when you wish to transmit a break character.
- *adman(1M)*, under terminal and printer administration menus, will allow all logins to be removed. Take care not to remove the login from your own terminal.
- *adman(1M)* has some problems computing the tty slot when configuring a serial printer on an I/O controller or an S/220.
- *ldeeprom(7)* will not display an error when there is NOT a VME interface card installed.
- Shell layers, *shl(1)*, does not work over 422 cluster lines or on virtual terminals.
- RS422 terminals cannot behave as consoles (i.e., cannot come up in Admin Mode) unless the system is re-sysgened with the 422 driver as part of the system, using `/usr/sys/cf/dfilecl`. Please refer to "ADDING CTIX DEVICE DRIVERS" in Chapter 7 of the *MightyFrame Series Administrator's Reference Manual*.
- Always run *pwck(1M)* (*gpck*) after modifying `/etc/passwd` (`/etc/group`).
- The QIC unit (led) turns off at BOT, after a rewind, allow settling time before removing the QIC.
- The *lp(1)* command has been added to the default commands executable from a remote system with *uux(1)*. The other defaults are *rmail(1N)* and *mews(1N)*.
- If the debugger is enabled:
 - the console will use X-on and X-off during normal operation.
 - *halt(1)* displays "Entered Single User Mode ...", twice.
 - *csh(1)* displays "Logout ...", twice.
- Kernel message: "422: retry ..." is a status message; call your field support if you see a bunch.
- If using RS232, remember to download a PT/GT prior to running *netman(1NM)*.

- When installing a new disk 0 and you see the message "... aren't any disks", the disk is either incorrectly installed, unformatted, or does not have a disk partition #2; verify with Diagnostics.

11.3 Bug Fixes from 5.23 to 5.24

- Large (approximately 1Mb) processes caused the kernel to panic. This was because the growth of the user structure to accommodate more open files pushed it beyond an internal limit. This limit has been adjusted to correct the problem.

11.4 Bug Fixes from 5.22 to 5.23

- csh(1) would hang when the "wait" command is interrupted (12391).
- csh(1) "kill %#" and "kill 0" did not work (12227).
- csh(1) background jobs see foreground interrupt (12224).
- slattach(1N) always used two stop bits (12364).
- I/O Processor would not transmit a "break" (12940).
- I/O Processor discards input if clists exhausted, silently (13227).
- putcbp() and getcbp() could be interrupted (13178).
- serrint() would hang a port if T_BLOCK set (13226).
- ttwrite() could be interrupted (13227).
- timein() was not called from trap.s, timed out process would not be rescheduled (13227).
- mitilp() discards "outq" if parallel printer goes offline (13206).
- z8530.o strips 8th bit prior to flow control detection, 0x93 is interpreted as xoff (13271).

12. Documentation Updates

12.1 Process Sizes and Swap Space

There are two swap area problems that can cause the system to panic. The first is running out of swap space; the second is when an I/O error occurs during a read or write of the swap area. Neither problem is new to the CTIX system; however, because of the larger allowable size of user processes, the first can become more visible than in the past. The *sar -r* report can be used to track the available swap space; if necessary, additional space can be allocated via the *swap(1)* command.

It is recommended that the swap area have at least one-half again as much space as there is physical memory on the system. To obtain more swap space, use the *swap* command with the *-a* option. There is no need to re-configure the kernel or to reconfigure the disk to enlarge the original swap slice (*/dev/rdisk/c0d0s2*) when this is done. Please refer to the *swap(1)* entry in the *CTIX Operating System Manual, Volume 1* and to "ADDING SWAP SPACE WITH THE *swap* COMMAND" in Chapter 8 of the *MightyFrame Series Administrator's Reference Manual*.

As an additional safety measure, CTIX restricts the maximum size that a process can be to 1/4 of the total available swap space plus 1 Megabyte. This limit dynamically changes when a *swap -a* or *swap -d* is issued. This default 'floating' max process size can be overridden by changing the 'maxumem' variable in *dfile* and sysgening a new kernel. A maximum value of 6144 will allow a 24 Mb process to be created.

12.2 Accessing Additional Disk Space

S/MTs shipped with 85 Megabyte or larger disk drives have additional Megabytes of space which was formatted at installation but was not initialized with a valid file system structure. Please refer to Chapter 8, "DISKS", in the *MightyFrame Series Administrator's Reference Manual* for instructions on how to create and mount file systems.

12.3 Re-Partitioning Additional Disks

S/MTs with more than one disk drive will have only the first (system) disk initialized with four or five partitions by this

installation. (VHB, root, swap, usr, and remaining space if any.)

For instructions on how to re-partition any additional disks into multiple partitions, and then setup filesystems; please refer to Chapter 8, "DISKS", in the *MightyFrame Series Administrator's Reference Manual*.

12.4 Configuration For Loading TCP/IP and PCX Drivers

If you purchase the software to support TCP/IP or PCX, it is necessary to modify the `/etc/drvload` shell script so that these drivers will be loaded at boot time. The variable `copts` must be set to 1, 2, or 3 for TCP/IP, PCX or both respectively. The appropriate lines are present, but commented out. The modification consists of uncommenting (remove the initial #) the line which will cause the desired drivers to be loaded.

12.5 Notes About Cross Development

Installation of the CROSS group provides the capability to do software cross development for the following processors:

68010	(1sw)
68020 with software floating point	(2sw)
68020 with 68881 hardware floating point	(2fp)

The default libraries installed into your root file system under `/lib` and under `/usr/lib` contain 68020 and software floating point objects. If your system has 68881 hardware floating point, and you plan to develop software **only** for the 68020 with 68881 hardware floating point, you may wish to install the 2fp libraries as the default libraries. (This would eliminate the need for setting the `LIBROOT` environment variable to `'/cross/2fp'` upon compiling and linking.)

- If the CROSS group is not already installed, perform an update installation of the group. (Refer to Section 5.2 of this release notice.)
- If the entire CROSS group is already installed, execute the `/cross/crossins` script to install one set of cross development libraries into the root file system. This script also changes the definition of `CENVIRON` in `/etc/profile`, and allows the removal of extraneous cross development libraries from `/cross`.

Please refer to the cc(1) and ld(1) pages in the *CTIX Operating System Manual, Volume 1* and to the *Programmer's Notes for C Cross Compiler and Flexnames* (Part Number 09-00689-01).

12.6 UPS Operation

If your S/MT system has a Intelligent UPS connected to it (via a ups cable - see the S/MT hardware manual for a description of the pin outs), it has the capability of handling an AC failure in a "sane" manner.

When the UPS notices that AC has been lost, it will send a signal via the UPS cable to the S/MT. The S/MT will then print the message "POWER FAIL IMMANENT" to the console (if there is one attached) and to the console log file. If AC is restored within 10 seconds, the UPS will remove the signal from the UPS cable, and the S/MT will write the message "POWER RESTORED - NO LOSS OF SERVICE" to the console.

If the AC is not restored within the 10 second limit, the S/MT will send the SIGPWR signal to all processes in the system. Processes should then clean up after themselves and exit. When init(1) catches the SIGPWR signal, it will start the "/etc/powerfail" script. The "/etc/powerfail" script will run the "/etc/halt" command with the argument "POWERFAIL" - this will have the effect of bringing the system into single user mode.

After two minutes have elapsed (enough for the system to become quiescent), the S/MT will command the UPS to "pull its plug." After AC is restored (and the UPS batteries are sufficiently charged), the UPS will restore AC power to the S/MT.

12.7 Manual Page Updates

The *CTLX Operating System Manual, Version B, First Edition, Update Notice 1* (Part Number 09-00793-01) contains the latest manual page updates.

The *sadp(1)* example given in *Volume 1* is incorrect. There is no space between the device name and device number. The corrected example is:

```
sadp -d disk-0 900 4
```

RETURN

Appendix A Parallel Printer Cable Pinout

Note the following parallel printer cable information:

1. To meet specifications, the length of the printer cable must be 10 feet or less (3.0 meters).
2. Chassis ground must be connected to the shield drain wire at both ends. Also all four unused conductors must be connected to a ground at both ends.
3. On the printer side, the cable's vinyl insulation must be stripped back so that the printer connector's metal strain relief bracket clamps down on the conducting shield.
4. The 36-pin Parallel printer connector to 25-pin D-type connector cable pin-to-pin connection is given in Table A-1.

Table A-1. Parallel Printer Cable Pinout Table

Computer Connector Pin	Printer Connector Pin	Signal
1	2	Line Printer Data 0 (LPT0+)
2	3	Line Printer Data 1 (LPT1+)
3	4	Line Printer Data 2 (LPT2+)
4	5	Line Printer Data 3 (LPT3+)
5	6	Line Printer Data 4 (LPT4+)
6	7	Line Printer Data 5 (LPT5+)
7	8	Line Printer Data 6 (LPT6+)
8	9	Line Printer Data 7 (LPT7+)
9,10,11	21,22,23	Ground (spare conductor)
12	24	Ground (LPPRESENT-)
13,15	25,26	Ground (spare conductor)
14	1	STROBE-
16	10	Line Printer Ack. (LPTACK-)
17	11	Line Printer Busy (LPBUSY+)
21	12	NO PAPER+
22	13	SELECT
23,24	19,20	Ground (spare conductor)
25	17	Chassis ground (shield)

Appendix B: Using SCSI Drives on the S/640

The kernel shipped with this release contains support for SCSI disk and tape drives attached to the S/640 SCSI bus. A line defining `scsidisk` was added to `/etc/master`, and a corresponding entry was made in the `dfile` used to build the kernel. The SCSI disk driver is designated as disk controller number 1. Thus, slice one of the first drive on the SCSI bus is designated:

```
/dev/dsk/c1d0s1
```

An entry was added to `/etc/system` to support one SCSI disk drive. If more than one drive is added, additional entries must be made. The existing entry has the form:

```
disk-c0d0 bus= 0 target= 6 lun= 0 parity reselect
```

After adding drive one, you should have two lines as follows:

```
disk-c0d0 bus= 0 target= 6 lun= 0 parity reselect  
disk-c0d1 bus= 0 target= 5 lun= 0 parity reselect
```

Do not confuse the `c0` used here to designate the SCSI controller, with the name in the `/dev/dsk` directory. Note that `target` is the device id of the SCSI device. All file system configuration procedures (*iv*, *mkfs*, etc.) are the same for SCSI disks as for others. The description files for SCSI disk drives in `/usr/lib/iv` are those with names ending with `S`. For example, `desc.140MS` is the description file for the Micropolis model 1370.

We have also added support for SCSI Half Inch Tape drives. The current entry in `/etc/system` for the QIC drive is:

```
tape-d0 bus= 0 target= 1 lun= 0 parity reselect
```

If you add a HIT, it must also be configured as follows:

```
tape-d0 bus= 0 target= 1 lun= 0 parity reselect  
tape-d1 bus= 0 target= n lun= 0 parity reselect halfinch
```

where n indicates the id of the SCSI HIT. The driver has been tested with a Cipher F/990, and a Hewlett Packard model 88780A.

After editing */etc/system*, type *scsimap -e* for a syntax check.

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