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DIGITAL ACCESS AND CROSS-CONNECT SYSTEM
EXTERNAL DATA BASE TRANSFER WITH PERSONAL COMPUTER
DESCRIPTION AND PROCEDURES
DIGITAL TRANSMISSION SYSTEMS

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1. GENERAL

1.01 This practice contains a description of the file transfer operations between the DACS (Digital Access and Cross-Connect System) and a compatible personal computer (PC) and the procedures for performing the transfers. These file transfer capabilities allow the creation and updating of an external DACS data base in the PC. The procedures herein apply specifically to the AT&T Model 6300 PC.

1.02 When this practice is reissued, the reasons for reissue will be contained in this paragraph.

1.03 The AT&T Model 6300 computer is documented in this practice because it works with the DACS for file transfer. The particular capabilities of the AT&T 6300 PC that enable this operation are the use of file transfer protocol and the capability to transmit and receive the data base image using binary data format. The protocol allows the machines to recognize specific control bits and communicate with each other.

1.04 The DACS data base includes an inventory of all the equipped circuit packs, the service status of the packs, and all the cross connections on the frame. This data base is contained both in the frame's volatile memory and in the nonvolatile bubble memory. This bubble memory system provides a degree of protection by remaining intact after a power failure, but it is still susceptible to corruption caused by memory equipment failure or transfer of errors. A second bubble memory, when provided for DACS only, adds another degree of protection because, unlike the first bubble memory, it is updated manually so that the content of the transfer is more controllable.

1.05 The storage of an image of the DACS frame data base in an external machine is still another degree of protection against the loss of the data

base after a catastrophic failure or inadvertent use of incorrect input command. Furthermore, the maintenance of an external data base will enable future interactions with DACS such as using the external machine to modify the data base before it is transferred to DACS.

1.06 The 4800 baud and the binary format (11 bits/word) of the file transfer offer more rapid transfer of information than can be achieved over the other asynchronous links. This increased transfer capability is of particular importance for the restoration of the data base of a frame which includes SRDC (subrate data cross-connect). This is because subrate data cross connections greatly increase the size of the data base.

2. DESCRIPTION

2.01 This part provides descriptive information on topics relating to procedures contained in Part 3 of this document. This description provides background information to introduce the user to the terminology and operations found in the procedures.

External Backup Philosophy

2.02 Along with considerations on how and when to use the external backup for restoration, the

philosophy for its use includes considerations on updating the external data base to maintain a current copy. The process of transferring information into the external data base is referred to as a "dump." Conversely, the process of making a transfer into the DACS is called a "boot." These topics will be discussed further in this portion. Figure 1 depicts these transfers and local PC transfers pictorially.

2.03 The time to complete the transfer of 1 kilobyte of file data including information access time is approximately 4 seconds. Knowing this, the following transfer times can be derived. It takes approximately 8 minutes for either a boot or dump for a fully loaded DACS frame with no SRDC. When SRDC is installed, it takes approximately 90 minutes for a dump and 120 minutes for a boot. The SRDC significantly lengthens the transfer times, with the boot requiring more time than the dump. These considerations have led to the recommendation to update the external data base only once a day and then during a low activity time of day. The boot, of course, is done when needed.

Dump to External Data Base

2.04 The dump of information from the DACS to the external data base is initiated by the entry of commands at the PC. During the process, the data

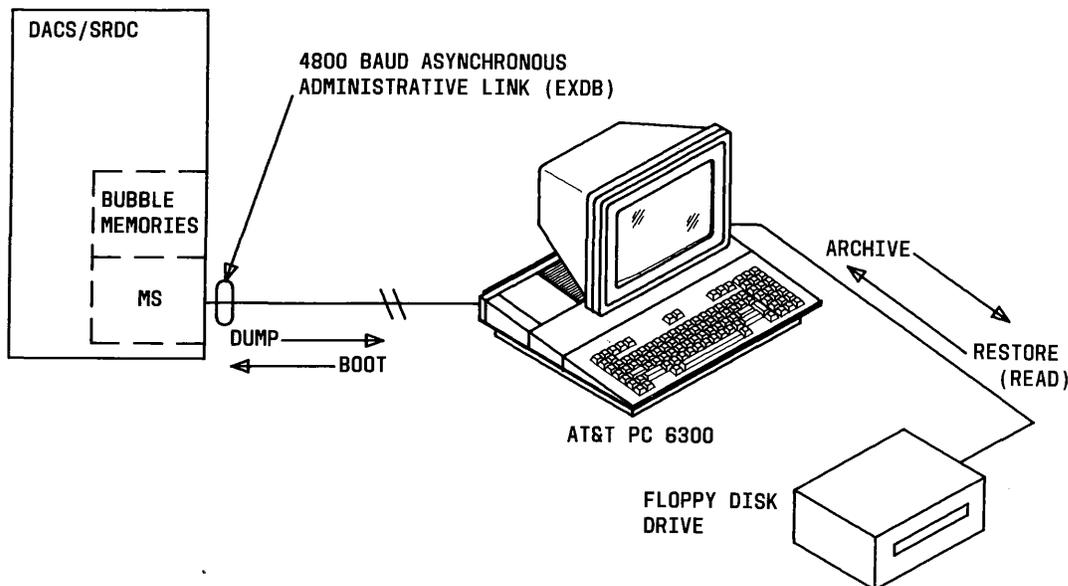


Fig. 1—File Transfer Pictorial

is transferred to the hard disk memory in the PC. Although the storage capacity of the hard disk is 10 megabytes, it is recommended that the total data base size for the DACS with SRDC be limited to three files at 768 kilobytes each. If the system is DACS only, then the recommended data base size is twelve files at 128 kilobytes each. Once the capacity of the disk is reached, the older files must be copied into a floppy disk and deleted from the hard disk. The file administration program available on the PC's menu of operations allows checking the amount of storage space available on the hard disk. If there is not enough space available, then write the older files to the floppy disk. Check again to make sure enough space is available on the disk before dumping data onto the hard disk. **DO NOT** attempt to dump data onto hard disk if the system tells you that hard disk capacity is exceeded. Each time a dump is completed, it is recommended that the file be copied onto a floppy disk.

Boot of DACS Data Base

2.05 The boot of the DACS data base from the external memory backup is used to restore a lost or corrupted DACS data base or used to replace the data base with a modified one. This process is initiated by the entry of commands at the PC. During the process, data is transferred from the hard disk of the PC. After the transfer is complete, the PC sends a "clear XDC" command to DACS which causes it to boot its frame memories into agreement with the data transferred to the buffer RAM memory.

2.06 In some cases, the DACS frame must be initiated or prepared before doing a boot. This preparation includes restoring of the microprocessor with the clear option, restoring the DACS bubble memories and if SRDC is installed, restoring the SMS (substrate microprocessor system) and SMBMs (substrate magnetic bubble memories). This preparation is required if: (1) an equipment failure caused the loss of data base, (2) a previously attempted boot failed, or (3) there is a difference in the equipage inventory between the two data bases. Booting from a data base that contains different equipage results in alarms that must be cleared. If the DACS is simply going to be booted and there are no differences in equipage, the preparation is not required; the external data base will supply all the needed provisioning.

Link Considerations

2.07 The transfer of information between the DACS and the PC is done over one of the DACS administrative links that has been conditioned for file transfer at 4800 baud and the 11-bit/word format. The service restore of the DACS MS (microprocessor system) grows link 5 for use in file transfer. If one of the other DACS links is to be used instead, the EXDB (external data base) designation must be deleted from link 5 and added to the desired link.

2.08 Connections between the DACS port and the PC may be either direct-wired or include modems. Existing codes of cabling and adapters used with DACS are available for the wiring. Modems are needed at each machine if the length of cabling exceeds 50 feet or if a dial-up telephone line is used. Figures 2 and 3 show the connections for the direct-wired and modem configurations, respectively.

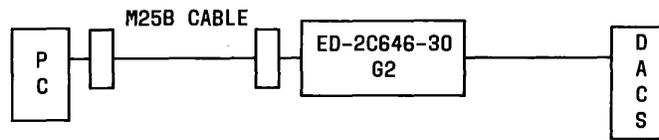
Floppy Disk Considerations

2.09 Floppy disks are used to initially install the file transfer software into the PC memory and to archive past copies of the DACS data base. Care must be taken to clearly label all floppy disks and to properly handle them. Labels should include the date and time the data base was transferred to the hard disk and the sequence number of the disk.

2.10 The following precautions are offered on the care and handling of floppy disks:

- Never touch the recording surface (at the read/write hole, index hole).
- Do not bend the disk.
- Keep the disk away from direct sunlight, magnetic fields, and high temperature and humidity.
- Store the disk upright in the protective envelope, not in the disk drive.

2.11 Another precaution that must be observed is the use of the opaque adhesive tab that fits over the write notch of the floppy disk. This tab must be removed when information is to be copied onto the disk, but it should be left over the notch when information is to be read from the disk. If the notch is un-



DACS - DIGITAL ACCESS AND CROSS-CONNECT SYSTEM
 PC - PERSONAL COMPUTER AT&T PC 6300

PIN CONNECTION:

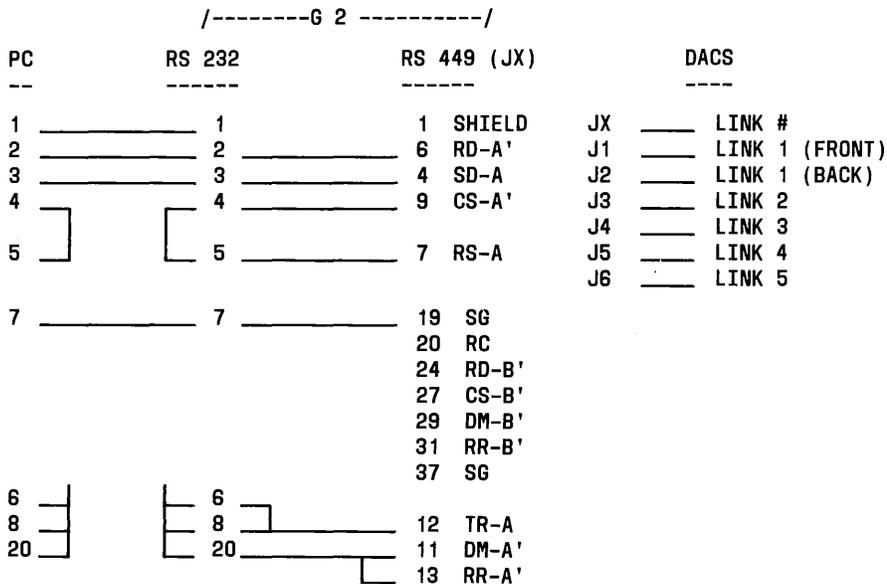


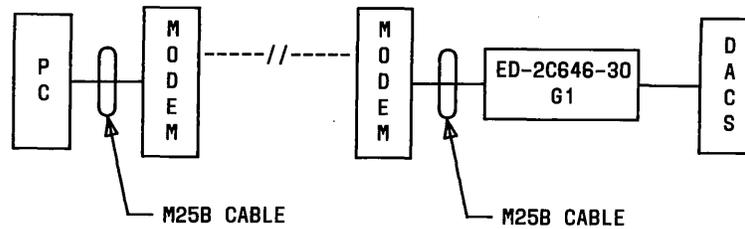
Fig. 2—Direct-Wired Connections

covered during a read operation, the content may be overwritten.

2.12 Floppy disks which are to be used to archive information must be formatted for use in the AT&T 6300. This formatting or initialization must be done once to new disks and disks that have never before been used in the AT&T PC 6300. Disks that have previously been used can simply be overwritten. Formatting also overwrites anything stored on the disk. The procedure for formatting is contained in Part 3.

3. PROCEDURES

3.01 This part contains the procedures for preparing the DACS and the AT&T Model 6300 PC for file transfers, for performing the transfers, and for file administration in the PC 6300. For additional information on the operation of the PC, refer to the Owner's Manual. The procedures herein have been given descriptive titles to allow easy reference to the desired information.



PIN CONNECTION:

		/----- G 1 -----/					
PC	MODEM	RS 232		RS 449 (JX)		DACS	
---	----	----		----		---	
1	---	1		1	SHIELD	JX	LINK #
2	---	3		6	RD-A'	J1	LINK 1 (FRONT)
3	---	2		4	SD-A	J2	LINK 1 (BACK)
4	---	4		7	RS-A	J3	LINK 2
5	---	5		9	CS-A'	J4	LINK 3
7	---	7		19	SG	J5	LINK 4
				20	RC	J6	LINK 5
				23	ST-B'		
				24	RD-B'		
				26	RT-B'		
				27	CS-B'		
				29	DM-B'		
				31	RR-B'		
				37	SG		
6	---	6		11	DM-A'		
8	---	8		13	RR-A'		
20	---	20		12	TR-A		

Fig. 3—Modem Connections

A. FILE TRANSFER SOFTWARE INSTALLATION

OVERVIEW: This procedure provides instructions on loading the supporting software into the PC 6300. This only needs to be done once after the MS-DOS* operating system has been booted as part of the PC setup.

STEP	PROCEDURE
1	Boot the PC with the MS-DOS operating system by following procedure J.
2	If not already done, turn the PC on and look for prompt (C>) which follows the diagnostic results.
3	Insert the DACS/SRDC FTP PACKAGE VERSION 1.167 into disk drive A, and close the drive door or lever.
4	At the keyboard, enter [a:install] to initiate writing the software onto the hard disk.

* Registered trademark of Microsoft Corporation.

STEP	PROCEDURE
5	When instructed by screen prompt, remove the floppy disk and reboot the PC per procedure J, or by holding down the CTRL key and the ALT key simultaneously and then pressing the DEL key.

B. DACS/SRDC FRAME INITIALIZATION

OVERVIEW: This procedure is used to prepare the DACS frame which includes SRDC for restoration of data base (boot) from the PC. DACS initialization is required if: (1) an equipment failure caused data base loss, (2) a previously attempted boot failed, or (3) there are equipage differences between the data bases. This procedure summarizes the contents of the "RESTORE LOST OR CORRUPTED DATABASE" procedure in DACS TOP 365-301-502. This procedure does not disrupt customer service on DACS.

STEP	PROCEDURE
1	<p>Verify that the following commands were entered at DACS and command completions were obtained:</p> <pre> RMV::SMS! RMV::MS! RST::MS,CLR! GRTH::FRAME ff[,UID abc...t]! </pre> <p>where UID is optional to distinguish frames which have the same No. (ff).</p> <pre> GRTH::BM 1! DGN::BM 1,CFT X'OFFF! RST::BM 1,SBSD,INIT! RST::SYNC 0! RST::SYNC 1! </pre> <pre> GRTH::SMS! RST::SMS! GRTH::SMBM 6! RST::SMBS 6! GRTH::SMBM a! where a is subject SMBM of those installed RST::SMBM a' </pre> <pre> GRTH::SUNIT 4, USRI! RST::SUNIT 4, USRI! (repeat for unit 3 if installed) </pre> <p>If other than DACS link 5 is to be used for the transfer, verify that the EXDB designation has been deleted from link 5 and added to the desired link using the following commands.</p> <pre> DLT::LINK m, EXDB! where m is the link No. (2-5) ADD::LINK m, EXDB, BAUD bb! where bb is the baud (4800) </pre>
2	

C. OBTAIN MAIN MENU

STEP	PROCEDURE
1	Remove any floppy disk that may be installed in drive A.
2	Operate computer power switch to on position.
3	After results of diagnostics and memory space are displayed, look for prompt to change date, and either enter new date or hit return (the date must be correct).
4	At prompt for password, enter your own password which you have previously assigned.
COMMENTS: (1) For security, after you have used one of the initial passwords (BOSS, SHIFT*) to obtain the menu, you should change your password so that unauthorized users cannot log in. If there will not be four users, change the unused SHIFT* passwords to BOSS.	
(2) BOSS should change the unused passwords to something so that no unauthorized users can have access. If the same password is used two or more times by different users, the number of available passwords will be reduced "forever".	
(3) Select a password that is meaningful to you and that you can remember without writing it down. Once forgotten, a new login for you can only be obtained from the AT&T Computer Administrator by reinitializing the disk per MS-DOS software instructions and reinstalling the File Transfer program.	
5	When the options of the main menu are displayed, you simply enter the number listed in the menu for the activity you want. The main menu display is shown below:
<ul style="list-style-type: none"> (1) DACS/SRDC File Transfer Program (2) File Administration Program (3) Floppy Disk Initialization (4) Change Password (5) Exit to Terminal Mode (4800 baud) (6) Exit to Terminal Mode (1200 baud) 	

D. DACS/SRDC FILE TRANSFER PROGRAM (DUMP OR BOOT)

OVERVIEW: This procedure contains instructions for transferring data to the hard disk in the PC (dump) and for transferring data to the DACS (boot). These transfers are done over DACS link 5 after the DACS MS is restored or over another link which has been designated as the EXDB link. The boot will be requested by DACS personnel in response to a memory failure or corrupted data base.

STEP	PROCEDURE
1	If you are going to do a dump, continue to Step 2; otherwise, proceed to Step 3.
2	Obtain the Main Menu by hitting RETURN and select option 2 to check the amount of file space available.

STEP	PROCEDURE
	COMMENT: The size of the DACS data base is 128k bytes, and SRDC (if provided) adds another 640k bytes. If the hard disk does not have enough capacity to handle a dump, you must archive the information on a floppy disk and then delete the files from the hard disk.
3	Obtain the Main Menu and select option 1.
4	Once in the FILE TRANSFER MODE, you will receive the prompt to select the desired operation, either a boot or a dump. Simply enter the key number listed for the option.
5	After receiving the message indicating that the PC has issued the QRY, WHO utility, proceed as follows: If BOOT, then go to Step 6. If DUMP, then go to Step 7.
6	Look at the displayed list of current backup files, and enter the key number for the file you want to use to boot the DACS. Then go to Step 8.
7	Look at the displayed date tag for the dumped file.
8	Look at the displayed list of different DACS/SRDC CONFIGURATIONS, and enter the item number listed for the configuration of bubble memories that you have.
9	After the message is received notifying you that this is the final point in the program from which you can terminate the operation, you must either enter the symbol to continue (c) or abort (a) at the prompt.
10	After the message is received indicating that the transfer has been completed, hit return to obtain the Main Menu again.

E. FILE ADMINISTRATION PROGRAM

STEP	PROCEDURE
1	Obtain Main Menu and select File Administration Program.
2	Notice that in the system response, there is a listing of backup files which are contained on the PC's hard disk.
3	At the prompt to select the desired administration option, enter the number corresponding to the option. The option display is shown below: <ol style="list-style-type: none"> 1. Archive file to floppy disk 2. Delete file 3. Restore file from floppy disk 4. Return to main menu.

STEP	PROCEDURE
4	<p>On-screen instructions are provided for the routine you have selected, but before proceeding, read through the information below for the subject routine.</p> <p>Archive File - This operation must be done before deleting file(s) from the hard disk to make room for new files. The files are identified by the date that the file was made and the sequence number assigned to the file. Of course, the floppy disk must be installed for this write operation and, if the floppy disk has not been previously used in the system, it must be formatted per procedure F. One floppy disk will hold a DACS-only file while as many as seven to eight disks may be needed for a full SRDC frame. The disks must be formatted and numbered sequentially so that the order is maintained. The disks should be labeled with the frame ID, date, and sequence number on each floppy disk. (User will be prompted to insert disks in sequence as required.)</p> <p>Delete File - This routine is used to make room on the hard disk for new files. Files to be deleted are identified by the date and sequence numbers assigned when the files were made. It is paramount that you first archive any file you want to keep on a floppy disk before you delete the file from the hard disk. If the file is deleted before it is copied, it cannot be recovered.</p> <p>Restore File from Floppy Disk - This routine is used to bring archived files back to the hard disk. Of course, the floppy disk must be installed for this operation, and it must be set for a read operation. (User will be prompted to insert disks in sequence as required.)</p>

F. FLOPPY DISK INITIALIZATION (FORMATTING)

OVERVIEW: This operation must be performed once on all new floppy disks and on any used disks which have never been used in the PC 6300. The operation formats the disk for use in the PC 6300 and results in anything stored on the disk being erased.

STEP	PROCEDURE
1	Obtain the Main Menu and select the option number for Floppy Disk Initialization.
2	After the results of the diagnostics are displayed, look for the instruction to insert the disk.
3	After installing the disk for a write operation, hit any key to begin the operation.
4	After 2 to 3 minutes, look for a message saying that the formatting is completed.
5	In response to the question about your desire to format another disk, enter either y (for yes) or n (for no) and proceed accordingly.

G. CHANGE PASSWORD

STEP	PROCEDURE
1	Obtain Main Menu and select option to Change Password.
2	Follow the on-screen instructions to enter your new password.
<p>COMMENT: The password must begin with a letter and have no more than eight letter or number characters total. Select a password that is meaningful to you and that you can remember without writing it down. Once forgotten, a new login can only be obtained from the AT&T Computer Administrator by reinitializing the disk per MS-DOS software instructions and reinstalling the File Transfer program.</p>	

H. EXIT TO TERMINAL MODE (4800 OR 1200)

OVERVIEW: These options, one for 4800 baud and one for 1200 baud, allow you to exit the file transfer program and use the terminal again for other purposes. The 4800-baud option can only be used on a link which has been designated as the EXDB link.

STEP	PROCEDURE
1	Obtain the Main Menu and select the option number for the desired terminal operation, 4800 baud or 1200 baud.
2	After receiving the Terminal Emulator Mode message, you can go ahead and use the terminal.
3	To exit the terminal emulator mode, log out by entering CTRL-d (hold CTRL key and hit d key). After logging out, you must supply one of the valid passwords to regain access to the Main Menu.

J. BOOTING THE PC WITH MS-DOS OPERATING SYSTEM

OVERVIEW: This procedure is only used initially to prepare a new PC.

STEP	PROCEDURE
1	Insert the MS-DOS diskette.
2	Turn on the computer.
3	At the A prompt (A>), type (F Disk).
4	Press the RETURN key.
The screen below is displayed:	
Fixed Disk Setup Program	
FDISK Options	

STEP**PROCEDURE**

Choose one of the following:

1. Create MS-DOS Partition
2. Change Active Partition
3. Delete MS-DOS Partition
4. Display Partition Information

Enter Choice(1)

Press Esc to return to DOS(1)

5 Press the **RETURN** key.

6 In response to the prompt:

Do you want to use the entire fixed disk

for MS-DOS operating system (Y/N)..... (Y)

Select Yes by pressing the **RETURN** key.

The screen displays the message:

Total fixed disk space is 305 cyls.

The current active partition is 1.

7 Return to the A> prompt by pressing the **ESC** key twice.

8 Type: A>**format/s c:**

9 Press the **RETURN** key.

The following message is displayed:

Press any key to begin formatting C.

10 Press the **RETURN** key.

Your screen displays the message:

Formatting...

STEP	PROCEDURE
------	-----------

After about 3 minutes, your screen looks like this:

```
A>format/s c:  
Press any key to begin formatting C:  
  
      Formatting ...Format Complete  
      System transferred  
  
          10592256 bytes total disk space  
            42496 bytes used by system  
          10549760 bytes available on disk
```

A>

Do not be concerned if the numbers on your screen do not exactly match the numbers shown above. They will vary depending on the specific disk installed in your computer.

You have completed the preparation process. Your hard disk is ready for use.

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