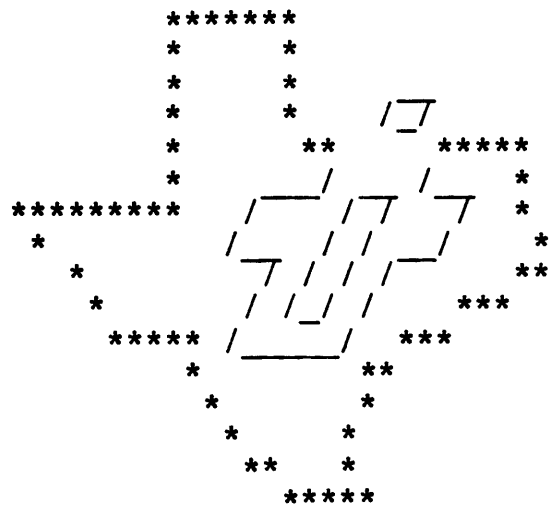
DATA SYSTEMS GROUP



D N O S

D N C S X . 2 5 R F T

R E L E A S E A N D U P D A T E

I N F O R M A T I O N

Release 1.2.0

Part Number 2308324-9901*A

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Sheet 1 of 12

Texas Instruments
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Paragraph Title

SECTION 1

GENERAL INFORMATION

1.1 INTRODUCTION

This document contains information about the DNCS X.25 RFT product, release 1.2.0, that is not contained in the standard documentation associated with the object installation kit.

The subjects that are discussed in this document are special features or considerations that may be important for the proper installation and operation of the object package.

1.2 UPDATE INFORMATION

Updates to the X.25 RFT package since the last release are as follows:

1. Provisions for automatic checkpoint/restart and associated SCI commands added.
2. Retry in case of network problems made user controllable.
3. Data exchange with lower levels uses larger buffers for inproved efficiency.
4. Disk access uses multi-record read/write for improved efficiency.
5. For other changes related to X.25 see DNOS DNCS NUCLEUS RELEASE AND UPDATE INFORMATION, 2276805-9901.
6. User's Guide revised and reissued to include site/routes, deletion of hardware information, auto-restart, and generic keyboards.

1.3 MEMORY REQUIREMENTS

X.25 RFT consists of the RFT task and TMR task running in the RFT job, three SCI tasks, and an SVQ task. The following table describes the memory requirements for the X.25 RFT Utilities.

name	size(bytes)	program file	memory resident?
RFT	27656 + (a)	<dncs volume>.S$DNCS.PGMTASK	NO
TMR	4100	<dncs volume>.S$DNCS.PGMTASK	NO
CPY	8412	<dncs volume>.S$DNCS.PGMTASK	NO
OPR	13422	<dncs volume>.S$DNCS.PGMTASK	NO
MSG	4192	<dncs volume>.S$DNCS.PGMTASK	NO
SVQRFT	9158	<dncs volume>.S$DNCS.PGMTASK	NO

Where:

(a) = (no. of CONCURRENT TRANSFERS for SUBSYSTEM of TYPE RFT)
* (292 + RECORD LENGTH for SUBSYSTEM of TYPE RFT)

1.4 DNOS BUFFER TABLE REQUIREMENTS

DNCS X.25 RFT initiates I/O to the DNCS IPC channel. To support this I/O, 2216 bytes of buffer table area are required.

1.5 DISK UTILIZATION

The following table summarizes the minimum disk requirements for DNCS X.25 RFT. The figures are estimates and will vary depending on the number of sectors/ADU of the disk and configuration parameters. Generally, the larger the sectors/ADU the more disk space required, due to disk allocation on an ADU basis. Also, the more configurable resources defined in DNCS the more disk space required. The ADU size in the following table is based on 256 bytes/ADU.

name	disk resident space (adus)
DNCS X.25 RFT DIRECTORY (DCRFTO)	3000-4500
DNCS GENERATION DIRECTORY (SDGU)	1500
DNOS SYSTEM DIRECTORY (S$UTIL)	200
DNCS SYSTEM DIRECTORY (S$DNCS)	300
DNCS COMMAND DIRECTORY	200

1.6 SYSGEN CONSIDERATIONS

The DNCS SYSGEN considerations noted below are general rules based on experience with various configurations and will vary for each individual installation.

1. CIRCUITS. A typical installation has one X.25 circuit, and may try to achieve maximum utilization of that circuit by specifying a large number of virtual circuits, or a large number of concurrent transfers. However, creating many virtual circuits or specifying a large number of concurrent transfers will not usually achieve greater throughput, although it will allow more transfers to be in progress. Experience has shown that more than three concurrent transfers over a 4800 baud physical line is not normally beneficial for increasing throughput. However, additional transfers may be desired so that more users may be served at once.

2. VIRTUAL CIRCUITS. Each Virtual Circuit specified will allow at least one transfer to a network address over the physical circuit serving that network. Therefore, specifiying 'n' Virtual Circuits will allow at least 'n' transfers to 'n'different addresses on the network. The number of transfers actually may be greater than the number of Virtual Circuits specified, as a multiplexing factor of 'm' will allow 'm' transfers to the same network address over a Virtual Circuit.

3. MULTIPLEXING. The multiplexing factor defines the maximum number of simultaneous transfers that may be handled by a Virtual Circuit to the same network address. If transfers to one site will predominate, then the required number of concurrent transfers may be accomplished by specifying a larger multiplexing factor to utilize the Virtual Circuits defined. A multiplexing value of 3 is recommended to best utilize resources, and to avoid virtual circuit setup overhead.

4. CONCURRENT TRANSFERS. For each installation, the number of concurrent transfers desired will normally depend upon the number of users, the number of physical circuits available, the number of virtual circuits present, and the multiplexing level desired for each virtual circuit. The number of concurrent transfers specified must be less than or equal to the total number of virtual circuits multiplied by the multiplexing factor.

NOTE

The number of active RFT users can not exceed CONCURRENT XFERS. The error message (CAUSE/DIAG 0002 0000) is logged when this happens.

5. RECORD LENGTH. The record length specified should be the length of the longest logical record that will be desired to be transferred. However, it must be noticed that a large record length will have an effect on the number of concurrent transfers that may be specified. Each concurrent transfer will require space in the RFT task equal to the record length plus 292 bytes for overhead. The maximum space available to be allocated is about 38000 bytes, so it may easily be seen that a large record length will not allow a very sizeable number of concurrent transfers. One way to allow a larger number of concurrent transfers when it is desired to transfer large records is to specify a smaller record length and do a backup of the directory or file, blocking it to a smaller logical record length.

6. PACKET LENGTH. The packet length which must be used will be specified by the network to which the circuit is connected in the case of connection to a public data network. In the case of a point to point line, the packet length may be specified at your discretion subject to the limitation that both end points must use the same packet length. The packet length may be 128, 256, 512, or 1024. In general, CPU usage goes down and throughput goes up with larger packet sizes. On the other hand, larger packet sizes require larger amounts of memory. In an extreme case, larger packet sizes could force undue roll-in/roll-out activity and, in fact, impact CPU usage and throughput negatively.

7. DISK RESIDENT TABLE. The site table information may be kept in memory or in a combination memory and disk resident table. If disk resident table is specified, only the local site and any sites associated with permanent virtual circuits may be defined as part of DNCSGEN. Remote sites not associated with permanent virtual circuits should be entered later using ASITE and AROUTE. A disk resident table has the advantage that table updates are retained. If DNCS is stopped and restarted, updates made to a memory resident table will be lost. On the other hand, call initiation may be somewhat faster when using the memory resident table. If it becomes appropriate to completely rebuild a disk resident table, delete the file .S$SIT while DNCS is not active. After DNCS is started, the new table may be built using ASITE and AROUTE.

8. DNOS SYSGEN CONSIDERATIONS. If using a CP503 board to operate an X.25 circuit, the CHANNEL PROTOCOL of the port should be COMA. If using a CP501 or CP502 board, the CHANNEL PROTOCOL should be LAP.

1.7 START UP PROCEDURES

Both the DNCS and RFT jobs must be started before RFT transfers can begin. If you wish to always start these jobs each time the computer system is initialized you will want to include the XDNCS and XRFT commands in the DNOS initialization batch stream, .S$ISBTCH. If DNCS and RFT are not started during initialization, then you must enter the XDNCS and XRFT commands to begin execution of the jobs.

Use the DNCSLOG and RFTLOG commands to determine if the DNCS and RFT jobs have been started. You will need to verify that they have been restarted after the operating system was last initialized.

DNCSLOG output indicating DNCS has started is :

```
DNCS0803 1745 NAP STARTED
DNCS1103 1745 TRANSPORT STARTED
DNCS0103 1745 I SCT INITIALIZATION COMPLETE
DNCS0078 1745 * * * * * * END OF DNCSLOG * * * * * *
 (note: other log messages will normally be mixed in with
      these messages)
```

Messages of the form

```
DNCS0803 1745 DATA-LINK NUMBER: 0001 IS ACTIVE
```

will appear for each X.25 circuit.

RFTLOG output indicating RFT has started is:

```
356;1747 01  DNCS/X25/RFT<1.2> STARTED
```

1.8 DETERMINING IF THE NETWORK IS OPERATIONAL

Many networks (Transpac, Telenet, Tymnet, etc) will allow you to call your own network address, which may be used to determine if the network is operational. To do this you must have your own address defined as a remote site in your site table. For example, if your network address is 311051200027, then the following steps could be used:

[] ASITE

```
ADD OR MODIFY A SITE
          SITE NAME:MYSITE
     RCALLING(Y/N):NO
     DNCS PASSWORD:
```

[] AROUTE

```
ADD OR MODIFY A ROUTE
               ROUTE NAME:LOOP
    ASSOCIATED SITE NAME:MYSITE
       SUBSCIBER ADDRESS:311021500027
            RCALLED(Y/N):NO
       CLOSED USER GROUP:>FF
         USER FACILITIES:
            NETWORK NAME:TELENET
```

```
                DNCS PASSWORD:


  [] SMSG

     SEND OPERATOR MESSAGE
                SITE:MYSITE
                 MSG:HELLO


  []RFTLOG     (Corresponding RFTLOG output follows)

01  F-ID=       4   LOCAL MSG-TRANSFER-REQUEST
01  F-ID=       4   MSG TO:MYSITE
01  F-ID=       5   CALL FROM:AUSTIN
01  17:13:29 WEDNESDAY, DEC 22, 1983.
01  AUSTIN:  HELLO
01  F-1D=       5   TRANSFER COMPLETED, CAUSE/DIAG:0000  0000
01  F-1D=       4   TRANSFER COMPLETED, CAUSE/DIAG:0000  0000


  []DNCSLOG    (Corresponding DNCSLOG output follows)

hhmm        VIRTUAL CIRCUIT OPEN        TYPE: B-W
hhmm 674C   LC:0001  LINE:00  VCTYPE:02   FLG:0000  ST:03  ADRL:0C
hhmm 6754   ADDR:3110215000270000  CAUSE:00     DIAG:00
hhmm        VIRTUAL CIRCUIT OPEN       TYPE: B-W
hhmm 6904   LC:0006  LINE:00  VCTYPE:02   FLG:0000  ST:03  ADRL:0C
hhmm 690C   ADDR:3110215000270000  CAUSE:00     DIAG:00
hhmm        VIRTUAL CIRCUIT CLOSED    TYPE: B-W
hhmm 674C   LC:0001  LINE:00  VCTYPE:02   FLG:0000  ST:03  ADRL:0C
hhmm 6754   ADDR:3110215000270000  CAUSE:00     DIAG:00
hhmm        VIRTUAL CIRCUIT CLOSED    TYPE: B-W
hhmm 6904   LC:0006  LINE:00  VCTYPE:02   FLG:0000  ST:03  ADRL:0C
hhmm 690C   ADDR:3110215000270000  CAUSE:02     DIAG:00
```

If the above procedure fails with a CAUSE code of 0D in the DNCSLOG, then the network does not allow you to call your own network address.

If the network does allow you to call your own address, then a form of a loopback check on the physical line between the DTE and the DCE switching node and a check of the operation of the DTE communication controller may be done by executing a XFTR command to your address.

SECTION 2

KNOWN PROBLEMS

This section documents known problems that may be encountered in installing and operating the DNCS X.25 RFT object package.

2.1 SOFTWARE

1. XFTR, BACKUP DIRECTORY. A Backup Directory output file will not restore after transfer if the backup was performed without blocking specified. Paragraph 2.5.1 of the RFT User's Guide documents the restriction that Backup Directory must be performed with Block Length equal to the logical record length of the backup file as returned by read file characteristics. Since the auto-create file utility function creates a file with a logical record length of 80 characters, the usual Block Length is 80 for Backup Directory.

2. SITE NAME UNIQUENESS. Site names within a group of communicating sites must be unique and must be defined in a consistent fashion at all sites. For example, if a group of communicating sites consists of locations in Toronto, Montreal, and Vancouver, the site names chosen might be TOR, MONT, and VANC. At Toronto, TOR would be defined as the local site name and MONT and VANC entered as remote site names. At Montreal, MONT would be the local site name and TOR and VANC remote site names. At Vancouver, VANC would be the local site name and MONT and TOR remote site names.

3. CAUSE/DIAG CODE OF 0004/0003. An SMSG or XFTR terminating with a cause/diagnostic code of 0004/0003 indicates the site name uniqueness requirement described above has not been observed.

2.2 DOCUMENTATION - DNCS X.25 RFT USER'S GUIDE

In general, most users will find the display from SFTR more beneficial than the display from SSTF although they are similar. Note the following differences.

1. The SSTF display only includes transfers initiated locally. The SFTR display includes both locally and remotely initiated transfers.

2. The count of records transfered in the SSTF display is only accurate if the transfer is in a held state. The counts given in SFTR are accurate. However, note the comments below on SFTR if the transfer has been suspended or suspended and restarted.

The values given for number of records transfered in the SFTR display may be confusing in the following situations.

1. If a file transfer is held, the record of its existence will disapear from the SFTR display at the remote site. When the transfer is restarted, it will again be noted in the SFTR display at the remote site but the count of records tranferred will start again at zero. It will not include records transferred before the transfer was held.

2. If the transfer is held due to a crash at the initiating site, the transfer will be restarted when the inititing site is again operational (assuming AUTO RESTART was requested). However, the SFTR displays at both sites will start counting records transferred begining at zero. Neither will include records transferred prior to the crash.

Also, note the following when a crash occurs and RFT is subsequently restarted. If a file transfer for which AUTO RESTART was specified was in progress, it will be restarted. However, the file transfer report will not contain meaningful information at the completion of the transfer.

SECTION 3

PATCHES AND PATCH PROCEDURES

3.1 PATCH UPDATE PROCEDURE

Patches are maintained by Texas Instruments and are available to customers from two sources - Customer Support Line and Patch Update Service. The Customer Support Line is able to provide patches on an as needed basis over the telephone or by communications link. Call (512)-250-7407 to get the latest patch files. Periodically, Texas Instruments will ship all current patches for the DNOS system family software to customers on the subscription service. Refer to the DNOS Products Patch Update Service Release Information for a list of the latest patches. In both cases, a detailed explanation will be provided on how to apply the patches to your system.

It is recommended that you call the Customer Support Line to get the latest patches prior to installation of the product.