TANDY®

Technician Series Diagnostics Software

TRS-80®

XENIX TOOLS

SOFTWARE

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XENIX TOOLS

INTRODUCTION

The purpose of this diskette is to provide a menu oriented method of accessing a XENIX system for testing and possible recovery. The menu options perform some of the commonly used procedures in a simplified manner. It is designed for use on any of the Tandy computers equipped with a 68000 processor and a double-sided 8" floppy drive. This includes the Tandy 6000, the Model 16/16B, and the 68000 Upgraded Model 12. A hard drive is required for this package to be useful.

Note: The routines contained in this package do not check for the existence of a drive. XENIX will conclude that there is a hardware problem if a hard drive does not respond to it. Therefore, asking any of these tests to access a hard drive that does not exist will cause a crash. In the case of a floppy drive, XENIX will merely respond with a message that the drive is not ready and the command being executed will fail.

The XENIX Tools are originally on TRS-XENIX Version 1.03.05. Operating the Floppy Disk Menu on a version of XENIX other than that on the Tools Disk is not suggested. However, by logging in as root on a system of the desired TRS-XENIX Version and typing "install", the tools may be put on the hard disk. Then you may log in as "tandy" with the password "support" to bring up the Hard Disk Menu. The "k" option of the menu can then be used to produce another Tools Diskette with the XENIX version that is resident on the hard drive.

```
*********************************************************************
*                          W A R N I N G                            *
*                                                                   *
*  Read this manual carefully and understand it before using this   *
*  package.  If not properly used there is a great potential for    *
*  damage to the XENIX Operating System and data on the hard drive. *
*                                                                   *
*********************************************************************
```

XENIX TOOLS - QUICK REFERENCE

FLOPPY DISK MENU

a - Disk Media Verification - Read an entire disk/diskette scanning for flaws.

b - Clean a File System - Perform a File System CheckK (fsck) on a floppy or hard drive.

c - Mount Primary & enter shell - Mount the primary hard drive under /mnt and enter a XENIX subshell.

d - Install the Test User - Install the test user "tandy" and all of its associated files.

e - Remove the Test User - Remove the test user "tandy" and all of its associated files.

f - Make tar system save - Make a full system save using "tar". Estimate the number of disks required for a tar system save.

g - Enter "sysadmin" utility - Run the file system maintenance program, "sysadmin" (sysadmin restores only).

h - Decipher Error Codes - Aid in deciphering the "HARD DISK x:" errors reported by XENIX.

i - Scan through DIAG Errors - Display documentation regarding the "DIAG" errors reported by XENIX.

j - Read Error Message File - Mount the primary and display the contents of the messages file on the hard drive.

k - Show info on a Hard Disk - Display the media error map, size and configuration of a hard disk.

l - Rebuild Boot Track - Recopy the boot track to the primary hard drive.

m - Rebuild Boot & Kernel - Recopy the boot track, /xenix, /z80ctl, and /z80diags to the primary hard drive.

n - Exit Menu to the shell - Exit menu to the XENIX shell.

o - Exit Menu and shutdown - Shutdown the system.

HARD DISK MENU

a - Cause Disk Head Seeks - Force a drive to do random head seeks.

b - Disk Media Verification - Read an entire disk/diskette scanning for flaws.

c - Make file structure - Make a mountable file structure on a disk or diskette.

d - Clean a File System - Perform a File System CheckK (fsck) on a floppy or hard drive.

e - Mount Disk & Enter shell - Mount a floppy or hard drive and enter a subshell.

f - Send Lines to a Device - Test a device (printer or terminal usually) by sending lines of text to it.

g - Test Local Printing - Send lines alternately to a terminal and its local printer.

h - Enter "sysadmin" utility - Run the file system maintenance program, "sysadmin" (sysadmin saves & restores).

i - Make tar system save - Make a full system save using "tar". Estimate the number of disks required for a tar system save.

j - Restore tar system save - Restore the files on a tar system save.

k - Regenerate XENIX tools disk - Using the files currently on the system, create a new XENIX tools disk.

l - Decipher Error Codes - Aid in deciphering the "HARD DISK x:" errors reported by XENIX.

m - Scan through DIAG Errors - Display documentation regarding the "DIAG" errors reported by XENIX one page at a time.

n - Read Error Message File - Display the contents of the messages file.

o - Search Messages for Errors - Display the lines of the messages file that contain read or write errors.

p - Show info on a Hard Disk - Display the media error map, and information regarding the size and configuration of a hard disk.

q - Start Background Test - Begin running the burn-in script in background.

r - Stop Background Tests - Terminates the burn-in script running in background.

s - Remove Test User & shutdown - Remove the user "tandy" from the system, and shutdown the system.

t - Exit Menu to the Shell - Exit menu to the XENIX shell.

u - Exit Menu and Shutdown - Exit menu and shutdown the system.

TECHNICAL SECTION

FLOPPY DISK MENU

To access this menu, first turn on power to all peripherals. Then turn on the power to the computer and immediately hold down the <REPEAT> and <BREAK> keys until the message "INSERT DISKETTE" appears on the screen. Insert the XENIX Tools Disk and close the floppy drive door. After the first screen of text is displayed press the <ENTER> key. You will then be asked if you wish to change diskettes and you should press <ENTER> again. This should bring you to the XENIX Tools Menu. Any of the displayed menu options can be selected by pressing the appropriate key **(Pressing <ENTER> is not required and may have undesirable results).** Be sure to use the option to shutdown before turning off power or pressing reset.

Option a - Disk Media Verification

This option will ask you to enter a drive (hd0,hd1,hd2,hd3,fd0,fd1,fd2,fd3) and force XENIX to read everything on that drive. In the process of reading, serious flaws in the media (or conceivably the drive) will be reported by XENIX. The test may or may not continue after encountering an error. Areas on hard drives that were reported as flawed during the format process will not be read by this test.

Option b - Clean a File System

This utility will ask for a drive and perform the XENIX "fsck" command on that device. "Fsck" is used primarily to assure the integrity of a system that has been shutdown incorrectly (i.e. power loss, system crash, user error, etc.). This command should not be used on a drive which is currently mounted or the drive that was used to boot.

Option c - Mount Primary & enter shell

This option will attempt to "mount" the primary hard drive under the "/mnt" directory. Having done this, it will then enter a subshell to give an experienced user the opportunity to repair a system or gain access to important files. Keying <CTRL-D> will unmount the primary and return to the menu. This option is intended as a utility to those experienced with XENIX.

Note: Should there be a problem in mounting the device during operation of any of the Tools options the option will display an error message and prompt for <ENTER> to return to the menu. The most common error encountered during this option is "mount: structure needs cleaning". This message is an indication of an improper shutdown, system crash, etc. and can usually be cured by Option b.

Option d - Install the Test User

This option will install the test user "tandy" and all of its associated files. To access this user, shutdown the system, boot up under hard disk, proceed to the normal login prompt, and login on the console as "tandy" with the password "support". This should bring you to the menu. See XENIX TOOLS - HARD DISK MENU.

Option e - Remove the Test User

This option will remove the test user "tandy" and all of its associated files. This option or the hard disk equivalent option should be run to release the space used by the Tools and to restore the security of the system.

Option f - Make tar system save

This option is a full system save using "tar". It will first attempt to mount the primary hard disk, then, if successful, ask if you intend to use double-sided diskettes. Then, since the process may take a minute or so, it asks if you would like an estimate of the number of diskettes the save will require. Occasionally, a problem with the directory structure can cause this estimate to continue in an infinite loop, therefore, if no answer is given in five minutes or so, press <BREAK>. After completing the estimation or skipping over it, you will be asked what floppy drive you plan to use, then asked to insert a diskette and press <ENTER>. Tar will save the entire primary hard drive. When each diskette becomes full, tar will prompt for a new "volume". Insert another diskette and press <ENTER>. Be sure that you have enough formatted diskettes prepared before beginning this process. Occasionally the order of these diskettes is significant, therefore it is suggested that they be restored in the same order they were saved (usually by numbering the diskettes).

Note: This save will save only the primary hard drive and, like all "tar" saves, will not save an empty directory (This is usually not necessary anyway). Secondaries can be saved from the tar save option of the Tools menu when booted up under the hard drive or by giving correct responses to the sysadmin utility of the hard drive menu. Since this diskette must be in drive 0, this option is useless on a single floppy drive system. The floppy diskettes to be used must be formatted. This is done by typing "diskutil" at the "xenix" prompt which is displayed upon bootup.

Option g - Enter "sysadmin" utility

This will simply run the standard "sysadmin" program that is on the file maintenance diskette. This "sysadmin" is purely for restoring. This option is basically an alternative to a file maintenance diskette. More detailed information is available in the TRS-XENIX Core Manual.

Note: Since this diskette must be in drive 0, this option is useless on a single floppy drive system.

Option h - Decipher Error Codes

This is a program to aid in deciphering the "HARD DISK x:" errors reported by XENIX. It will ask for the error code (4 hex digits) and graphically show the meaning of each bit set in the error code. For example to decipher the following error message:

HARD DISK 0: hard err 4059 on rd of trk 1 head 2 sect 3

Enter 4059 when asked for the Hard error code. A bit by bit breakdown of the error code will be displayed. You are then asked if you would like to decipher another. Answer with 'y' to do another or 'n' to return to the menu.

Option i - Scan through DIAG Errors

This option will display documentation regarding the "DIAG" errors reported by Version 7 XENIX one page at a time. Press <SPACE> to display another page or press <ENTER> to display another line. Press <?> to see a list of other functions you can choose when at the "more" prompt.

Option j - Read Error Message File

This option will attempt to mount the primary and, if successful, display the contents of /usr/adm/messages on the hard drive. This file contains all serious error messages reported by XENIX as well as records of each boot up sequence. The file will be displayed one page at a time. Press <SPACE> to display another page or press <ENTER> to display another line.

Option k - Show info on a Hard Disk

This utility will ask for a hard drive number (0,1,2,3) and read the error map contained on the hard disk. Included in the information displayed is the media error map, and information regarding the size and configuration of the hard disk.

Option l - Rebuild Boot Track

This option will refresh the boot track of the primary hard drive with the contents of /hdboot (the original boot track).

Note: This could cause serious problems if the version of XENIX on the hard drive is not the same as that on the Tools disk. Since this option cannot reformat the boot track, this will be unsuccessful if the boot track format is no good.

Option m - Rebuild Boot & Kernel

This option will refresh the boot track of the primary hard drive with the contents of /hdboot (the original boot track), then attempt to mount the primary hard drive. If successful, it will then recopy the kernel (/xenix, /z80ctl, /z80diags) to the hard drive.

Note: This could cause serious problems if the version of XENIX on the hard drive is not the same as that on the Tools disk. If the version of XENIX on the tools disk is System 3 the "/z80ctl" file will not be present and will produce an error message but this message can be ignored.

Option n - Exit Menu to the shell

This option will exit the menu and allow the experienced user to access the system, save important files, or manually attempt to repair the system. This option is intended to be used by those experienced with XENIX. Typing "menu" at the "#" prompt will return you to the menu.

Option o - Exit Menu and shutdown

This option is intended to be used to shutdown the system. After shutting down you might boot the hard disk, boot the boot floppy, run diskutil, etc. **If the customer's service is complete, be sure that the user "tandy" (if installed), is removed before shutting down.**

HARD DISK MENU

To access this menu (the user "tandy" must be installed) turn on all peripherals and the computer. Press <ENTER> after the first page of text. Then type <CTRL-D> to proceed with the boot-up process. Enter the date and time. Then login on the console as "tandy" with the password "support". This should bring you to the XENIX Tools Menu. Any of the displayed menu options can be selected by pressing the appropriate key **(Pressing <ENTER> is not required and may have undesirable results).** Be sure to use the option to shutdown before turning off power or pressing reset.

Option a - Cause Disk Head Seeks

This option will ask for a drive and force it to do seeks to random positions. Since it uses a read command to force head positioning, there must be a formatted disk, or diskette, present. To stop this test you must press <BREAK>.

Option b - Disk Media Verification

See option a of the floppy menu.

Option c - Make file structure

This routine is useful to simplify the process of making a file structure. Making a file structure is the process after formatting a disk or diskette that will allow XENIX to "mount" the device containing it and access it in the same manner that it accesses the primary storage device (the primary hard drive, specifically). The routine will ask for a drive then request the desired size of the file structure in blocks. It selects the remaining two parameters based on whether the drive that you selected is a hard drive (1 17) or a floppy drive (2 16). The request for the desired size will be preceded by a table containing the maximum sizes for the most used storage devices.

Option d - Clean a File System

See option b of the floppy menu.

Option e - Mount Disk & Enter shell

This option will ask for a drive and attempt to "mount" the device under the "/mnt" directory. Having done this, it will then enter a subshell to give an experienced user the opportunity to repair a system or gain access to important files. Keying <CTRL-D> will unmount the primary and return to the menu. This option is intended as a utility to those experienced with XENIX.

Note: Should there be a problem in mounting the device during operation of any of the Tools options the option will display an error message and prompt for <ENTER> to return to the menu. The most common error encountered during this option is "mount: structure needs cleaning". This message is an indication of an improper shutdown, system crash, etc. and can usually be cured by Option d.

Option f - Send Lines to a Device

This option can be used to test a device. It will ask for a device name and then for a baud rate. Baud rate is associated only with serial devices tty01, tty02, tty04, tty05, tty06 and will have no effect on any other device. The test will send a line consisting of the alphanumerics and several special characters. Protocol on the serial ports will be 8 bits, no parity, and 1 stop bit. Since most terminals will be running at 9600 baud, pressing <ENTER> at the baud rate prompt will cause baud rate to default to 9600 baud. Press <BREAK> to stop the test.

Note: Any device is allowed for this test though the console, terminals, and printer are the most likely (and the safest). Storage devices, such as fd0, hd0, etc. are allowed, however, is not suggested since corruption of the data on that device is certain. Text on the screen may not line up as expected. This is because under normal circumstances XENIX filters the output going to a terminal, however, when no one is logged in this filtering is not active.

Option g - Test Local Printing

This test is much like that of Option f, however, the only eligible devices are the terminals and they should be referred to by the numbers 1 through 9. The /etc/ttytype file will be searched to identify the terminal type at that location and the type will be displayed on the screen. If the type does not agree with the actual type of the terminal then local printing will fail. The test will only recognize trs16 (the emulator), adds25, and dt100 as acceptable terminal types. It will then send lines alternately to the screen and to the terminal's printer. The line that is sent to the local printer is preceded by the appropriate escape sequence to instruct the terminal to invoke local printing and followed by the escape sequence to deactivate it. Press <BREAK> to stop the test.

Note: Text on the screen may not line up as expected. This is because under normal circumstances XENIX filters the output going to a terminal, however, when no one is logged in this filtering is not active.

Option h - Enter "sysadmin" Utility

This is simply an entrance to the standard "sysadmin" program that is currently on the hard drive. Sysadmin is probably the quickest save possible, however, the restore is painstakingly slow on a single drive system. Sysadmin is oriented towards a device, so it will only save, for instance, one hard drive at a time. More detailed information is available in the TRS-XENIX Core Manual.

Note: Be sure that you have enough formatted diskettes before beginning this process.

Option i - Make tar system save

This option is a full system save using "tar". It will ask if you intend to use double-sided diskettes. Then, since the process may take a minute or so, it asks if you would like an estimate of the number of diskettes the save will require. Occasionally, a problem with the directory structure can cause this estimate to continue in an infinite loop, therefore, if no answer is given in five minutes or so, press <BREAK>. After completing the estimation or skipping over it, you will be asked what floppy drive you plan to use, then asked to insert a diskette and press <ENTER>. Tar will save the entire system including any mounted file systems such as secondaries. When each diskette becomes full, tar will prompt for a new "volume". Insert another diskette and press <ENTER>. Be sure that you have enough formatted diskettes prepared before beginning this process. Occasionally the order of these diskettes is significant, therefore it is suggested that they be restored in the same order they were saved (usually by numbering the diskettes).

Option j - Restore tar system save

This option is a full system restore using "tar". It will ask you which drive to use, then prompt you to insert the first diskette and press <ENTER>. If the message "tar: mount next volume" appears, insert the next diskette and press <ENTER>. Otherwise you will be prompted to insert the next diskette in the chosen drive and press <ENTER>. Insert all diskettes and when the final diskette has been read, press <BREAK>.

Option k - Regenerate Tools Disk

This option will produce another Tools Disk using the kernel, command files, and Tools files currently on the hard drive. This is a very powerful command since, for those that are very experienced with XENIX, it will aid in generating a customized version of the Tools Disk. If a tools disk for a different version of XENIX is required, simply use the "install" command to install the user on a hard drive with the desired version of XENIX on it, then use this option to create a new Tools Disk. Differences in the version of XENIX may cause some minor problems, however this method has been tested with much success. Using this method, the utilities included with the Tools Disk can be put to use with System 3 XENIX.

Option l - Decipher Error Codes

See option h of the floppy menu

Option m - Scan through DIAG errors

See option i of the floppy menu.

Option n - Read Error Message File

This option will display the contents of /usr/adm/messages on the hard drive. This file contains all serious error messages reported by XENIX as well as records of each boot up sequence. The file will be displayed one page at a time. Press <SPACE> to display another page or press <ENTER> to display another line.

Option o - Search Messages for Errors

This option will display only lines that contain read or write errors from /usr/adm/messages. The lines will be displayed one page at a time. Press <SPACE> to display another page or press <ENTER> to display another line.

Option p - Show info on a Hard Disk

See Option k of floppy menu.

Option q - Start Background Test

This option will start a burn-in script running in the background. The process will run until stopped (see option r) or until the system is shutdown. Approximately 100 blocks of free space should be allowed for each simultaneous execution of this test. It is suggested that no more than 6 of these tests be run at once. After the test has been started, the system date will be occasionally displayed near the bottom of the screen which may cause a garbled screen but should not interfere with operation. The date is intended to show the time of the last execution should XENIX crash.

Option r - Stop Background Tests

This option should be used in conjunction with option p to stop all tests running in the background. It is suggested that you make sure that there are no tests running before shutting down the system.

Option s - Remove Test User & shutdown

This option will remove the test user "tandy" and all of its associated files. This option, or its floppy equivalent, should be run to release the space used by the Tools and to restore the security of the system. It will shutdown the system when it completes the removal.

Option t - Exit Menu to the Shell

This option will exit the menu, and allow the experienced user to access the system, save important files, or manually attempt to repair the system. Keying <CTRL-D> after executing this option will return you to the login prompt. This option is intended to be used by those experienced with XENIX.

Option u - Exit Menu and Shutdown

This option is intended to be used to shutdown the system when expecting to use the test user in another session. For example, to enter diskutil to format diskettes, use this option, press reset, and type "diskutil" at the "xenix" prompt.

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