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RELEASE AND UPDATE INFORMATION, DNOS OPERATING SYSTEM, RELEASE 1.1.1-990

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Release and Update Information

DNOS Operating System, Release 1.1.0

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SECTION 1

IMPORTANT INFORMATION

Before installing DNOS 1.1, you should be aware of installation details pertinent to the DNOS 1.1 release.

1.1 Deleting Old System Files

It is best to install the new DNOS onto a clean system disk. However, if you are using your system disk as a data disk also, you need to replace your old operating system by the new DNOS. If your old system is a DX10 system, delete all system files before installing DNOS.

If you are installing DNOS 1.1 on a system disk that has been used to run DNOS 1.0, be sure to delete the following files and directories before copying the new DNOS onto the disk. If you copy the new DNOS without deleting these files, you will have several DNOS 1.0 files occupying space on the disk but never being used, you will be unable to copy a directory for the spooler, and you will have user IDs that are not usable with DNOS 1.1.

- * .S\$OSLINK - the directories of linkable parts in DNOS 1.1 are of different sizes so that the DNOS 1.0 set must be deleted before a copy can be made to replace them
- * .S\$UTIL - the utility program file is larger in DNOS 1.1 than it was in DNOS 1.0
- * .S\$SGU\$ - configurations from DNOS 1.0 will not work with DNOS 1.1. You must do a system generation for systems other than S\$SHIP. The .S\$SHIP subdirectory also has delete protected files on the DNOS 1.0 disk, so be sure to remove that protection before deleting .S\$SGU\$.
- * .S\$SHIP - this program file has ID conflicts in DNOS 1.0 and DNOS 1.1
- * .S\$SYSTEM.S\$HSTRY - this history file has information accumulated since your initial installation of DNOS, showing all products installed, all products patched, and any MVI command executed. You may want to make a

copy of this for later reference before deleting it. Because of some changes made to the entries for DNOS, it is wise to begin with a new file when you install your 1.1 release of DNOS.

- * .S\$SDTQUE - this spooler file is replaced by a directory in the new release
- * .S\$USER - this directory of user synonyms and logical names must be deleted since a new format of synonym and name segments is used. Synonym and logical name files from DNOS 1.0 cannot be used with DNOS 1.1. Users will need to create new synonyms and logical names.
- * .S\$CLF - this file is a companion to the user ID files and needs to be recreated by DNOS when you redefine all user IDs.
- * .S\$ROLLA - this system swap file is now a file within a directory (.S\$ROLLD.S\$ROLLA).
- * .S\$SCA - this will be rebuilt when the new DNOS is used.
- * .S\$IPL - this will be replaced from the new disk
- * .S\$LANG - to get the new link editor installed correctly, remove the delete protection from all of the delete protected overlays in .S\$LANG

1.2 Creating System Files

To avoid locking file structures in the VCATALOG (volume table of contents) of the system disk, the DNOS swap file was moved from VCATALOG into its own directory for release 1.1. Because of this, a Create System Files (CSF) command on DX10 or DNOS 1.0 will not correctly create the swap file for DNOS 1.1. The CSF command is done by software manufacturing before shipping DNOS. It can also be done on a DNOS 1.1 system if you are building another DNOS 1.1 disk. If you must use DNOS 1.0 to create system files onto a DNOS 1.1 system disk, copy the CSF command from the DNOS 1.1 S\$CMDS directory to your DNOS 1.0 S\$CMDS directory before issuing the CSF command.

1.3 Special Conditions for the 940 EVT

When generating a 940 EVT in your system, you need to allow 4K bytes of buffer table area for each 940 being included. This is

used for screen buffers. The BUFFER AREA question is a preanswered parameter in system generation, with a default value of 4K bytes.

When using COBOL applications, the BLINK and BEEP clauses for the ACCEPT and DISPLAY statements result in no action on the 940. The 940 does not blink or beep.

If you attempt to print to a printer attached to a 940, and that printer is out of paper, the 940 hangs. It is necessary to IPL the system to regain use of the 940.

To use graphic characters on the 940, consult Figure B-3 in Appendix B of the DNOS Supervisor Call (SVC) Reference Manual. To enter graphics mode (SC2) on a 940, press ALT 9 (SPEC CHAR). To exit graphics mode, press ALT 9 (SPEC CHAR) again. The current documentation on using graphics characters in TIFORM assumes you are working with a 911 terminal. To use a 940 terminal, you need to use the corresponding keys of the 940. Consult figures B-3 and B-1 of the SVC manual to see the corresponding keys for the 911 and 940.

1.4 Use of LUNO 00

In order to use DBMS, DNCS 1.0, TIFORM, Query, Sort/Merge, TIPE, the teleprinter device utilities and online diagnostics, you need to apply patch number 1770 that is currently commented out in the kernel patch file. This patch allows DNOS to automatically build a task-local LUNO 00 when a task is bid at a terminal. The products currently using LUNO 00 will be changed before the DNOS 1.2 release. This patch will not be in future releases, and a LUNO 00 will not be assigned to a terminal. System utilities and user programs must explicitly assign a LUNO before trying to use a terminal.

Patch 1770 is in the kernel patch file in .S\$OSLINK.PATCH.KERNEL. To apply the patch, you need to remove the asterisks in column 1 of each non-comment line of the patch. Patch 1770 has two sets of such lines. Each set begins with a .DATA and ends with an EC. Remove the asterisks from all lines between the .DATA and EC, inclusive. Then run the kernel patch file, using the instructions at the beginning of the file.

1.5 Special Conditions for Language Packages

If you are installing TIPE 1.2 on DNOS 1.1, you must be sure to include the optional SVCs for GET EVENT CHARACTER during your

system generation.

If you are installing TIFORM 3.1, the object installation instructions need modification. They refer to several ways to assign a logical name for S\$TIFORM. This procedure should be done just one way. The user should assign a global logical name, then issue the Snapshot Global Name Definitions (SGND) to save the name to disk. No job-local logical names should be assigned for TIFORM.

1.6 Special Conditions for RTS

If you use the System Generation Utility (XSGU) to add terminals or printers to your system after you have run the RTS Define RTS Configuration (DRC) command, the DRC must be done again. If you do not redo the DRC procedure, you will have 2 different devices (terminals or printers) that have the same name, and the ALGS step of the system generation will not work correctly.

1.7 Special Conditions for Online Diagnostics

If you use the Online Diagnostics package, you need to check your S\$DIAG file. Some S\$DIAG files were created incorrectly by the DNOS 1.0.0 and DNOS 1.1.0 versions of the Install New Volume (INV) command. Unless the file is corrected, the diagnostic commands will not function properly. This problem has been fixed in the DNOS 1.1.1 release.

To determine whether your S\$DIAG file is correct, enter the following Map Disk (MD) command for the volume in question.

```

MAP DISK
          PATHNAME: <volume>.$DIAG
    LISTING ACCESS NAME:
          SHORT FORM?: NO
          TOP LEVEL ONLY?: NO
    DIRECTORY NODES ONLY?: NO
    EXECUTION MODE (F,B): FOREGROUND
    
```

When this command completes, check the listing file. If the BLK/ADU field is 1, the file is okay. If the BLK/ADU field is not 1, the file must be recreated.

To correct the problem, use the DNOS 1.1.1 version of the INV command to create the S\$DIAG file on the desired disk volume. Since the INV command will destroy the contents of the disk, care should be taken to preserve any data you want to keep prior to executing this command. Alternatively, if a good S\$DIAG file already exists, the bad file can first be deleted using the Modify File Protection (MFP) and Delete File (DF) commands. Then, the Copy Directory (CD) command can be used to replace the bad file with the good one, but only if the media types of the two disks are the same (e.g. DS50 to DS50). The S\$DIAG file must not be copied between unlike media types (e.g. DS10 to DS50).

1.8 DX10 Migration

Several users have asked if it is possible to run both DX10 and DNOS on the same system disk. It is possible, but not advised. Because of the difficulty in renaming all files, this practice is not recommended. It is recommended that any given system disk be used for DNOS only or for DX10 only.

For details about the differences between DX10 and DNOS, consult the DNOS Systems Programmer's Guide. Instruction on migration is also available in a course at the Texas Instruments Education Center titled DX10 to DNOS Migration.

1.9 Installation Details

Read and follow carefully the installation instructions in the DNOS Object Installation Manual. Please note that when you perform the first initial program load (IPL) you must let the IPL sequence run to completion before logging on. Various system structures must be established during that first IPL to allow you to log on. Wait for the system to go completely idle before doing the first logon. If you do not wait long enough, you may be unable to use some or all of the system channels for Mailbox, the spooler, and accounting. In that case, do another IPL and wait for the system to finish the IPL process before signing on.

1.10 Packaging Details

In addition to microfiche source listings of the DSRs, the object package for DNOS includes microfiche source listings for the logon task. A number of customers have indicated a desire to

customize that task to their own needs. The microfiche also includes a complete listing of all Software Trouble Reports (STRs) fixed in this release of DNOS.

Unlike release 1.0, the 1.1 release of DNOS does not include the DNOS SCI and Utilities Design Document as a piece of the object kit. Most users did not need it, and those who want it can order a copy.

1.11 Files That Must be Rebuilt

If you have encrypted any data using the DNOS 1.0 Encrypt Data SVC, you will need to rebuild those files before using DNOS 1.1 with them. You must decrypt the files using DNOS 1.0, then encrypt them again using DNOS 1.1. Section 4 of this document describes the encryption changes in more detail.

1.12 Using the 9902 Port for a Line Printer

During execution of the System Generation Utility (XSGU) and the System Configuration Utility (XSCU) the new question INTERFACED WITH 9902? is asked when defining a line printer device type. Line printer devices can be interfaced to the CPU via the TTY/EIA or a TMS 9902 controller. A response of NO indicates that the line printer is interfaced to the CPU via the TTY/EIA controller. A response of YES indicates that the line printer is interfaced to a TMS 9902 port (on the 990/10A processor board or related products). Also, a YES response requires that a serial print mode be specified. Refer to the 990/10A General Description Manual, part number 2302633-9701, for related information regarding the valid CRU address and the interrupt level assigned to the 9902 port of the 990/10A processor board. Note: When using the 9902 port on the 990/10A board, the only valid CRU address is 1700.

If you have a system with line printers that was generated with DNOS 1.1.0 and you wish to use it as the input configuration for a system generation with DNOS 1.1.1, you must text edit the configuration file to add an additional line of text for each line printer type device before doing the system generation. The configuration file pathname is .\$\$\$GU\$.<input configuration name>.CONFIG. Insert either the text INTERFACED WITH 9902? NO or INTERFACED WITH 9902? YES between the EXTENDED? prompt and TIME OUT? prompt for each of the line printer devices in the configuration file.

An example of the new System Generation Utility format for adding a line printer device is shown below.

```
                DEVICE TYPE? LP                LP01
                CRU ADDRESS? >0060
                VALIDATE OPENS? YES
                PRINT MODE? SERIAL
                EXTENDED? YES
-->            INTERFACED WITH 9902? NO
                TIME OUT? 30
                INTERRUPT? 14
```

Similarly, an example of the new System Configuration Utility format for changing a line printer device is shown below.

```
                CHANGE LP01

                                CRU ADDRESS: >0060
                                OPENS VALIDATED?: YES
                                TIME OUT: 30
                PRINT MODE(SERIAL/PARALLEL): SERIAL
-->            EXTENDED CHARACTER SET?: YES
                                INTERFACED WITH 9902?: NO
                                INTERRUPT: 14
                                EXPANSION CHASSIS:
                                EXPANSION POSITION:
```

SECTION 2

DIFFERENCES BETWEEN DNOS 1.0 AND 1.1

Changes have been made to DNOS for release 1.1 to provide support for new devices, to augment the user interface to DNOS, to provide performance enhancements, and to enhance documentation.

2.1 Support for New Devices and Software

The following software products are now supported on DNOS 1.1 that were not supported at the time DNOS 1.0 originally shipped:

- TIPE 1.2 (911s)
- TIPE 2.0 (940s and 911s)
- Data Dictionary
- DNCS 1.0
- 3270 Communications
- FORTTRAN78

If you are installing or using any of the following software products with DNOS 1.1, please read and follow the instructions in the section on patches and patch procedures. Each of these products requires that you execute a patch stream before the product will operate correctly with DNOS 1.1.

- DNCS 1.0
- TIPE 1.2
- Data Dictionary 1.1
- DBMS 2.2

The device service routines (DSRs) and various utilities have been upgraded to support the following new devices on DNOS:

- 840 printer
- teleprinter devices (TPD devices)
- 940 EVT terminal
- DS80
- DS300
- WD800

The disk controller for the DS80 and DS300 has a bad track mapping option to handle access to bad spots on the disk. When bad track mapping is used, the track that contains a bad spot is mapped to a reserved area on the disk by the hardware. To cause a track to be mapped, the software performing the initial surface

analysis must command the disk controller to map the track to the reserved area.

The DNOS 1.1 version of the surface analysis utility, Initialize Disk Surface (IDS), does not have the ability to issue the command to cause a bad track to be mapped. (This feature will be added for the next release of DNOS.) DS80 and DS300 disk packs shipped from the factory are initialized using the DOCS surface analysis package. This package has the commands to cause bad track mapping. For the current release, you can take advantage of bad track mapping only if the DOCS surface analysis has been done at the factory or at your own installation. DOCS must be run before the IDS or Initialize New Volume (INV) command is used, in order to take advantage of the bad track mapping hardware. An IDS command after the DOCS analysis will not destroy the work of the DOCS surface analysis.

A recently added feature allows you to control the priority of system access to a printer attached to the 940. If you press the SHIFT and PREV FORM NEXT key while output is being sent to the attached printer, the printer priority will be raised.

2.2 Enhancements to the User Interface

A number of areas in the user interface have changed. Some of these are features needed for new products, some are changes for consistency in the user interface, and some are responses to customer requests.

2.2.1 Link Editor Changes.

Changes have been made to the link editor to allow more flexible use of segmentation in DNOS. A SEGMENT command has been added to allow you to link a segment after the TASK segment of a program. This now allows program structures of the form PROCEDURE/TASK/SEGMENT and TASK/SEGMENT in addition to the previously supported structures. Segments linked with the SEGMENT command can be installed by the link editor in a FORMAT IMAGE link, as can other segments.

Segments linked with the SEGMENT command can have overlays and these will be installed in a FORMAT IMAGE link. The user task is responsible for loading those overlays during execution. To aid in that loading, you can specify the desired segment or overlay ID to be used for the installation in the link control stream.

DNOS segments and tasks that contain COBOL segments (those using COBOL segmentation) will have those COBOL segments automatically installed by the link editor as overlays into a program file.

Further details on the link editor support can be found in the new revision of the DNOS Link Editor Reference Manual.

Note that the DX10 directory utilities (Copy, Backup, and Restore Directory) cannot handle DNOS program segments with overlays. This feature is handled only by DNOS directory utilities.

2.2.2 New User Interface Routines.

The following routines have been added to the .SCI990.S\$OBJECT library of user interface routines to SCI and other DNOS features:

- * S\$SPLR - interface to the spooler for print requests
- * OI\$BGN - initialize use of operator interface (in file OI\$IF)
- * OI\$COM - create an operator message (in file OI\$IF)
- * OI\$WAT - wait for an operator response (in file OI\$IF)
- * OI\$END - terminate use of operator interface (in file OI\$IF)
- * MB\$INT - initialize mailbox interface
- * MB\$SND - send a message
- * MB\$RCV - receive a message
- * MB\$RLS - terminate use of mailbox interface

In addition, S\$CMMSG has been modified to allow suppression of the message category identifier. Any user software that links with this routine should be relinked with the new .SCI990 library.

Further details on these additions to the .SCI990 library can be found in the DNOS Systems Programmer's Guide.

2.2.3 Global Logical Names.

To enable easy use of logical names for system wide resources, global logical names are available in DNOS 1.1. These names can be assigned by any user through the Assign Logical Name (ALN) command, released by any user with the Release Logical Name (RLN) command, and viewed by any user with the List Logical Names (LLN) command. A global logical name is available to every user in the system. The global name segment is searched by DNOS after searching the job-local name segment, so that you can override the global name by assigning that name as a job-local name.

Global logical names make it possible to install new packages or change locations of I/O resources without having to change every user's environment; only the global name environment needs to be modified.

Once a global name has been assigned, it is available in the in-memory copy of the global name segment. To make the names now in memory the permanent set of global names, use the Snapshot Global Name Definitions (SGND) command to save them to the file .S\$GLOBAL.

So that certain utilities can function without requiring that the utilities program file remain named .S\$UTIL, there is a global logical name S\$UTIL assigned to the current utilities program file when an IPL is done. This name is available to any user as well as to system utilities.

2.2.4 Segment Management Changes.

Segment management has been enhanced to provide more user control over program segments. These new suboperations have been added to the Segment Management SVC:

- * Set Exclusive Use - allows only the issuer of the SVC to map in or access the segment
- * Reset Exclusive Use - cancel the effect of a Set Exclusive Use operation
- * Load Segment - have the system keep this segment in memory whenever the issuing task is executing
- * Unload Segment - cancel the effect of the Load Segment operation

The Load Segment operation allows programs to keep a segment in physical memory for some operation, such as I/O. The exclusive use operations allow a program to extend the share protection to a segment that is mapped out of a task.

In DNOS 1.0, segments can be created in memory or retrieved from program files. In DNOS 1.1, segments can also be retrieved from any relative record file. This allows you to manage data files using segment operations.

2.2.5 Spooler Changes.

Several changes have been made to the spooler subsystem to make it easier to use. The changes include:

- * Printers can be put into a state that allows them to be

used by both the spooler and other processors. This state is designated Remote or Shared and is accessed using the Modify Spooler Device (MSD) command.

- * Print requests are printed first by form type, then by job priority within form. This eliminates excessive form change requests when you alternate forms in printers.
- * The Show Output Status (SOS) command in DNOS 1.1 shows the number of copies of a file queued for the printer, if more than one copy is being printed. SOS also shows the status of the specified device(s). The Show Device Attributes (SDA) command has been removed.
- * The spooler queue file in DNOS 1.0 is .\$\$\$DTQUE and is used for all systems generated on a particular disk. This causes problems when several sysgens are used, each having a different number of printers. In DNOS 1.1, .\$\$\$DTQUE is a directory with a different file for each generated system. This allows each sysgen to have a different number of printers and different class names without causing conflicts.
- * Because each system generated for DNOS 1.1 has its own spooler queue file, the Modify Spool Device (MSD) command must be used after each system generation to make known the spool devices for this system.
- * A user defined banner sheet can be placed in the file .\$\$\$DTQUE.\$\$BANNER. The file contains a standard banner sheet when a DNOS system is delivered, but you can change this file using the format described in the DNOS Systems Programmer's Guide.

2.2.6 Text Editor Changes.

The text editor has been enhanced in several ways.

- * Find String (FS) positions the cursor on the string specified.
- * Delete String (DS) and Replace String (RS) permit null values to be entered for the STRING prompt. If a null value is specified, DS deletes all characters between the specified columns, regardless of the characters in those columns, for the specified number of lines. If a null value is specified, RS deletes all characters between the specified columns, regardless of the characters in these columns, for the specified number of occurrences and inserts the specified CHANGE in each line beginning at the START column.

- * The XE and XES commands have a new prompt for exclusive editing. This allows you to verify that you are the only one who can modify the file until you do the Quit Edit (QE) command.
- * The XE and XES commands also have a prompt for LINE LENGTH, to allow an edit of a file with line lengths between 80 and 240 characters. Records shorter than the length specified are padded with blanks, and records longer than the length specified are truncated when read into the work file. When the Quit Edit (QE) is done, the specified line length is used for the output file logical record length if neither the input nor output file existed previously. The specifics about the wide edit features, the scrolling supported, and special keys supported for wide file editing are described in the DNOS Text Editor Reference Manual.
- * Because the text editor now supports editing of records longer than 80 characters, the text editor automatically scrolls the text to your left as it reaches the current right margin on the screen. No text is lost; it merely is invisible until you tab left or use the return key to get to a new line.
- * The Save Lines (SVL) command allows you to extend as well as replace the save file.
- * The F3 key is available when in compose mode to enable word wraparound. This allows you to continue typing after the right margin is encountered. The editor detects the right margin, inserts a blank line, and copies any nonblank characters before the end of line to the new line so that words do not split across line boundaries.
- * The F8 key is available to cancel the effect of the last key entered for the following keys: Erase Input, Erase Field, and Skip. The F8 key (Restore Line) must be entered immediately after one of these keys is entered to restore the line to its prior value.

2.2.7 SCI Changes.

The SCI environment has been enhanced with the following:

- * An option is available to allow lower case characters in commands to SCI and in responses to command prompts. This is enabled with the `.OPTION LOWERCASE=YES`, as described in the DNOS Systems Command Interpreter (SCI) Reference Manual.

- * The .EVAL primitive evaluates an expression in decimal or hexadecimal, at your discretion.

2.2.8 Name of System Disk.

DNOS 1.0 allowed you to boot the system from any disk in your configuration. This system disk is always known as DS01 in DNOS 1.0. In DNOS 1.1, this is no longer the case. You can boot from any disk in the configuration, but the system disk is then known by its name defined during system generation. That is, if the system is booted from DS06, the system disk is known as DS06. Pathnames beginning with a period resolve to the current system disk.

2.2.9 Enhancements for Consistency.

Some of the changes to DNOS involve slight incompatibilities with the first release; however, they provide a more consistent user interface to DNOS. These changes include the following:

- * The directory utilities (CD, BD, RD, VB, VC) in DNOS 1.0 are the only set of DNOS utilities that require you to specify a disk volume name rather than a device name when identifying a directory. For DNOS 1.1 this inconsistency has been removed. You may specify a directory by either disk or volume name followed by a directory pathname.
- * Job local shared LUNOs in DNOS 1.0 are available to all tasks in a job after one task has opened the LUNO. In DNOS 1.1, job local shared LUNOs must be opened by every task that uses them. This is consistent with all other LUNO scopes in that each task must open a LUNO before using it. In addition, it allows DNOS to keep track of the number of users of a particular LUNO for cleanup purposes when tasks terminate.
- * In DNOS 1.0, if a batch job cannot access its input or listing file, you receive no notification of an error. In DNOS 1.1, a message to that effect is placed in the system log.
- * The file .S\$SHARED is used for shared procedures available to user tasks. Several IDs are to be used for DNOS and related products: task IDs >01 through >0F and procedure IDs >01 through >2F. This is to avoid conflicts in IDs between software provided by Texas Instruments and that built by users.
- * Although they are modifiable in DNOS 1.0, the SCI synonyms \$\$MO, \$\$I2, \$\$UI, \$\$ST, and ME are not

modifiable by the user in DNOS 1.1. Because these synonyms cannot change, SCI does not reset them each time it reaches the top command level; this allows SCI to run more efficiently. It also prevents system problems caused by users changing these synonyms.

2.2.10 SVC Changes.

SVC support has changed for several features.

- * The Post Event SVC (>4F) has been added to allow a task in one job to post an event in another job, permitting cross-job synchronization.
- * The Time Delay SVC now has a return code to indicate that the task in time delay was activated by an Activate Time Delayed Task SVC. This code is >01.
- * Handling of event characters for a 911 VDT is possible in DNOS 1.0 with several SVCs. The expressed preference in the DNOS 1.0 manuals is for you to specify SVC 00, subopcode 5 to Get Remote Event Characters. SVCs >30, and >39, though supported for a similar purpose in DNOS 1.0 are not supported in DNOS 1.1. For purposes of graceful deletion in user programs, SVCs >30 and >39 can be included for release 1.1 only by specifying the optional SVC group GET EVENT CHARACTER during system generation. Note that use of TIPE 1.2 requires this optional SVC group.
- * The cursor position reported to I/O SVCs doing screen I/O to a 911 or a 940 is the position at which the cursor now sets. This differs from DNOS 1.0 where the position reported was the character position in front of the cursor.
- * DNOS 1.0 documents advised that Unconditional Character Input (SVC >08) and Conditional Character Input (SVC >18) would be removed from release 1.1. This has been done.
- * The Initiate Event SVC (SVC >41) no longer has the option that allows DNOS to generate the event number. You must always supply the event number for the event being initiated.
- * The Wait for Event SVC (SVC >42) has been modified to complete after an event it is waiting for completes or when a time delay expires. In DNOS 1.0, the internal representation of initiated events was such that if a Wait was issued for an event that had not been initiated, the Wait would complete immediately. In

DNOS 1.1, the same situation will result in the Wait operation completing when the time delay expires. In DNOS 1.0, initiating an event that had already completed showed the event to be not complete when a Wait was done; in DNOS 1.1, the event is shown as complete when the Wait for Event is done.

- * An IPC Master Read operation receives a master read buffer (MRB), containing the requester's identifier, call block, and data. In DNOS 1.0, if the requester's call was a Read, the MRB had a zero for the data buffer address; if the call was a Write with Reply, the MRB had an address for a write buffer as the reply data buffer address. In DNOS 1.1, both the data buffer address for a Read and the reply data buffer address for a Write with Reply are zero in the MRB.
- * An error was fixed in the Get Encrypted Value SVC (SVC >45). This makes the encryption algorithm work differently for DNOS 1.0 and DNOS 1.1. If you have encrypted data using DNOS 1.0, that data must be decrypted with DNOS 1.0 before encrypting and/or decrypting it using DNOS 1.1.

2.2.11. Miscellaneous Interface Enhancements.

Other enhancements include:

- * The accounting record for task termination includes the following new fields for DNOS 1.1: task installed ID, execution time, station number, task segment attributes, and the task name.
- * Several log message formats have changed to accommodate other software changes. The new formats are described in the DNOS Messages and Codes Reference Manual.
- * The system configuration utility supports more devices and more special options in DNOS 1.1 than in DNOS 1.0. See the DNOS System Command Interpreter (SCI) Reference Manual for details.
- * In DNOS 1.0, a task-local LUNO 00 is assigned to the terminal each time a task is bid in an interactive job. In DNOS 1.1, this is not done, in order to support remote terminals in future products. If you wish to have tasks access the terminal, you need to assign a LUNO to ME when running in the SCI environment. SCI in DNOS 1.1 assigns a LUNO to ME when bid in an interactive job. (There is a patch in the patch file that is released in an inactive form to enable the automatic assignment of LUNO 00 for release 1.1. This is patch

DIFFERENCES BETWEEN DNOS 1.0 AND 1.1

number 1770 in the KERNEL patch file. The patch is there merely to help you adjust to this change; no such patch will be supplied in future releases of DNOS.) Note that use of DBMS, DNCS 1.0, TIFORM, Query, Sort/Merge, TIPE, the teleprinter device utilities, and online diagnostics require that the LUNO 00 patch be applied.

- * Copy KIF Randomly (CKR) is supported. (This utility was previously known in DX10 environments as CKSR.)
- * Modify KIF Logging (MKL) now includes a third logging option. Full logging, no logging, and partial logging are now available. Full logging and no logging have the same effect they had in DNOS 1.0. Partial logging increases the speed of KIF insert operations over full logging. However, it also increases the recovery time if a system failure occurs.
- * A new utility, Copy and Verify Disk (CVD), is available to perform a disk copy similar to that done by the directory utilities (for disks of exactly the same type), but at twice the speed of the directory utilities.
- * A new utility Check and Reset Volume (CRV) is available to check that a disk volume currently in a drive matches that of the most recent Install Volume (IV) command. If the drive is powered down (to change disks or because of a power failure), the disk device service routine will determine whether the disk in the drive has been changed when the drive is powered up again. If the disk has been changed, Write operations to the disk will be prevented until the media change condition is reset by either an Unload Volume command or a CRV. See the description of the CRV command in the DNOS System Command Interpreter (SCI) Reference Manual for details. Media checking is not done on DS31, DS25, DS50, or DS200 disk drives.
- * In DNOS 1.0, the user ID supplied with the system was SYSTEM00. In release 1.1, that initial user ID is SYSTEM.
- * In DNOS 1.0, you can supply a command definition table (CDT) for each device for which keyboard bids are to be enabled in addition to the system supplied keys for SCI and hard break. In DNOS 1.1, the default tables are built by the system to include these same keys. If you want to add or define other keys for keyboard bids, there are two SCI commands available for your use. Show Command Definition Table (SCDT) shows the current contents of a table, and Modify Command Definition Table

(MCDT) allows you to modify a table.

- * A new feature is available with the CDT definition for 1.1. This feature allows for even task loading across specified jobs. The description of the MCDT command outlines access to this feature.
- * User-written DSRs that make use of CDTs and user-written logon tasks need to be aware of the internal changes to support CDTs in DNOS 1.1. These changes are documented in the DNOS Systems Programmer's Guide and in the DNOS System Design Document. User programs that use the >3F SVC to access a CDT from the NFPTR CSEG must be revised for DNOS 1.1, since the CDT addresses are no longer in that CSEG.
- * Because of internal changes to DNOS, several of the system CSEGs have changed. Those that are available for user access using SVC >3F are completely documented in the DNOS System Design Document. The following have changes that may impact a user program using SVC >3F: NFDATA, NFPTR, and PMDATA. Several fields in the PDT have also been changed; therefore, access to the PDT using SVC >3F must also be carefully examined.

2.3 Enhancements for Performance

Several DNOS routines have been coded in microcode for a DNOS performance package. This set of routines is accessed via XOP instructions. For systems not running with the performance package, a set of default routines is used in its place. The performance package is available as an add on package for DNOS 1.1.

When using DNOS 1.0, it is possible to generate configurations that need more system table area than is available. When a request exceeds the capacity of the table area, DNOS 1.0 crashes with crash code >30. DNOS 1.1 prevents such crashes by scheduling system processes for use of table area when there is no more room to build data structures in the system table area, by enabling the restart of a user SVC, and in other cases taking special action to avoid allocating a new structure. (This redesign replaces the file management governor developed for DNOS 1.0.)

To enable DNOS to support more devices, several changes have been made to internal data structure locations. All structures used by file management are in the file management table area in DNOS 1.1, rather than having some of them in the system table area as in DNOS 1.0. This allows more room in the system table

area for generating device structures.

The name management subsystem is a very time consuming subsystem in DNOS 1.0. This subsystem was redesigned for DNOS 1.1 and has gained a significant increase in speed. In some cases, it has been measured at a 500% increase. Part of the implementation was to put both the synonyms and logical names into the same file. Therefore, the file `.$$USER.userID.SYN` now contains the information that was in files `.$$USER.userID.SYN` and `.$$USER.userID.LGN` in DNOS 1.0. While DNOS 1.0 had 12K bytes of synonym space and 12K bytes of logical name space for each user, DNOS 1.1 has one 12K-byte space for both synonyms and logical names for each user.

The change to name management, coupled with the changes to location of system structures make it unwise to have more than one terminal in a job in DNOS 1.1. With DNOS 1.0, users often had to combine several terminals in one job to permit sharing of files. In DNOS 1.1, this is unnecessary, since file structures are in the same system area regardless of whether or not the files are shared. In addition, because of the changes in name management, it is possible for you to overrun the synonym and logical name space if many users reconnect to the same job in DNOS 1.1. It is best to avoid use of the reconnect feature, unless you need to share the same job resources such as a job-local channel.

In DNOS 1.0, the simulation mode of the debugger is quite slow because of the overlay structure. This has been changed for DNOS 1.1, with a consequent increase in speed.

The IPC subsystem in DNOS 1.0 supports transport of most I/O calls to a master owner task of a master/slave channel. In DNOS 1.1, all standard file and device I/O calls are supported, as are all I/O utility calls.

The DNOS Macro Assembler has had a significant change in its memory management algorithm. The assembler runs 10% to 20% faster than it did in the previous release.

2.4 Enhancements to Documentation

All of the DNOS operating system manuals have been updated for the 1.1 release. This involves revision packages for several manuals and complete reissues of the others. New information has been added to the DNOS Systems Programmer's Guide concerning the spooler, optimization of DNOS, and measuring DNOS performance. Major additions have been made to the DNOS Operations Guide to describe new devices available with release 1.1. New commands are documented fully in the DNOS System Command Interpreter

(SCI) Reference Manual.

A new manual, the DNOS Reference Handbook, is also available with the DNOS 1.1 release. This pocket-sized manual includes collections of useful SCI command sequences, SVC blocks, and various charts and brief guidelines to common operations. This version is a prototype; we welcome your comments about items that should be added or deleted to make this most useful for quick reference.

A set of DNOS analysis and development tools is described in the revised DNOS System Design Document. These were previously made available in special publications to field analysts for DNOS 1.0.

2.5 Errors Fixed in DNOS 1.1

A complete listing of problems fixed for DNOS 1.1 is on the microfiche shipped with the object package. The problem listing is a complete set of the descriptions for all Software Trouble Reports (STRs) fixed for this release.

SECTION 3

HOW TO REPORT A SYSTEM CRASH

When a system crash occurs, refer to the DNOS Messages and Codes Reference Manual for an explanation of the crash code shown on the programmer panel of the CPU. To conduct a crash analysis, refer to the DNOS Systems Programmer's Guide. If the crash is not understandable or if the crash continues to occur, you may want to send information to your customer representative for analysis. Before sending the crash file, be sure that it was created large enough to contain the entire system memory. Check the size of the crash file against the size of the system shown with the Show Memory Map (SMM) command. If the crash file is not large enough, use another disk as your system disk and use the Create System Files (CSF) command to increase the size. Note that this CSF must be a DNOS 1.1 version of the command procedure.

If your software was supplied to you by Texas Instruments and you are sending the information to Texas Instruments for analysis, please send the following information on either magnetic tape, diskettes, or some other disk medium:

1. the .\$\$CRASH file from the system crash saved according to procedures described in the DNOS Messages and Codes Reference Manual.
2. the system linkmaps found in the files SYSMAP, IOUMAP, and DMMAP for the system in use at the time of the crash. If these linkmaps are on the running system, they can be found in the directory .\$\$SGU\$.<system name>.
3. a text file with a report about the system activity at the time of the crash
4. the output from the List Software Configuration (LSC) command.

Once the information has been copied, the medium will be returned to you. As soon as the problem is resolved, you will be informed.

In cases where the system is in a loop, you may have to force a crash to occur. The DNOS Operations Guide tells you how to force a crash on a standard 990/10 or 990/12. To force a crash on the new 990/10A, which does not have the standard front panel, push the HALT button eleven times, then push the RUN button.

SECTION 4

KNOWN PROBLEMS

The problems described in this section are known to exist. Only the problems in the paragraph on DNOS 1.1 are being examined for solutions.

4.1 DNOS Macro Assembler

The following problems exist in the DNOS Macro Assembler:

1. The period (.) is not properly processed in macros unless it is used to qualify a macro variable.
2. Unquoted character strings that appear on macro call lines may be listed as undefined symbols preceding the NO ERRORS message.
3. Any use of RORG, AORG, CSEG, DSEG, or PSEG that results in the program counter having an odd value will cause the byte at the preceding even address to be set to zero. It is good programming practice to include an EVEN directive immediately after any of these.
4. A macro library that was created by assembling a source file with the DX10 3.0 version of the macro assembler cannot be used by the DNOS macro assembler. The macro library should be recreated by reassembling the source file or files using the current version of the macro assembler. The converse is also true. A macro library that has been created by the DNOS macro assembler will not be properly interpreted by the DX10 3.0 version of the macro assembler. In addition, a macro library created by the DNOS macro assembler cannot be interpreted by the DX10 3.1 and 3.2 versions. However, the DNOS macro assembler can use a macro library created by the DX10 3.1, 3.2, 3.3, 3.4, and 3.5 versions.

4.2 DNOS Link Editor

The DNOS Link Editor has the following known problems:

1. The use of the DUMMY command in one link masks the unresolved references that would be reported if the same link were being performed without the DUMMY command.
2. The promotion strategy within the link editor has a problem. In some cases, a module that is referenced by two modules on different overlay paths will not be included in an overlay common to both paths. This problem can be circumvented by using specific INCLUDE statements to force the module(s) into the proper overlay(s).
3. DNOS STR 8494 - If a SEARCH command precedes an ALLOCATE command, the SEARCH command will not resolve references from the portion of phase 0 which precedes the ALLOCATE command.

4.3 990/12 Firmware

The 990/12 firmware has the following known problem. It affects the following string operations: Move String (MOVS), Move String Reverse (MVSR), Push String to Stack (PSHS), and Pop String from Stack (POPS). The error causes DNOS to crash with a crash code indicating an illegal interrupt. The conditions under which the problem occur are these:

1. The task executing must be a hardware-privileged task.
2. There must be a Long Distance Destination (LDD) instruction followed by one of the aforementioned string instructions.
3. The string instruction must be interrupted during the move. The string being moved must be longer than 16 bytes in order for the instruction to be interrupted.
4. The address of the string instruction must be illegal in the destination logical address space.

4.4 Known Problems with DNOS 1.1

DNOS 1.1 currently has the following known problems. Those which can cause system crashes are so stated. Patches will be generated as soon as possible. STR numbers are included for each of the problems to assist you in finding patch solutions from the customer support line or dial-a-patch service.

1. STR 9129 - Assign Logical Name (ALN) of permanent key indexed files does not work. Also, List Logical Name (LLN) of a name for a key indexed file with more than 2 keys does not work. It is recommended that ALN be used to create sequential and relative record files only.
2. STR 11453 - CD of pathnames of the form DS01 or DS01.FILE cause the directory utilities to perform incorrectly. If the name specified is of the form DS01, the utility terminates. If it is of the form DS01.FILE, the utility hangs. The patch currently available (patch number 1842) makes it possible to use a device name in many cases. It will not work in cases where files in a directory have pathnames less than or equal to 48 characters in length when using the device name, but greater than 48 characters when using the volume name of the directory.
3. STR 11927 - If a system runs out of file manager table area (primarily when set too small or total system memory allows no larger setting), various errors can appear. Some of these appear as inconsistencies. For example, you may be able to list a directory but not show a file in that directory. The solution is to increase the size of file manager table area with the Modify System Tables (MST) command.
4. STR 12113 - If you try to use the RETURN key when scanning a list of synonyms with the Modify Synonym (MS) command, the listing will abort when examining delete protected synonyms such as ME. The down arrow key should be used for such a scanning operation.
5. STR 12294 - Channel names specified for Show Channel Status (SCS) must begin with volume names, not disk device names.
6. STR 12615 - When changing the spooler device state from Remote/Shared to Spooler, the Modify Spooler Device (MSD) command must be issued twice. The first MSD is used to make the device unavailable to the spooler and not Remote/Shared. The second MSD can then make the device available to the spooler.

7. STR 12687 - Any user task installed with the WCS bit set and no DNOS performance package installed can crash the system if that task issues an XOP 9 or XOP 10.
8. STR 12738 - Verify Copy (VC) cannot be used to verify files that have been copied with Copy Directory (CD) using the SPRL and RPRL options. The listing shows the files to be "not verified."
9. STR 12791 - If a SCU session is done to a write-protected disk, that fact is not detected until the session is terminated and the data cannot be saved. No patch is planned for this problem. You must verify that your disk is not write protected before starting a SCU session.
10. STR 12904 - Print File (PF) does not resolve global logical names.
11. STR 12921 - When using the directory commands (CD, BD, RD, VC, VB), the spooler directory .\$\$\$DTQUE is not copied. This means that spooler devices and class names must be redefined when using a copied system disk.
12. STR 12954 - A Map Program File (MPF) command issued to a channel name causes a system hang.
13. STR 13093 - CKS does not work for foreign country codes when the user specifies a beginning and ending value. These must be left null.
14. STR 13141 - A task that processes the accounting log is automatically bid by DNOS, with one of the task bid parameters specifying which log file to use. When a Pascal task is linked with the LUNOBJ runtime library it does not work correctly, because that task expects its bid parameters to be stack and heap parameters. When linked with the MINOBJ library, the processor works fine.
15. STR 13157 - The encryption SVC processor for DNOS 1.0 had several bugs in it that were patched for this STR (patch 2049). The effect is to make encryption work the way it was designed, which is different from how it worked for DNOS 1.0. Therefore, if you have encrypted data using DNOS 1.0, it must be decrypted using DNOS 1.0 before encrypting and/or decrypting that same data using DNOS 1.1.
16. STR 13300 - An attempt to use Copy KIF Randomly (CKR) with an alias name for the key indexed file will return the error message U UTILITY 0332 INPUT FILE USES HASH

PLACEMENT. You must use the file name, not the alias name, to specify the key indexed file. Since there is insufficient space to insert a meaningful error message in CKR, the hash placement message has been multiplexed for this purpose. The documentation describes this message for the case where you are attempting to use a hash placed KIF on DNOS. If you get the message, check to see that you are not using an alias name and that you do not have a hash placed KIF to see which problem is being detected.

17. STR 13350 - Backup Directory (BD) does not work correctly when doing multivolume backup to several disks.
18. STR 13921 - If a Backup Directory (BD) was done on DNOS 1.0 (or DX10 3.4 and a Restore Directory (RD) is attempted on DNOS 1.1, it may fail if the backup was done to a disk name and the backup was done to a disk of the same sector size but with a different number of sectors per ADU than the source disk.

4.5 Changes to Messages

The following crash code may occur but it is not documented in the messages manual.

- * Crash Code >94 - If a 940 DSR is unable to get enough buffer table area for its screen buffer, the system will crash with a code >94. Another system generation or a system configuration session must be done, increasing the buffer table area by 4K bytes per 940 terminal on the system.

The following messages problems exist:

- * Message number 0503 in the UTILITY collection refers to the Show Device Attributes (SDA) command. This command no longer exists. The Show Output Status (SOS) command performs the function of SDA in addition to its other functions.
- * The expanded explanation for message EDITOR-0002 is incorrect in the software and in the DNOS Messages and Codes Reference Manual. It should read as follows:

US EDITOR-0002 INSUFFICIENT MEMORY TO COMPLETE COMMAND

Explanation:

There was not enough memory to complete the execution of the Copy Lines (CL) or Move Lines (ML) command.

User Action:

Copy or move fewer lines at a time.

- * The expanded explanation for message EDITOR-0003 is incorrect in the software and in the DNOS Messages and Codes Reference Manual. It should read as follows:

U EDITOR-0003 INVALID LINE LENGTH PARAMETER

Explanation:

The parameter passed to the text editor for the LINE LENGTH prompt is not an integer between 80 and 240, inclusive.

User Action:

The XE and XES commands supplied by Texas Instruments ensure that this parameter is an integer between 80 and 240, inclusive. Check the command procedure being used to see how it differs from the standard command procedure. Correct the error and retry the operation.

- * The expanded explanation for message EDITOR-0004 in both the software and the DNOS Messages and Codes Reference Manual cite a limit of 65,250 records in a file to be edited. This limit should be given as 65,520 records.
- * The explanation for message EDITOR-0016 in both the software and the DNOS Messages and Codes Reference Manual should be:

Explanation:

One of the specified tab stops has a value greater than the specified line length, which is the maximum number of characters per line.

SECTION 5

DOCUMENTATION UPDATES

Because of developments late in the release cycle, the following items are not yet documented in the DNOS manuals:

1. Information on how to use the DNOS accounting system is included in section 6 of the DNOS Systems Programmer's Guide. It needs to indicate that the file of account numbers must have an entry for each account number to be used. For users who have set their terminals to require no account number, a record showing a blank account number must be included. If a blank record is not included in the account number file, every person signing on to the system must use a valid account number in the file.
2. Several messages have errors in both the software and the DNOS Messages and Codes Reference Manual. These problems are documented in the previous section titled Changes to Messages.
3. The shipped configuration for DNOS 1.1 includes a 940 EVT at CRU address >1700, interrupt 8. This is not included in the description of S\$SHIP in the DNOS System Generation Reference Manual.
4. The following problems occur in the DNOS SCI Reference Manual.
 - a. Several options of the directory utility commands (CD, BD, RD, VB, and VC) are not documented correctly. There needs to be more explanation of the use of control files with these commands. The command descriptions will be redone for an ECN to that manual in the fourth quarter of this year.
 - b. The Modify Device Configuration utility command (MDC) does not permit the changing or deletion of the 940 VDT or TPD devices from a running system. However, these devices can be added to a running system. They can also be changed or deleted from a system image on disk. This requires that the modified system be booted before the changes will take effect.

- c. Throughout the manual, references to the file .S\$DIOU should be .S\$CDT.
- d. The prompt response type for pathname throughout the book refers to using a synonym, a synonym followed by a pathname (synonym.pathname), a logical name, or a logical name followed by a pathname (logical name.pathname). This description should also allow for pathnames not involving any synonyms or logical names.

SECTION 6

PATCHES AND PATCH PROCEDURES

6.1 PATCHES NEEDED FOR CERTAIN PRODUCTS

Several products currently available on DNOS 1.0 require patches to run correctly on DNOS 1.1. Some of these products require use of the optional LUNO 00 patch (patch number 1770 in the DNOS KERNEL patch file). Others require application of a special patch file.

The following products work correctly only if patch number 1770 in the KERNEL patch file is made operational: DBMS, DNCS 1.0, Query, TIFORM, the teleprinter device utilities shipped with DNOS, Sort/Merge, TIPE, and online diagnostics.

In order to use the products listed in the table below, read the specified file from the directory .S\$OSLINK.PATCH on your shipped disk. Set up the specified synonyms and execute the patch file. You need to do this just once, not with every new system you generate on a particular system disk.

If you are using the DNCS patches, please read the information in the file named .S\$OSLINK.PATCH.DNCS.RELINFO before using the patches.

If you are using the TIPE 1.2 patches, you must do an IPL after applying the patches to make the changes effective for TIPE.

Product	Patch File
-----	-----
DNCS 1.0	.S\$OSLINK.PATCH.DNCS(directory)
Data Dictionary	.S\$OSLINK.PATCH.DD990
TIPE 1.2	.S\$OSLINK.PATCH.TIPE12
DBMS 2.2.0	.S\$OSLINK.PATCH.DBMS

6.2 PATCH UPDATE PROCEDURE

Periodic patch releases are available for DNOS. These are provided with a software subscription as the DNOS Product Patches. They are available on microfiche, magnetic tape, or diskette. DNOS Product Patches cover all software released by Texas Instruments on DNOS and are available on a bimonthly

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schedule. Patches are also provided by the Customer Support Line on an as needed basis over the telephone or by communications link. The October, 1982 (volume 4) issue of DSG Computer Users News describes the dial-a-patch service available using the 3780 package.