

QANTEL

**Overview of the
BEST Operating System**

software announcement

release no. SA-079

subject BEST 207-3 AND 407-3

date September 1983

software announcement

This software announcement documents enhancements and updates to the BEST® operating system and utility programs for release X07-3. Two tapes are included with this announcement, as follows:

1. BEST X07-3 Release Tape
2. BEST X07-3 Diskette Image Tape

A note for new installations: Because it is an MDS Qantel licensed product, the advanced operating system, BEST/AOS (407-3), requires a password on the Systems 10, 20, 40, and 64, and Series 200 and 300.

For new installations of Systems 10, 20, 40, or 64, or Series 200 or 300 that will be using BEST 407-3, a password must be obtained from Cheri Garcez, MDS Qantel, Hayward, CA, (415) 887-7777 x2235.

Please have ready the following information: system number, customer number, CPU type, and CPU serial number.

For installations running BEST 405-1 or later: The password remains the same; it is not to be re-entered after BEST 407-3 has been released.

BEST X07-3 Features

The System 64 is now supported. This is the most powerful system in the QANTEL® family of computers.

Certain problem areas of BEST X07-2 have been cleared up, as follows:

1. Contiguous file create
2. System hang on Exception 99
3. QICBASIC® symbol table
4. *MAINTC null entry

Refer to SA-079 for the specific documentation of these problems.

(over)

OPERATING SYSTEM CHART

The following chart represents the supported versions of the BEST operating system for existing QANTEL systems.

<u>Operating System Version</u>	<u>CPU</u>	<u>Model/Series</u>
BEST 101-5	Q7.0	Systems 800, 900, 950, 1100, 1200
	Q7.5	Systems 960, 965, 1300, 1400
BEST 204-2	Q7.5	Systems 960, 965, 1300, 1400
	Q29	Systems 970, 1450, Series 200/300
BEST 205-2	Q29	Systems 23, 970, 1450, Series 200/300
	Q30	System 40
BEST 405-2	Q29	Systems 23, 970, 1450, Series 200/300
	Q30	System 40
BEST 207-3	Q29	Systems 10, 20, 970, 1450, Series 200/300
	Q30	System 40
	Q64	System 64
BEST 407-3	Q29	Systems 10, 20, 970, 1450, Series 200/300
	Q30	System 40
	Q64	System 64
BEST 408-1.11	Q29	Systems 10, 20, 970, 1450, Series 200/300
	Q30	System 40
	Q64	System 64

*DFORMAT

The Utility *DFORMAT provides the ability to 'hardware' format and verify single and double sided diskettes. All new diskettes must be hardware formatted before any data can be written to them. Any diskette that is formatted after data has been written to it will have all the data 'erased' during the format process. Diskettes that are only 'verified' will not have data 'erased' from them.

During the execution of this Utility, the diskette controller must be 'locked' by the Utility. Therefore, any users attempting to access the diskette controller will be suspended until the format or verify process is completed by the Utility.

The diskette drive to be used during the format or verify process must be configured (CFG) as a File Transfer Device.

From READY:: enter

R *DFORMAT

The following prompts will be displayed:

FLOPPY FORMATTER UTILITY (*DFORMATXX.XXXXXXXXXX)
ENTER DEVICE NAMES:

Enter the name of the File Transfer Device, i.e. FT1.
(A null entry will exit the Utility.)

ENTER PRINTER NAME:

Enter the name of the listing device.
(A null entry will only display the errors on the screen.)

OPTIONS ARE

- 1 - FIRMWARE FORMAT AND VERIFY DISKETTE
- 2 - FIRMWARE VERIFY DISKETTE
- 3 - PROCESSOR VERIFY ONLY

ENTER OPTION:

Insert the required diskette before selecting an option.

Enter 1 to Format and Verify the diskette.
Enter 2 to Firmware Verify the diskette.
Enter 3 for the Processor to Read Verify the formatted diskette.
(A null entry will return to the ENTER DEVICE NAMES prompt.)

If option 1 (FORMAT) was selected, proceed to Page C-018.

If option 2 (VERIFY) was selected, proceed to Page C-019.

If option 3 (PROCESSOR VERIFY) was selected, proceed to Page C-020.

Option 1 - Firmware Format and Verify Diskette

The following prompts will be displayed:

WARNING: ALL DATA ON DISKETTE WILL BE ERASED
CONTINUE (Y/NO)?

Enter Y to continue and format the inserted diskette.
Enter N to return to the Options Menu.
(A null entry will return to the Options Menu.)

FORMAT AND VERIFICATION ON DEVICE FT1(nx) IN PROGRESS...

The above message will be displayed during the format and verification process. If any errors are encountered, they will be displayed and printed (if a printer name was specified) during the process. If any errors are encountered on a diskette, attempt to format the diskette again. If any errors are still encountered, the diskette should be discarded and rendered unusable. Damaged diskettes could affect the performance of the diskette drive.

During the format/verify process, the Flag 2 key may be used to either terminate or pause the process. On pressing Flag 2, the following prompt will be displayed:

CONTINUE FROM NEXT SECTOR NUMBER ?????? (YES/N)?

Enter Y to continue with the process. The OPERATION CONTINUES message will be displayed.

Enter N to terminate the process and return to the Options Menu.
(A null entry will continue with the process.)

On completion of the format/verify process, the total number of errors encountered will be displayed and the Utility will return to the Options Menu.

Option 2 - Firmware Verify Diskette

The following prompts will be displayed:

FIRMWARE VERIFICATION ON DEVICE FT1(nx) IN PROGRESS...

The above message will be displayed during the verification process. If any errors are encountered, the following prompt will be displayed:

STATUS ssss: error description. SECTOR: xxxxxx
CONTINUE FROM NEXT SECTOR NUMBER yyyyyy (YES/N)?

Enter Y to continue with the verify process from the next sector number displayed. The OPERATION CONTINUES message will be displayed.
Enter N to terminate the verification process.
(A null entry will continue with the process.)

During the verification process, the Flag 2 key may be used to either terminate or pause the process. On pressing Flag 2, the following prompt will be displayed:

CONTINUE FROM NEXT SECTOR NUMBER ?????? (YES/N)?

Enter Y to continue with the process. The OPERATION CONTINUES message will be displayed.
Enter N to terminate the process and return to the Options Menu.
(A null entry will continue with the process.)

On completion of the verification process, the total number of errors encountered will be displayed and the Utility will return to the Options Menu.

Option 3 - Processor Verify Only

During this process, the Processor attempts to Read all the sectors on the diskette.

The following prompts will be displayed:

PROCESSOR VERIFICATION ON DEVICE FT1(nx) IN PROGRESS...

The above message will be displayed during the verification process. If any errors are encountered, the following prompt will be displayed:

STATUS ssss: error description. SECTOR: ~~xxxxxx~~
CONTINUE FROM NEXT SECTOR NUMBER yyyyyy (YES/N)?

Enter Y to continue with the verify process from the next sector number displayed. The OPERATION CONTINUES message will be displayed.
Enter N to terminate the verification process.
(A null entry will continue with the process.)

During the verification process, the Flag 2 key may be used to either terminate or pause the process. On pressing Flag 2, the following prompt will be displayed:

CONTINUE FROM NEXT SECTOR NUMBER ~~xxxxxx~~ (YES/N)?

Enter Y to continue with the process. The OPERATION CONTINUES message will be displayed.
Enter N to terminate the process and return to the Options Menu.
(A null entry will continue with the process.)

On completion of the verification process, the total number of errors encountered will be displayed and the Utility will return to the Options Menu.

ERROR MESSAGES:

UNKNOWN INPUT: "xxx"

The specified File Transfer Device name is invalid.

DEVICE "FT1" IS UNAVAILABLE

The File Transfer Device is not configured.

INPUT ERROR: PRINTER NAME NOT "LP" OR "SP"

The name specified for the printer must be a LP or SP configured device type.

OPEN EXCP 11 OF xPy

The specified printer is not configured.

OPEN EXCP 30 OF xPy

The specified printer is configured but not available.

UNABLE TO LOCK CONTROLLER OF DEVICE "FT1"

The Utility must lock the controller prior to performing the requested option. On attempting to lock the diskette controller, other users were accessing the controller.

STATUS ssss: error description. SECTOR: xxxxxx

During the format or verification process, the specified error was encountered on the reported sector.

CURRENT CONFIGURATION
MODULE MESSAGE: BEST 207-2
128K TOTAL MEMORY
30 FILE AFL ENTRIES
4 DEVICES

SYS 22

5 EXTRACT ENTRIES
2 PARTITIONS

#	DESCRIPTION	NAME	DEV#	TYPE	DETAIL
2	TERMINALS	T00	000	VT3	P00
		T01	010	VT3	P01
2	PARTITIONS	P00		01	(00DDE6,3000)
		P01		01	(010DE6,3000)
2	DISCS	DK1	0D	FLPY	
		DK2	1D	FLPY	

NO LINE PRINTERS
NO MAGNETIC TAPES
NO SPOOL PRINTERS
NO CLOCK
NO FILE TRANSFER
NO NETWORK
NO CARD READERS
NO SPECIAL DEVICES

BEST TABLE AREA: \$7E98 TO \$7FFF

LAST USED: \$7EDF

CURRENT CONFIGURATION
MODULE MESSAGE: BEST 207-2
128K TOTAL MEMORY
30 FILE AFL ENTRIES
5 DEVICES

SYS 23

5 EXTRACT ENTRIES
2 PARTITIONS

#	DESCRIPTION	NAME	DEV#	TYPE	DETAIL
2	TERMINALS	T00	000	VT3	P00
		T01	010	VT3	P01
2	PARTITIONS	P00		01	(00DD64,3000)
		P01		01	(010D64,3000)
1	DISCS	DK1	0D		
1	LINE PRINTERS	LP1	00F	S	

NO MAGNETIC TAPES
NO SPOOL PRINTERS
NO CLOCK

1 FILE TRANSFER FT1 0C
NO NETWORK

NO CARD READERS
NO SPECIAL DEVICES

BEST TABLE AREA: \$7E98 TO \$7FFF

LAST USED: \$7EC4

☆CBACKUP/☆RBACKUP

The Standalone Utilities *CBACKUP and *RBACKUP provide a simple method to perform image backup of data stored on disc to 1/4" tape and 1/2" tape respectively.

*CBACKUP or *RBACKUP may be used as the only backup procedure on a daily basis or it may be combined with *TBACKUP to perform only the image backup portion of a TIC backup procedure.

*CBACKUP or *RBACKUP can only be executed from a System disc or from a BACKUP tape if the tape is to be restored to disc. If the Utility is loaded directly from a tape, the program will default to the restore operation and the address of the output disc will be requested from the operator. Refer to LOADED FROM TAPE section.

These utilities are generalized programs that can accept instructions from a previously defined Parameter file. This file is usually set up by the programmer during System installation and includes the specific parameters for the hardware devices, the order of copying, and any messages to be displayed on the terminal. Use of the Parameter file alleviates the need for the operator to enter parameters for the utility from the terminal.

The utilities will accept #BACKPAR, *BACKPAR, or !BACKPAR as a valid parameter file name. It searches the first directory on the IPLed disc for #BACKPAR, then if not found, for *BACKPAR, and if neither exist, for !BACKPAR. If a BACKPAR file is found, its parameters may be used or the operator may enter the parameters from the terminal. If a BACKPAR file is not found, the parameters may also be entered from the terminal. Refer MANUAL PARAMETER SPECIFICATIONS section for details.

The !BACKPAR file is supplied by QANTEL on the BEST Operating System Release Tape.

LOADED FROM DISC

From READY:: enter:

I *BACKUP

The following menu will be displayed:

BACKUP MENU PROGRAM (*BACKUPXX.XXXXXXX)

- 1 - BACKUP DISC TO CARTRIDGE TAPE (*CBACKUP)
- 2 - BACKUP DISC TO DISKETTE (*DBACKUP)
- 3 - BACKUP DISKETTE TO DISKETTE (*DBACKUP)
- 4 - BACKUP DISC TO REEL TAPE (*RBACKUP)
- 5 - BACKUP DISC TO DISC (*RBACKUP)
- 6 - TIC BACKUP TO TAPE (ALL TYPES) (*TBACKUP)

SELECT OPTION (1,2,3,4,5,6):

- Enter 1 if backup is to be performed to a cartridge drive
4 if backup is to be performed to a 1/2 inch tape.
5 if backup is to be performed to a hard disc.

The utility will attempt to open the BACKPAR file on disc and if successful, will read the Parameter Section into memory. Any Message lines will be displayed on the terminal and the program will wait for input of a 'user word'. Once entered, the P= Command line in the Parameter section will be searched for the 'user word' and the associated key will be used to load the Command block from the Command section in the BACKPAR file.

The 'user word' may be substituted with manual entry of parameters by the operator. Refer MANUAL PARAMETER SPECIFICATIONS section.

Prior to executing the instructions in the Command block, the utility performs the following functions:

- o Determining the number of sectors to be copied by:

- reading the Allocation Unit Bit Map on the input (to be copied) disc and calculating the Last Sector Used, or
 - reading the Tape Header if the copy is tape to disc.

- o If the copy is disc-to-tape, a 20 character tape label will be requested.

- o Performing a hardware check. An appropriate message will be displayed:

- CHECKING DISC DRIVE(S)... if the copy is disc-to-disc
 - CHECKING TAPE DRIVE... if the copy is disc-to-tape
 - RETENSIONING...TAPE RETENTIONED if the copy is to a cartridge drive.

The copy operation will then begin and the following message will be displayed:

BACKUP IN PROGRESS...

The utility will execute all the instructions in the Command block selected or the Manual Parameters that were entered and will display the sector number being transferred in the upper right corner of the screen during the process.

When the END Command word is encountered, the following message will be displayed:

CLEARING DISC FLAGS (only if CLRTICS was specified)

BACKUP COMPLETED
PRESS TRANSMIT TO IPL

Any transmission will return to the Loader of the IPLed device.

CHK

Provides an extensive check of the copy process performed and causes the PERFORMING CHECK OF BACKUP... message to be displayed.

On a disc-to-disc copy, when the copy is complete, the CHK function executes a second pass reading the same sectors from both discs comparing them byte for byte. During this comparing process, three major types of errors may be encountered which will display either a disc read error or the compare error message, PREVIOUS COPYING IS UNSUCCESSFUL. A disc read error could be from either the input or the output disc and the normal procedures for correcting disc errors should be followed.

The CHK option for a disc to disc comparison almost doubles the BACKUP time. However, it is recommended that the CHK option be included in any disc-to-disc or tape-to-disc copy operation. The CHK Command word must appear after the:

- 0 parameters on a disc-to-disc copy,
- 1 parameters on a tape-to-disc restore,
- 0 parameters on a disc-to-tape copy.

During the tape CHK function, the tape is re-read and checked for parity errors, short blocks and blocks out of sequence. If an error is detected, the PREVIOUS COPYING IS UNSUCCESSFUL message will be displayed along with a description of the error. If the tape check is successful, when the end of the tape is reached, the following prompt will be displayed:

TAPE REWINDING...
CHECK MORE TAPES? (Y,NO):

Enter Y to display the PRESS ST/SP TO PROCEED prompt.

Enter N to resume execution of the next instruction in the COMMAND block.

Examples of CHK function:

```
4700 ! disc 1D will be checked
4800 ! against disc 0D after the
4900 ! copy process
5000 I=1D
5100 O=0D
5200 CHK
5300 END
```

```
4700 ! tape will be checked
4800 ! for parity errors after
4900 ! the copy process
5000 I=0D.
5100 O=08
5200 CHK
5300 END
```

```
4700 ! the tape will be checked for
4800 ! parity errors before the copy process
4900 M=' MOUNT BACKUP TAPE ON DRIVE '
5000 HLT
5100 I=08
5200 CHK
5300 O=0D
5400 END
```

ICLK

ICLK may be substituted for CHK in the parameter file. If ICLK is specified each tape in a multi-tape backup will be checked prior to proceeding to the next tape in the set. This will expedite the discovery of tape errors early in the backup process and will allow a bad tape to be rewritten without having to restart the entire backup process. =BREAK=
If ICLK is used it must appear prior to the Output device specification in the parameter file or entered prior to entry of the Output device specification if being entered manually.

MANUAL PARAMETER SPECIFICATIONS

The utility will process instructions either from the BACKPAR file or from direct input on the terminal. If the BACKPAR file is found, its parameters may be used or the operator may manually enter the parameters. If a BACKPAR file is not found in the first directory of the IPLed disc, the following message will be displayed:

```
PARAMETER FILE NOT FOUND  
ENTER BACKUP PARAMETERS:
```

The parameters are entered in the same format as defined for the BACKPAR file. After an END Command or null entry, the entered parameters will be executed in the order they were specified.

Example:

```
M='BACKUP DISC, CHANGE LABEL, CHECK BACKUP'  
I=0C,DSK  
O=1C,DSK,NEW  
CHK  
HLT  
BEEP  
END
```

Tic Backup

★ TBACKUP

The Standalone Utility *TBACKUP, used in conjunction with *BACKUP, provides the ability to back up only Ticked Hard Disc sectors on a Q29 or higher system to a 1/4-inch cartridge or 1/2-inch reel-to-reel tape drive.

The Utility has the following capabilities:

- o TIC BACKUP: This process will copy to tape only those sectors that have been written to the disc since the last Full Backup. During normal processing, any sector written to the disc will be flagged (ticked) and during the Tic Backup process only the flagged (ticked) sectors will be copied to tape. Ticked sectors are cumulative from the previous Full Backup and a sector will remain ticked until a Full Backup or Restore of the disc is performed.
- o RESTORE: This process will copy the Backup sectors from a Tic-Tape to disc. The Restore process assumes that the most recent Full Backup has been restored with *BACKUP. The program will restore should be used to restore the most recent Tic-Tape since the latest Full-Backup.

From READY:: enter

I *TBACKUP

The following Options Menu will be displayed:

TIC-TO-TAPE BACKUP UTILITY (*TBACKUPXX.XXXXXXXXXX)
COPYRIGHT MDS QANTEL, INC. 1982

1 - TIC-TO-TAPE BACKUP
2 - RESTORE TIC TAPE TO DISC
ENTER DESIRED ACTION (1;2):

Enter 1 if a Tic Backup is to be performed.
Enter 2 if the Tic-Tape is to be restored.
(A null entry will exit the Utility.)

If option 1 (TIC BACKUP) was selected, proceed to Page C-131.

If option 2 (RESTORE) was selected, proceed to Page C-132.

Option 1 - Tic Backup

The following prompts will be displayed:

DEVICE ADDRESS OF HARD DISC TO BE BACKED UP:

Enter the hexadecimal address of the disc to be backed up in the format NX, where:

N is the device number (always 0) on the controller and X is the address of the controller.

(A null entry will return to the Options Menu.)

DEVICE ADDRESS OF TAPE UNIT (HH):

Enter the hexadecimal address of the Tape Unit in the format NX, where

N is the device number (always 0) on the controller and X is the address of the controller.

(A null entry will return to the Options Menu.)

CHECKING TAPE DRIVE:

The program will now perform a check of the tape drive specified. (For cartridge, the tape will also be retensioned at this point.)

TIC BACKUP IN PROGRESS...

The above message will be displayed to indicate the Tic Backup is being performed. During the copy process, the number of ticked sectors found will be displayed at the top of the screen.

TAPE VERIFICATION IN PROGRESS...

The tape is rewound and checked to verify that a valid tape has been produced.

END TAPE - LOAD NEXT
PRESS TAB TO CONTINUE.

This Tic Backup will require more than one tape. Load the next tape and press TAB to continue.

On completion of the Tic Backup process, the following prompt will be displayed:

TIC BACKUP HAS BEEN SUCCESSFULLY COMPLETED.
xxxxxx SECTORS WERE TRANSFERRED.
xxx% OF THE UTILIZED DISC AREA IS TICKED.

Remove the tape and label it to indicate the date of the Tic-Backup and the date of the previous Full Backup to be used if a restore should be required. The Utility will return to the Options Menu. Press TAB to exit to the loader of the IPLed disc.

☆ RETENSE

The Utility *RETENSE provides the ability to RETENSION a 1/4-inch tape cartridge.

The 1/4-inch tape cartridges maintain tape tension by means of the internal mechanics of the cartridge. This requires that the tape be evenly packed on the feed reel when writing or reading a tape from the beginning.

The Utility should be used to RETENSION a new tape cartridge prior to initial use. Also if the cartridge is subjected to vibration during transportation, or any time read or write errors are encountered.

(If errors persist after retensioning contact your Field Service Office.)

From READY:: enter

R *RETENSE

The following prompt will be displayed:

TAPE RETENSIONING UTILITY (*RETENSEXX.XXXXXXXX)
COPYRIGHT MDS QANTEL, INC. 1982

ENTER TAPE NAME:

Enter the name of the Tape Unit in the form MTx, as configured in CFG. The only valid device names are MT1 thru MT9.
(A null entry will return to READY::.)

RETENSIONING TAPE PLEASE WAIT.

The program will now retension the cartridge tape by winding from BOT to EOT and back to BOT at 90ips. This should take about 1.5 minutes for a 450-foot cartridge.

Upon completion, the Utility will exit to *MONITOR.

ERROR MESSAGES:

NOT A MAGNETIC TAPE CARTRIDGE DEVICE.

The device name specified is not an IOU47 cartridge tape drive.

CURRENT CONFIGURATION
MODULE MESSAGE: BEST 207-2
128K TOTAL MEMORY
30 FILE AFL ENTRIES
5 DEVICES

SYS 24

5 EXTRACT ENTRIES
2 PARTITIONS

#	DESCRIPTION	NAME	DEV#	TYPE	DETAIL
2	TERMINALS	T00	000	VT3	P00
		T01	010	VT3	P01
2	PARTITIONS	P00		01	(00DDF3,3000)
		P01		01	(010DF3,3000)
1	DISCS	DK1	0D		
1	LINE PRINTERS	LP1	00F	S	
1	MAGNETIC TAPES	MT1	08	03	
	NO SPOOL PRINTERS				
	NO CLOCK				
	NO FILE TRANSFER				
	NO NETWORK				
	NO CARD READERS				
	NO SPECIAL DEVICES				

BEST TABLE AREA: \$7E98 TO \$7FFF LAST USED: \$7EC4

Tape CFIG

Type

1 - Slow

2 - Fast

3 - Cartridge

CURRENT CONFIGURATION

MODULE MESSAGE: BEST 408-1

NET,Q64

508K TOTAL MEMORY

234 SECTOR POOL BUFFERS

50 FILE AFL ENTRIES

15 EXTRACT ENTRIES

6 DEVICES

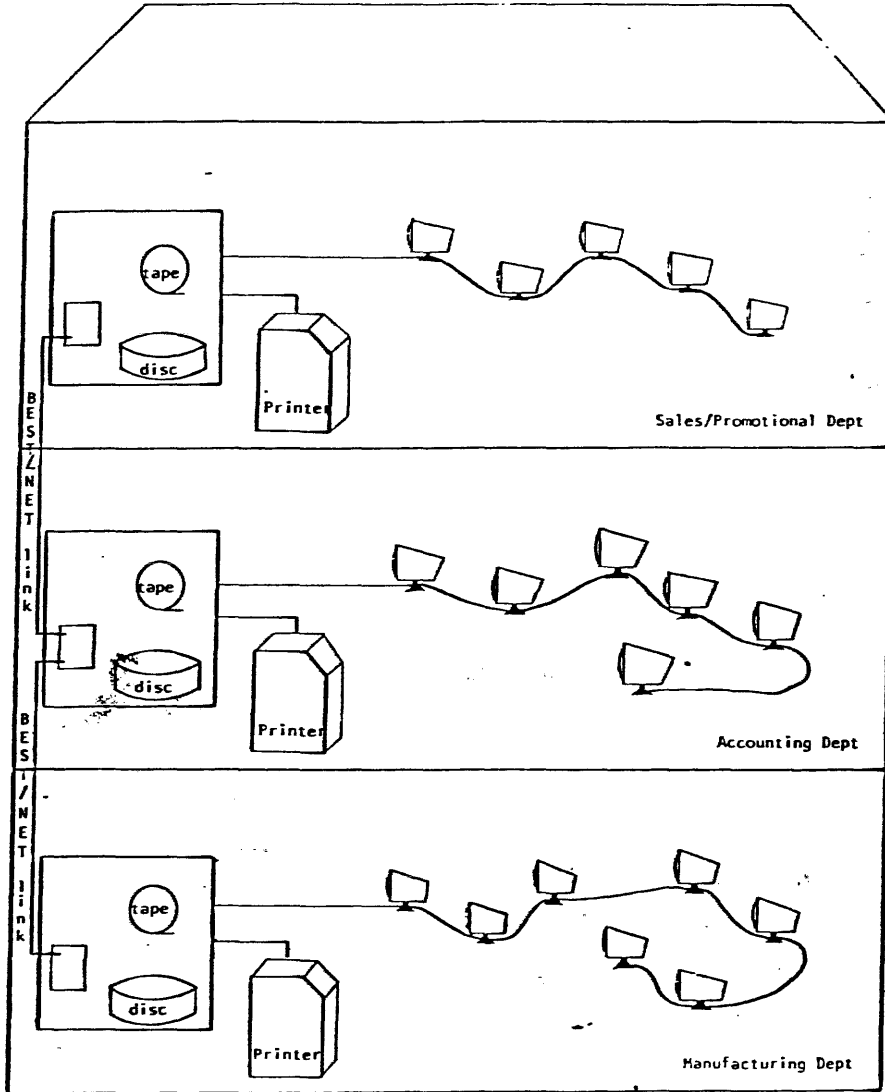
4 PARTITIONS

70 2K PARTITION EXTENSIONS

30 NTWK SURROGATES

#	DESCRIPTION	NAME	DEV#	TYPE	DETAIL
2	TERMINALS	T00	000	VT3	P00
		T01	010	VT3	P01
4	PARTITIONS	P00		01	(04D153,2800)
		P01		01	(04F953,0800)
		P02		05	(050153,0800)
		P03		09	(050953,0800)
1	DISCS	DK1	0D		
1	LINE PRINTERS	LP1	00F	S	
1	MAGNETIC TAPES	MT1	08	02	
	NO SPOOL PRINTERS				
	NO CLOCK				
	NO FILE TRANSFER				
1	NETWORK	NT1	04	01	30 SURROGATES
	NO CARD READERS				
	NO SPECIAL DEVICES				
	S/W OPTION 1	COBOL		INACTIVE	RUNTIME
	S/W OPTION 2	IPC		INACTIVE	PSEUDO DEVICE
	BEST TABLE AREA:	\$7BF9 TO \$7FFF			LAST USED: \$7C28

Expanded capabilities with BEST/NET Links



BEST/NET:

Local Area Networks or Network File Systems handle distributed processing loads more economically and can provide more processing power than one large central computer system. BEST/NET is MDS Qantel's Local Area Network that ties two to sixteen local QANTEL systems into an intra-company distributed network.

With BEST/NET, a user on one system can access data and printers on another system and execute programs that physically reside on another system's disc. Distributed processing through BEST/NET provides load sharing among several systems as well as access to large data bases and high-speed or special printers. Implementation of BEST/NET can occur without modification to existing application programs.

BEST/NET High-Speed Communications Controller

The BEST/NET Communications Controller is microprocessor-based and provides a 500 kilobit per second communication link over a multi-drop passive shielded cable (to a maximum of 3000 feet) using base-band signalling.

The line control is a contention-based, fully distributed peer protocol with slot reservation. The Carrier Sense Multiple Access (CSMA) method is employed for allocating the 'bus' to a system. When the bus is idle, each system in the network has an equal chance of seizing it.

Error recovery is based on the High-level Data Link Control (HDLC) techniques. CRC errors or discrepancies are handled by retransmission.

Operation

BEST/NET is divided into two main sections: the Communications Driver and the Network File Server. The Communications Driver handles the physical system communications function and executes primarily at interrupt level. The Network File Server handles the logical communications function and executes at the system level.

Operation (cont.)

When a user on one system requests the access to a file or program operation on another system, the request process is detected by the Communications Driver. A message containing the required parameters is gathered by the Network File Server and forwarded by the Communications Driver to the 'receiving' system. The resultant data or status is then returned to the 'originating' system.

The execution of the requested I/O operation is carried out by a Surrogate partition on the 'receiving' system. Surrogate partitions are activated on the 'receiving' system at the time the user is provided access to the system. While the Surrogate partition is active, it is associated with the 'originating' partition.

Availability of data and program files to users in a network is controlled by the access to directories on a disc in a system. Directories are defined as 'Public' or 'Private'. A Public Directory may be accessed by users within the network, while a Private Directory can only be accessed by the users on the system where the directory actually resides.

Requirements

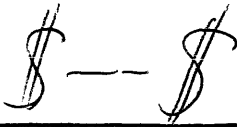
The following is a guide to the requirements of systems participating in a BEST/NET network:

- A BEST/NET Communications Controller resides in each system and is assigned a unique **Machine Address**.
- Each directory on every disc on each system is defined as either a **Public** or **Private** access type.
- If the Security System is being utilized, each password includes the Machine Number for the directories the password can access.
- Each REMOTE printer to be accessed by a LOCAL machine is assigned a Logical Name so that it may be accessed by all users in the network or by only those users on the local system.

Check List

MDS Qantel recommends that each BEST/NET user appoint a person to serve as "Network Manager" with responsibility for installing, configuring, and operating BEST/NET. The following check list is a tool for all BEST/NET installations. It should be used for each system in a BEST/NET network.

- _____ Record the hardware device address of the BEST/NET Communications Controller.
- _____ Record the machine number setting on the BEST/NET Communications Controller.
- _____ Release BEST X07-2 to the system.
- _____ Configure network device NT1 (use hardware device address from above).
- _____ Configure the required number of surrogate partitions (maximum of 50).
- _____ Modify the Pxx:Txx prompt in *MONITOR to show machine number (e.g., Mxx:Pxx:Txx). Last 2 characters (digits) of machine number available through NSTAT function.
- _____ In a non-security environment, enter all ACCESS commands at READY:: prompt in *MONITOR
- _____ In a security environment, use *SECURE to set up directory, disc, and machine accesses for user passwords. Note: do not enter machine number for local directories.
- _____ Use *DRMAINT to update public/private status of specific directories.
- _____ Use *DRMAINT to create unique directory names within the total network (recommendation only).
- _____ Use *ASSIGN to establish device names for all printers and spool printers that will be shared across the network.
- _____ Copy needed object files from remote systems onto directories of local system (use *OFCOPY or **COPY).
- _____ In applications using the terminal or partition name as a key to a file, include also the machine number as part of the key to guarantee uniqueness (recommendation only).



☆ ASSIGN

The Utility *ASSIGN allows a user to assign an alternate LOGICAL NAME to an existing printer or spool device. This is a facility for sharing printers and/or spools among machines linked in a BEST/NET network. The user may also List or Clear a logical assignment.

This facility may also be utilized on a non-network system.

If a partition is ASSIGNing to a remote printer that partition must have ACCESS to at least one directory on that remote system.

There are two types of logical assignments supported:

- The GLOBAL assign affects ALL users on a single system. These assignments remain intact until they are cleared by *ASSIGN using the C-CLEAR option, or until the system is IPL'd. A maximum of 10 Global assignments per system may be in effect at one time.
- The LOCAL assign affects only the partition doing the assignment. These assignments remain intact until they are cleared by the C-CLEAR option, the partition gets a fatal BEST error, or the system is IPL'd. A maximum of 10 Local assignments per partition may be in effect at one time.

From READY:: enter

R *ASSIGN

The following prompt will be displayed:

```
ASSIGN UTILITY (*ASSIGNXX.XXMDDYY)
COPYRIGHT MDS QANTEL, INC. 1982
COMMAND FILE:
```

(For COMMAND FILE processing, Page C-005.)

A null entry will display the following prompt:

```
ASSIGN, CLEAR OR LIST LOGICAL NAMES
(A,C,L):
```

Enter A to assign, C to clear or L to list the logical assignments.

(A null entry will return to the COMMAND FILE: prompt.)

A - ASSIGN

If option A is chosen, the following prompt will be displayed:

GLOBAL OR LOCAL (G/L):

Enter G to maintain the Global Assign Table.
Enter L to maintain the Local Assign Table.
A null response will return to the (A,C,L): prompt.

If G was entered, the following prompt will be displayed:

PASSWORD (NOT REQUIRED FOR LOCAL ASSIGNS):

Enter the password to allow Global commands. Once correctly entered, a password will not be required for additional Global commands.

ASSIGN LOGICAL NAME (THREE CHARACTERS):

Enter the new name that will be used to reference a printer or spool e.g., PTR.

TO DEVICE:

Enter the name of the printer or spool (as CFIG'd) that will actually be used e.g. LP1.

ENTER MACHINE ID (M00-M15, OR BLANK FOR THIS MACHINE):

Enter the machine number of the machine on which the printer is configured in the range M00 to M15.

A NULL response will default to the local machine number.

The following message will then be displayed:

LOGICAL NAME : LLL IS ASSIGNED TO PPP ON SYSTEM MXX

The program will return to the Options Prompt.

C - CLEAR

If C was entered at the options prompt, the following prompt will be displayed:

GLOBAL OR LOCAL (G/L):

Enter G to clear Global Assignments.

Enter L to clear Local Assignments.

A null response will return to the (A,C,L): prompt.

If G was entered, the following prompt will be displayed:

PASSWORD (NOT REQUIRED FOR LOCAL ASSIGNS):

Enter the password to allow Global commands. Once correctly entered, a password will not be required for additional Global commands.

ENTER LOGICAL NAME TO CLEAR OR "TAB" TO CLEAR TABLE:

Enter the 3-character LOGICAL name that is to be cleared, or TAB to clear the entire table.

PERFORM CLEAR NOW? (Y/NO)

To continue the Clear operation enter a Y. Enter N or TAB to abort the Clear operation.

Once the Clear operation is complete, the following message will be displayed:

LOGICAL NAME: XXX DELETED or
LOGICAL NAME TABLE CLEARED.

The program will then return to the Options Prompt.

L - LIST

If L for List was chosen, the following prompts will be displayed:

GLOBAL OR LOCAL (G/L):

Enter G to list the Global Assign Table.
Enter L to list the Local Assign Table.
A null response will return to the Options prompt.

LISTING DEVICE (TXX):

Enter the device name of the desired listing device, e.g. LP5.
The default Listing Device is the user's terminal.

The following is a sample listing of a Local Assign Table generated by the List command:

*ASSIGN (LOGICAL NAME ASSIGNMENT UTILITY)

LOGICAL NAME TABLE FOR PARTITION: P02

LOGICAL NAME: PTR IS ASSIGNED TO LP1 ON SYSTEM M01
LOGICAL NAME: SPL IS ASSIGNED TO LP2 ON SYSTEM M02
LOGICAL NAME: LP3 IS ASSIGNED TO SPL ON SYSTEM M03

LIST COMPLETE.

The program will return to the Options Prompt.

Memory dump procedures

The following procedure can be used to dump the first 96K of memory to magnetic tape. Use this procedure only if requested by a QANTEL representative, otherwise use the normal system dump procedure.

1. Press the IPL button and make sure that a tape (with a write ring) is on-line on the the tape drive addressed \$08.

2. Enter 4000F20000B80000A8

Press TRANSMIT. A 16K record will be written to tape and the CPU Stop light will be on. Press the IPL button.

3. Enter 4000F24000B80000A8

Press TRANSMIT. A 16K record will be written to tape and the CPU Stop light will be on. Press the IPL button.

4. Enter 0000AD4000F24000B80000A8

Press TRANSMIT. A 16K record will be written to tape and the CPU Stop light will be on. Press the IPL button.

5. Enter 0000AE4000F24000B80000A8

Press TRANSMIT. A 16K record will be written to tape and the CPU Stop light will be on. Press the IPL button.

6. Enter 0011820014824000F24000B80000A8410000612000

Press TRANSMIT. A 16K record will be written to tape and the CPU Stop light will be on. Press the IPL button.

7. Enter 0011820014824000F24000B80000A8414000616000

Press TRANSMIT. A 16K record will be written to tape and the CPU Stop light will be on. Press the IPL button.

Rewind and save the tape. Immediately continue with the normal procedure (i.e., enter 8687A7) to dump configured memory to the printer.

```

!      S A M P L E   C F I G   C O M M A N D   F I L E
!
SYSTEM=256K,40,8,12      ! 256K Memory, 40AFLs, 8 EXTRACTs,
!                          12 2K Partition Extentions.
TERMINAL=000,4,P00       ! T00
!
TERMINAL=010,4,P01      ! T01
!
TERMINAL=020,4,P02      ! T02
!
PARTITION=2K,1,2        ! P00 & P01 SIZE= 2K PRIORITY 1
!
PARTITION=30K,1         ! P02 SIZE=30K PRIORITY 1
!
PARTITION=2K,9          ! P03 SIZE= 2K PRIORITY 9 Background
!
DISC=0D,H               ! SYSTEM DISC
!
DISC=0C,F               ! FLOPPY DISC
!
PRINTER=F,N,N           ! LP1 Non-Standard, Non-Spool
!
PRINTER=E,S,D,SPL      ! LP2 with Default Spooling
!
CLOCK=7                 ! SYSTEM CLOCK
!
TAPE=9,2                ! MAGTAPE Read after Write
!
SPOOL=ABC,SPL           ! SPOOL DEVICE
!
SPECIAL DEVICE=COM,6,I  ! COMMUNICATIONS CONTROLLER
!
NETWORK=01,50           ! BEST/NET w/50 surrogate partitions
!
MESSAGE=System          ! IPL message.

```

The keyword must start in the first character position of the Command record and must end with an equal sign. Only the first three characters of the keyword are required.

Note: The "Message" command terminates the configuration and therefor must be the last command in the file.

★MESSAGE

The Utility *MESSAGE provides the ability to display a message on the control line on a Model 4031 terminal. The message can be sent from one terminal to another, to selected terminals only (in Command Mode) or to all terminals on the System.

From READY:: enter

R *MESSAGE

The following prompts will be displayed:

MESSAGE PASSING UTILITY (*MESSAGEXX.XXXXXXXX)
COPYRIGHT MDS QANTEL INC. 1982
COMMAND FILE:

Enter the name of the Command File.
(A null entry will proceed to the SEND TO prompt below.)

DIRECTORY NAME:

Enter the name of the directory where the Command File is to be located. If the directory or Command File specified is not found, the Utility will return to the COMMAND FILE prompt.
(A null entry will return to the COMMAND FILE prompt.)

The Command File will be read and the message or messages will be sent to the designated terminals. The Utility will execute the specified program in the RUN Command Line on completion of sending all messages.

SEND TO:

Enter the name of the terminal that the message is to be sent to.
Enter ALL if the message is to be sent to all the terminals on the System.
(A null entry will return to the COMMAND FILE prompt. A null entry at the COMMAND FILE prompt will exit the Utility.)

MESSAGE:

Enter the message (maximum 51 characters) to be sent.
Enter the DEL key if a blank message line is to be sent. This will clear the 27th line on the 'send to' terminal.
(A null entry will return to the SEND TO prompt.)

The name of the sending terminal and the message will be displayed on the 'send to' terminal. If the message cannot be displayed on certain terminals (those not on-line or not Model 4031 terminals), the MESSAGE NOT SENT TO TXX message will be displayed.

On completion of sending the message the Utility will return to the SEND TO prompt.

★CONSOLE

The Utility *CONSOLE allows any terminal to ACTIVATE and TERMINATE partitions, LOG the current activity of all partitions, request detailed INFORMATION on a specific partition, check the current STATUS of all controllers configured in the System, display the list of DIRECTORIES accessible by the user running *CONSOLE, request the status of any configured DEVICE, display the status of any accessible FILE, and check the current NETWORK status of any configured partition.

From READY:: enter

R *CONSOLE

The following prompt will be displayed:

```
SYSTEM ACTIVITY MONITOR (*CONSOLEXX.XXXXXXXXXX)
COPYRIGHT MDS QANTEL, Inc. 1982
```

(A,T,L,I,S,D,DS,N,F)::

The program will then accept any of the nine command words (or any initial, nonconflicting segment of a command word) displayed in parentheses. A null entry will return to READY::. Any other entry will cause the following list of options to be displayed:

A	- ACTIVATE	PARTITION,PROGRAM,DISC,'MESSAGE'
T	- TERMINATE	PARTITION
L	- LOG	(ALL PARTITIONS)
I	- INFORMATION	PARTITION
S	- STATUS	(ALL DEVICES)
D	- DIRECTORIES	(THIS PARTITION)
DS	- DSTAT	DEVICE
N	- NSTATUS	PARTITION
F	- FSTATUS	FILENAME,DISC

Notice that this list shows the correct form for each command available in *CONSOLE. This is a useful "help" function for program operators.

***CONSOLE**

- Terminate Option:- Override ESCAPETO when terminating Background partition
e.g. T P20,0

- Terminate Foreground option, password protected.
May also be used with Override option

e.g. T P01,0,F $\left(\% \uparrow \uparrow \% \right)$ (Override ESCAPETO)

T P01,,F or T P01,N,F (no Override ESCAPETO)

STATUS

The STATUS command displays the status of all device controllers currently connected to the system, in the form:

```
DEVICE # x -- STATUS : yy
```

where x is the number of the device controller, and yy is the current STATUS of the controller.

DIRECTORIES

The DIRECTORIES command displays the names of the directories (listed in the Directory Access Blocks (DAB's)) accessible by the user. There is a maximum of 10 directories per user that may be ACCESSEd at one time. The display format is:

```
DIRECTORIES:  
(00) - 'DSK' ON 'YYY'  
(01) - 'REM' ON 'YYY'  
(02) - 'XXX' ON 'YYY'  
(03) - 'ABC' ON 'QQQ' MACHINE 'M01'
```

where DSK, REM and XXX are directories on disc YYY of the "local" computer, and ABC is a directory on disc QQQ of the "remote" computer M01.

DSTAT device

device is the name of a configured system device (e.g. terminal, printer, disc) upon which a device status (DSTAT) function is to be performed and reported.

For example: DS LP1

The DSTAT command displays up to seven lines of status information for any configured device as follows:

DEVICE STATUS FOR: 3-character device name
DEVICE NUMBER: device address (hex)
OWNING PARTITION: partition using device (if any)

SPOOL OPTION: spool option code for printer (from CFG)
(or)
DISC LABEL: 3-character disc label
(or)
(blank display line)

STATUS 0: status 0 for device (hex)
STATUS 2: status 2 for device (hex)
SYSTEM STATUS: DEVICE IS message

where: spool option code for printer (from CFG) is:

N for Non-spooling printers
D for Default spooling
A for Automatic spooling
E for Exception spooling

DEVICE IS message is:

AVAILABLE

if the device is currently available for use

UNAVAILABLE

if the device is currently unavailable for use

INOPERATIVE

if the device is currently inoperative

IN USE BY THIS PARTITION

if the device is being used by the partition running *CONSOLE (e.g., the terminal).

NSTAT partition

partition is the name of a configured partition upon which a network status (NSTAT) function is to be performed and reported.

For example: N P02

The NSTAT command displays the following information:

NETWORK STATUS FOR PARTITION:	partition name
LOCAL MACHINE NUMBER:	xx
IOU44 BACKPLANE ADDRESS:	xx (decimal)
LAST MACHINE ACCESSED:	xx
LAST REMOTE MACHINE ACCESSED:	xx
LAST REMOTE MACHINE ACCESSED WITH ERROR:	xx
LAST REMOTE BEST ERROR:	xx
LAST NETWORK ERROR:	xx

where: LOCAL MACHINE NUMBER, LAST MACHINE ACCESSED, LAST REMOTE MACHINE ACCESSED, and LAST REMOTE MACHINE ACCESSED WITH ERROR all report the numeric segment of network computers (e.g., network computer 'M01' would be displayed as '01').

IOU44 BACKPLANE ADDRESS is the decimal device address of the BEST/NET network controller.

LAST REMOTE BEST ERROR is the most recent system error encountered by this partition on a remote computer (from *ERRFILE; where 'Err' is the key to the file containing system error messages).

LAST NETWORK ERROR is the most recent network error encountered by this partition on a remote computer (from *ERRFILE; where 'Nxx' is the key to the file containing system error messages).

FSTAT filename,disc

filename is the name of a program or data file upon which a file status (FSTAT) function is to be performed and reported.

disc (optional) is the directory name where the file/program is located.

For example: F *MONITOR,DSK

The FSTAT command displays up to eight lines of file status information in the following format:

```
STATUS FOR:      filename, directory
CREATE DATE:     MMDDYY
UPDATE DATE:     MMDDYY
OPEN COUNT:      xxx
FILE TYPE:       file-type-code
RECORD SIZE:     xxx
AU COUNT:        xxx

KEY SIZE:        xx          (for keyed files)
  (or)
FILL CHARACTER:  xx          (for contiguous files)
  (or)
FILE LENGTH:     xxxxx       (for standalone files)
  (or)
(blank display line)      (for object or sequential files)
```

where: file-type-code is:

```
  O for object files
  S for standalone files
  K for keyed files
  D for sequential files
  C for contiguous files
```

☆DRMAINT

The Utility *DRMAINT provides the implementation and maintenance of the Multiple Directory feature in BEST 20X and 40X Operating Systems. The program can CREATE new directories, ERASE existing directories (and all files contained therein), print or display a LIST of all directories on a specified disc, RENAME a specific directory (or disc), and UPDATE the public/private status of a local directory.

A DIRECTORY is a logical subsection of a disc. It is used to segregate data files and programs contained on a single physical disc (for organization and/or security purposes). There is a maximum of 50 directories per disc (and only 1 per diskette). There is no limit to the size of a single directory other than the physical limits of the disc. In other words, a directory can use any amount of disc space from a minimum of 10 sectors to the entire disc (minus the space allocated to the operating system). Disc space is allocated to directories on a first come, first served basis.

A directory name is a 3-character label given to each directory. The name can be composed of letters, numbers, or special symbols. It should NOT be the same as a configured device name. Duplicate directory names may exist on different discs (and on different computers in a BEST/NET network).

NOTE: It is not recommended to duplicate directory names in any system.

The first directory of a disc is automatically given the same name as the disc label. All other directories are named when they are CREATED using Option 1, or RENAMED using Option 4 of the Utility *DRMAINT.

A local directory is one that is located on a disc of a local computer system (which is part of a BEST/NET network), while a remote directory is one that is located on a disc of a remote system.

A public directory is one that is accessible (via access procedures described below) from any computer in a BEST/NET network. A private directory is one that may only be accessed from the local computer (e.g., NOT from any remote system in a BEST/NET network).

Each user may access up to 10 different directories at one time. The directories may be local or remote and public. Access to a remote and private directory is not allowed. Each accessed directory is assigned a Directory Access Block (DAB) reference number in the range 0 to 9. This number sets a search priority for the operating system (e.g., if a directory name is not specified by a program or user, the operating system will search all of the accessed directories in DAB order, from 0 through 9, looking for a specific file).

5-UPDATE

Allows the public/private status of a local, accessed directory to be changed. UPDATE may NOT be performed on remote or un-accessed directories.

DISC LABEL:

Enter the disc label where the directory is located. A null entry will return to the options menu.

DIRECTORY NAME:

Enter the name of the directory for which the public/private status is to be changed. A null entry will return to the DISC LABEL: prompt.

If the directory is public, the following prompt will be displayed:

DIRECTORY IS PUBLIC.
CHANGE TO PRIVATE? (Y/NO):

If the directory is private, the following prompt will be displayed:

DIRECTORY IS PRIVATE.
CHANGE TO PUBLIC? (Y/NO):

In either case, a null entry will default to NO, the public/private status of the directory will remain unchanged, and the program will return to the DISC LABEL: prompt. An affirmative response will change the directory status, and display the other prompt, ad infinitum (or until a negative response is entered).

DIRECTORY MAINTENANCE UTILITY (*DRMAINT00.07042383) LISTED ON 09/13/83

DIRECTORY.	CREATE DATE	UPDATE DATE	AU COUNT	
DSK	08/23/83	09/13/83	0005	(ACCESS)
DK1	08/23/83	08/23/83	0002	
DON	08/23/83	08/23/83	0002	
* JOE	09/13/83	09/13/83	0002	(ACCESS)
* TST	09/13/83	09/13/83	0002	
FUN	09/13/83	09/13/83	0002	(ACCESS)
* S/A	09/13/83	09/13/83	0002	

LIST COMPLETE.

XØ4 / XØ5

*Secure

ENTER USER'S NAME

Enter the name or identification of the user of this password. This field is only used for documenting purposes.

The screen will be cleared and the following format will be displayed:

ENTER DIRECTORY NAME AND DISC LABEL OF UP TO 10
DIRECTORIES TO BE ACCESSED BY THIS USER:

DIR DSK	DIR DSK	DIR DSK	DIR DSK	DIR DSK
1	2	3	4	5
DSK DSK	XXX DSK	YYY DSK	REM REM	ZZZ REM
6	7	8	9	10
WXY REM	\$\$\$ REM	### REM	FIX REM	END DSK

DSK and REM are disc labels. DSK, XXX, YYY, REM, ZZZ, WXY, \$\$\$, ###, FIX and END are directory names.

Enter the directory name and the disc label where the directory is located for each directory that is accessible by this password.
Press TAB to move from field to field.

X07/X08

ENTER USER'S NAME:

. Enter the name or identification of the password user. This field is used only for documentation purposes.

The following format will be displayed:

ENTER DIRECTORY NAME, DISC LABEL AND MACHINE ID OF UP TO 10 DIRECTORIES TO BE ACCESSED BY THIS USER:

DIR	DSK	MID	DIR	DSK	MID	DIR	DSK	MID	DIR	DSK	MID
0			1			2					
3			4			5					
6			7			8			9		

Enter the directory name, the disc label, and the machine number where the directory is located for each directory that is accessible by this password. Leaving MID (machine number) blank defaults to the local system. Press TAB to move from field to field.

DIR	DSK	MID	DIR	DSK	MID	DIR	DSK	MID	DIR	DSK	MID
0	DSK	DSK	1	XXX	DSK	2	YYY	DSK			
3	REM	REM	4	ZZZ	REM	5	WXY	DSK			
6	FIX	FIX	7	###	FIX	8	END	DSK	9	END	DSK

DSK, XXX, YYY, REM, ZZZ, WXY, ###, FIX, and END are directory names. DSK, REM, and FIX are disc labels. MOO, M01, and M02 are machine numbers.

NOTE:-- MID MUST BE BLANK if BEST/NET is not configured.

problem areas

1. An aborted contiguous file create can cause file damage. The contiguous file will appear as a sequential file and the bit map will not be updated, so the next disc allocation could cross files.

To avoid this condition, the user should not attempt to ESCAPE (F3) out of the programs that support creation of contiguous files (re: **COPY, *CREATE, *FILTRAN, *RELEASE, and *TAPE).

Should a situation arise where an ESCAPE has been attempted during execution of one of these programs, or a power failure, accidental IPL, or system hang has occurred, *FILCHEK should be executed to validate the status of the file structures. If any errors are reported, they should be corrected before resuming normal operations.

Recent software quality assurance testing discovered that this problem exists in all BEST XOX systems. It is imperative that customers/users be informed of this situation and the potential file integrity problems that could result.

To ask questions or to get aid in correcting this situation, call QANTEL Systems/Communications Support (HOTLINE 415/783-3934).

2. Under certain circumstances, the spooler may spool into itself.

For example, if a printer is configured as an "exception spool printer" and is off-line to a user printing to it, a spool job file will be created. If the printer is turned on-line, then opened, printed to, and closed by a second user, and if the spooler is running in "forever mode" in background, the spool job file created by the first user may be written into a second spool job file instead of being printed on the printer.

3. The system may hang or report an exception 99 on a disc full condition. If this occurs, the user should perform a system memory dump, execute *FILCHEK, and report the problem to QANTEL Systems/Communications Support.

TO ALL DISTRIBUTORS AND SALES REPRESENTATIVES
FROM MARKETING TECHNICAL SUPPORT
REF SOFTWARE ALERT - W016 103183

- 1) UNDER SOME CONFIGURATIONS THE X07-3 *QIC COMPILER WILL REPORT "INSUFFICIENT MEMORY AVAILABLE". THE COMPILER REQUIRES EITHER A 30K CONFIGURED PARTITION OR A MINIMUM OF 16K INVOLVING AT LEAST ONE 2K PARTITION EXTENSION.

TO PREVENT THIS CONDITION IN 207-3 INSTALLATIONS, YOU MAY EITHER CONFIGURE A PARTITION WITH 30K OF USER MEMORY AND ALWAYS USE THIS PARTITION FOR COMPILATION OR CONFIGURE THE FIVE 2K PARTITION EXTENSIONS ALLOWED BY 207-3 AND CONFIGURE THE PARTITION TO AT LEAST 6K. CONFIGURED PARTITIONS OF 16K THRU 28K WILL CAUSE THE "INSUFFICIENT MEMORY AVAILABLE" CONDITION IF THE FIVE 2K PARTITION EXTENSIONS ARE NOT CONFIGURED.

TO PREVENT THIS IN 407-3 INSTALLATIONS, CONFIGURE AT LEAST ENOUGH PARTITION EXTENSIONS TO BE ABLE TO ACQUIRE A MINIMUM OF 16K OF USER MEMORY INVOLVING AT LEAST ONE 2K EXTENSION OR CONFIGURE THE PARTITION TO HAVE 30K. CONFIGURED PARTITIONS OF 16K THRU 28K WILL CAUSE THE "INSUFFICIENT MEMORY AVAILABLE" CONDITION IF NO PARTITION EXTENSIONS ARE CONFIGURED.

- 2) *KEYBILD AS RELEASED IN X07-3 WILL NOT REBUILD EITHER FILES OR DIRECTORIES. IT WILL LEAVE THE OUTPUT WORK FILE CREATED BUT EMPTY. YOU MUST USE *KEYBILD FROM THE 408-1.00 RELEASE IF YOU WISH TO REBUILD EITHER A FILE OR DIRECTORY. USE *TAPE TO LOAD *KEYBILD AND *KEYBILD FROM THE 408-1.00 RELEASE TAPE, THEN USE *TAPE TO MAKE A COPY OF THEM TO TAKE TO ALL OTHER INSTALLATIONS.
- 3) PLEASE REMEMBER IF YOU HAVE A SYSTEM 10 OR SYSTEM 20 MINI WITH LESS THAN 128K YOU WILL NOT BE ABLE TO RELEASE 407-3. 207-3 IS INTENDED FOR THIS PURPOSE.
- 4) PLEASE REMEMBER THAT THE READ STATUS 2 SWITCHES AT THE UPPER LEFT CORNER OF THE IOU 38B CONTROLLER MUST BE SET TO "BB" FOR THE RELEASE PROCESS FROM A DISKETTE TO A HARD DISC, AND FOR *DBACKUP OF HARD DISC TO DISKETTE.
- 5) FOR THE SYSTEM 22, THE CORE-IMAGE DISKETTE, "SYS", REQUIRES THE FOLLOWING PATCH TO ENABLE 207-3:
I PATCH
P CF
SH 1006,32
(XMIT)
(XMIT)
I CFG

NOW RECONFIGURE YOUR SYSTEM TO MATCH YOUR HARDWARE CONFIGURATION. NOTE: THE RECONFIGURATION STEP IS MANDATORY REGARDLESS OF YOUR CURRENT CONFIGURATION.

ANY QUESTIONS SHOULD BE DIRECTED TO MARKETING TECHNICAL SUPPORT.

-
4. In the Utility, *MAINTC, a blank entry for the index value under options "R" or "I" will "lock up" the program. To continue, the user must ESCAPE (F3/TRANSMIT) and return to *MONITOR.
 5. In the Utility, *FIXFIL, entering only the first character of a directory name will allow maintenance on the first directory encountered with the same matching first character. Doing this twice in a row without exiting the program will change the directory name to the single character. If the directory matched happens to be the primary directory, only the directory name (and not the disc label) will be changed, resulting in a serious problem.
 6. The QICBASIC compiler, *QIC, now requires a minimum of 18K to execute. Programs with large symbol tables that would compile successfully under BEST X05 may not compile successfully under BEST X07. For these situations, the programs may have to be divided into smaller overlays, or the number of symbols (labels, variable names, etc.) may have to be reduced.

TO ALL DISTRIBUTORS AND SALES REPRESENTATIVES
FROM MARKETING TECHNICAL SUPPORT
REF SOFTWARE ALERT - W016 103183

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TO PREVENT THIS IN 407-3 INSTALLATIONS, CONFIGURE AT LEAST ENOUGH PARTITION EXTENSIONS TO BE ABLE TO ACQUIRE A MINIMUM OF 16K OF USER MEMORY INVOLVING AT LEAST ONE 2K EXTENSION OR CONFIGURE THE PARTITION TO HAVE 30K. CONFIGURED PARTITIONS OF 16K THRU 28K WILL CAUSE THE "INSUFFICIENT MEMORY AVAILABLE" CONDITION IF NO PARTITION EXTENSIONS ARE CONFIGURED.

- 2) *KEYBILD AS RELEASED IN X07-3 WILL NOT REBUILD EITHER FILES OR DIRECTORIES. IT WILL LEAVE THE OUTPUT WORK FILE CREATED BUT EMPTY. YOU MUST USE *KEYBILD FROM THE 408-1.00 RELEASE IF YOU WISH TO REBUILD EITHER A FILE OR DIRECTORY. USE *TAPE TO LOAD *KEYBILD AND *KEYBILD FROM THE 408-1.00 RELEASE TAPE, THEN USE *TAPE TO MAKE A COPY OF THEM TO TAKE TO ALL OTHER INSTALLATIONS.
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SH 1006,32
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(XMIT)
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ANY QUESTIONS SHOULD BE DIRECTED TO MARKETING TECHNICAL SUPPORT.

TO ALL DISTRIBUTORS AND SALES REPRESENTATIVES
FROM MARKETING TECHNICAL SUPPORT
REF SOFTWARE ALERT - W017 120683

- 1) Under X07-3, a system hang could occur if a BEST ERROR 86 (AFL OVERFLOW) is encountered. Please install the following patch at all X07-3 accounts to prevent this problem:

```
I   PATCH
P   B
SH  4E2D,7CB7A7
SH  7CB7,0246F04E8262
SH  7CBD,0242F0039F61
SH  7CC3,4E33A7
SH  75B1,7CC6A7
SH  7CC6,6C3AA9
SH  7CC9,028EF0039F62
SH  7CCF,75B4A7
(XMIT)
(XMIT)
```

This condition can also occur under 408-1.00. To prevent the problem in these accounts, upgrade them to 408-1.03.

- 2) Do not attempt to use the command file capability of *TAPE in either 408-1.00 or 408-1.03. It will be supported in the next release of BEST.
- 3) Please do not configure spool printers with names like SP1, SP2, etc. These names are reserved for spools associated with particular printers, i.e., LP1/SP1, LP2/SP2, etc. Such incorrect configurations may cause system hangs.

KNOWN PROBLEM AREAS

1. *FILCHEK should be run on the entire disc, not on a range of files. If the range of files path is taken, an empty directory can generate erroneous output from the program.

2. Under certain circumstances, the spooler may spool into itself.

For example, if a printer configured as an exception spool printer is off-line to a user printing to it, a spool job file will be created. If the printer is turned on, then opened, printed to, and closed by a second user, and if the spooler is running in forever mode in background, the spool job file created by the first user may be written into a second spool job file, instead of being printed on the printer.

3. In the utility *FIXFIL, entering only the first character of a directory will allow maintenance on the first directory encountered with the same matching first character. Doing this procedure twice in a row without exiting the program, however, will change the directory name to the single character. If the directory matched happens to be the primary directory, only the directory name (and not the disc label) will be changed, resulting in a serious problem.

4. *DISC -- The CHECK ALTERNATE SECTORS prompt reports erroneously (IOU 52). The CHECK ALL SECTORS option should be used with these discs. Either option will work with an IOU 42 disc controller. This program should not be used with an IOU 32 disc controller (see below).

*DISC32 -- Replaces *DISC on 25 or 70MB discs that use the IOU 32 disc controller.

5. For object and stand-alone files, *CATALOG displays a record size of 0.
6. Taking the streaming tape drive off-line during *BACKUP may hang the program.

date: February 1984
number: SA-084
re: BEST 408-1.11 Update

☆☆ BACKUP FULLY IMPLEMENTED

This software announcement documents System Update 408-1.11 of the BEST[®] operating system. A single tape is included with this announcement, the BEST 408-1.11 update tape.

This update tape must be loaded only to an existing 408-1.xx system. Users installing BEST 408 for the first time must release the BEST 408-1.00 tape (refer to Software Announcement 080) before loading the BEST 408-1.11 update tape. See Section A of this document for update information.

A note for new installations: The advanced operating system, BEST/AOS™ (408), requires a password. For new installations that will be using BEST 408, a password must be obtained from Order Entry, MDS Qantel, Hayward, CA. Telephone: (415) 887-7777 x2235 or x2236.

Please have ready the following information: system number, customer number, CPU type, and CPU serial number. On the System 64, use the serial number of the CPU board without any connectors. (This is the ALU board.)

Note: the QANTEL/COBOL software option is licensed and passworded separately from the operating system and requires a signed Software Program License Agreement I.

For installations running BEST 405-1 or later: The password will remain the same; re-entry is not required after releasing BEST 408-1.00.

BEST 408-1.11 is for use only on certain configurations. It has been tested on and support will be provided for the following:

● Processors	Q29, Q30, Q64
● Terminals	CRTII, VT3, VT4
● Printers	Current product line only
● Discs	6+6 MB (IOU-24) 30 MB (IOU-24) 20/40 MB (IOU-42/52) 25/70 MB (IOU-42/52) 75/150 MB (IOU-42/52) 400 MB (IOU-54; System 64 only)
● Magnetic tapes	1/2-in. reel-to-reel 1/4-in. cartridge 1/2-in. streamer (System 64 only)
● Network	BEST/NET (IOU-44)
● Software options	QANTEL/COBOL

No IOU32
DISCS

Testing of other configurations and other features such as IPC is currently under way, and BEST 408-1.xx will be released for such configurations when testing is successfully completed.

The QANTEL/COBOL Language Reference Manual will be provided shortly under separate cover.

This Software Announcement is distributed by MDS Qantel to all QANTEL Distributors. It is imperative that important updates and known problems be communicated to customers/users. Extra copies of this announcement are available from MDS Qantel, Order Entry, Hayward, CA.

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NEW OPERATING SYSTEM NUMBERING AND RELEASES

The BEST 408-1.00 release introduces the expanded numbering system for releases. This larger (or longer) numbering scheme provides for system updates, in addition to the standard full releases. Operating system releases are identified as follows:

Operating system
numbering format

4XX-Y.nn

where:

4 = BEST/AOS

XX = feature level of the system

Y = the current full release number

nn = the current update number

The current release
used as an example

408-1.11
 | | | | |
 | | | | |
 4 | | | | |
 | | | | |
 08 | | | | |
 - | | | | |
 | | | | |
 1 | | | | |
 . | | | | |
 | | | | |
 11

Thus, the current release, 408-1.11, represents BEST/AOS at feature level 08, the first release, and update level 11. (More colloquially, 408-1.00 is the first full field release of BEST/AOS that incorporates features beyond level 407.)

When enhancements or corrections are made to BEST 408, they will be distributed via update tapes, which are identified by a larger-than-zero "point" number. The full release tape plus the highest numbered update tape represents the latest system level, (i.e., BEST 408-1.11).

Update tapes include only items that have been changed since the associated full release. This new procedure allows enhancements or corrections to be distributed in a more timely manner. An update tape will also take less time to install than a full release.

An added advantage is that installation is made simpler and quicker, because the update procedure is automated and requires minimal operator intervention.

A detailed description of the update procedure begins on the next page.

SYSTEM UPDATE PROCEDURES

WARNING: The following procedures describe how to install a system update, in this case BEST 408-1.11. These procedures assume that a full release at this level (i.e., BEST 408-1.00) has already taken place. DO NOT CONTINUE UNTIL THE FULL RELEASE HAS BEEN VERIFIED. Also, refer to Software Announcement 080 for complete information on BEST 408-1.00. If you are running an updated version of 408 (i.e., 408-1.03), the .11 update may be put down directly on top of it.

The following procedures should be used to transfer programs from the update tape to disc. The update process sets single-user mode. Therefore, at least 30K of user memory (e.g., configured partitions plus partition extensions) must be configured.

1. Ensure a current backup is on hand.
2. Ensure that *FILCHEK has been executed, checking all discs. (If any problems are reported, make the corrections and then backup the corrected disc.)
3. Ensure that no users are active on the system.
4. Mount the update tape.
5. Press the IPL button.
6. Determine the address of the tape controller. Enter 00030x, where x is the address of the tape controller.
7. Press TRANSMIT. The following prompt will appear:

DATE (MMDDYY):
8. Using the MMDDYY format, enter the current date (e.g., 030184). Press TRANSMIT. (Note: if exactly six numbers are not entered, the prompt will be repeated.)
9. The following loader message will be displayed:

REL 408-1.## mmdyy

The numeric field "##" indicates the current level of the update tape.
10. Enter *UPDATE and press TRANSMIT. The following prompt will appear:

ENTER OUTPUT DISC #:

11. Determine the device number of the disc and the address of the disc controller. Enter the hexadecimal disc address in the form NX, where N is the device number of the disc on the controller and X is the address of the disc controller. For example, if the disc is device 0 on the controller with the address D, enter OD.
(A null entry will exit the utility, the tape will rewind to the load point, and the DATE (MMDDYY): prompt will be displayed.)
12. The update will proceed to copy files from the tape to the specified disc. The system configuration will NOT be altered during the update process (as it is during a full release). Note: Other users should not log on to the system during the update process.

When the last file has been copied to the disc (i.e., #PATCHES), the PATCH program will be executed. The command file "#PATCHES" will be used to apply all patches to various core-image programs. After all patches have been applied, the program will instruct the user to press TRANSMIT to load the configuration utility CFG. CFG should always be executed following a system update. The user should choose option C (to configure), answer YES to the RETAIN ALL DEVICES prompt, then exit CFG to the system loader message and BEST.

*** WARNING ***

TO ALL BEST 408 USERS

Operating systems are the most complex software that computers use. If for any reason it is deemed necessary to re-install an earlier version of the BEST operating system, contact MDS Qantel, Corporate Technical Support, Hayward, CA for guidance. Because data could be destroyed if incorrect procedures are used, do NOT under any circumstances attempt to release independently a pre-408 level of BEST to an existing BEST 408 system.

x05 and

X07 DISC LAYOUT

SYSTEM DISC

- 0 -DISC LOADER
- 1-3 -COREIMAGE LOADER
- 4 -COREIMAGE DIRECTORY
- 5 -~~9~~ -DDR & DDR'S -up to 50 Directories
- 10-19 -AU BIT MAP
- 20-39 -UNUSED (RESERVED) (UNSPECIFIED)
- 40-999 -COREIMAGE FILES
- 1000 -~~1~~ -FIRST DIRECTORY SECTORS

DATA DISK

- DISC LOADER
- COREIMAGE LOADER
- COREIMAGE DIRECTORY
- DDR & DDR'S
- AU BIT MAP
- SELECTED COREIMAGE FILES
- 40 - -FIRST DIRECTORY SECTORS

X08 DISC LAYOUT (400MB EAGLE)

SYSTEM DISC

- 0 -DISC LOADER
- 1-3 -COREIMAGE LOADER
- 4 -COREIMAGE DIRECTORY
- 5-14 -DDR & DDR'S - up to 100 directories
- 15-29 -AU BIT MAP - up to 768MB
- 30-39 -UNUSED (RESERVED) (UNSPECIFIED)
- 40-999 -COREIMAGE FILES
- 1000-↑ -FIRST DIRECTORY SECTORS

DATA DISC

- DISC LOADER
- COREIMAGE LOADER
- COREIMAGE DIRECTORY
- DDR & DDR'S
- 15-29 -AU BIT MAP
- UNUSED (RESERVED) (UNSPECIFIED)
- FIRST DIRECTORY SECTORS

*Eagles may not
be Data discs*

DISC INITIALIZATION UTILITY (DKIN06.05081583)
COPYRIGHT MDS QANTEL, INC. 1983.

- 1 - EXAMINE DISC LABEL
- 2 - SET DISC LABEL ONLY
- 3 - INITIALIZE DISC
- 4 - CONVERT DISC
- 5 - CLEAR ERROR COUNT
- 6 - REFORMAT BIT MAP

ENTER DESIRED ACTION (1;2;3;4;5;6):

DKIN 204

30

6+6

3+3

25

50

75

10

20

40

DKIN X05-X07

3M

6M

10M

20M

25M

30M

40M

50M

70M

75M

150M

DKIN X08

3M

6M

10M

16M

18M - Marksman

22M

25M

30M

33M

36M - Marksman

40M

50M

70M

75M

150M

400M

Low 50
5 1/4" disc



DKIN

Option 6 - REFORMAT BIT MAP has been added to the core-image utility DKIN. The bit map must be reformatted (moved) prior to using Option 4 to accommodate discs larger than 150MB (i.e., 400MB) or to accommodate 100 directories per disc.

OPERATING PROCEDURES (Option 6)

From READY:: enter

I DKIN

The following prompt will be displayed:

DISC INITIALIZATION UTILITY (DKINnn.nmMMDDYY)
COPYRIGHT MDS QANTEL, INC. 1983.

- 1 - EXAMINE DISC LABEL
- 2 - SET DISC LABEL ONLY
- 3 - INITIALIZE DISC
- 4 - CONVERT DISC
- 5 - CLEAR ERROR COUNT
- 6 - REFORMAT BIT MAP

ENTER DESIRED ACTION (1,2,3,4,5,6):

Enter 6 to reformat (move) the bit map. The following prompt will be displayed:

**** BIT MAP CONVERSION ****
ENTER DISC ADDRESS (HEX):

Enter the hardware address of the disc (i.e., 0D).

If the conversion is to convert the bit map to sectors 25-49 and increase the number of directory entries available to 100, the following prompt will appear:

CONVERT TO EXTENDED DISC FORMAT CONTINUE (Y/NO)?

Enter Y to move the bit map.
Enter N to return to the options menu.
(A null entry will return to the options menu.)

If the conversion is to move the bit map to sectors 10-19 (this conversion will reduce the number of directory entries available to 50), the following prompt will appear:

CONVERT TO EARLY DISC FORMAT CONTINUE (Y/NO)?

Enter Y to move the bit map.
Enter N to return to the options menu.
(A null entry will return to the options menu.)

If Y was entered (to either prompt above), the following prompt will be displayed:

CURRENT DISC SIZE IS:nnnM. CONTINUE (Y/NO)?

Enter Y to continue. The following prompt will be displayed.
Enter N to return to the options menu.
(A null entry will return to the options menu.)

SELECT DISC SIZE (nnnM): SIZES: 3M,6M,10M,16M,18M,22M,25M,30M,33M
36M,40M,50M,70M,75M,150M,400M

The value of (nnnM) is the actual hardware disc size. Enter the disc size in the format nnnM (e.g., 150M). The utility will move the bit map and return to the options menu. Press TRANSMIT to exit the utility.
(A null entry will return to the options menu.)

If the disc size specified does not correspond to the actual size of the disc (the "hardware type"), the following prompt will be displayed:

SPECIFIED DISC SIZE DOES NOT MATCH HARDWARE TYPE.
CONTINUE (Y/NO)

Enter Y to change the disc size. The utility will move the bit map and return to the options menu. Press TRANSMIT to exit the utility.
Enter N to return to the options menu.
(A null entry will return to the options menu.)

Note: If the current disc size is not the same as the actual (or hardware) disc size, after the hardware address of the disc is entered (the first action after selecting Option 6), the following warning message will be displayed before the CONVERT TO EARLY DISC FORMAT CONTINUE (Y/NO) prompt:

BIT MAP UTILITY MAY DESTROY CORE-IMAGE UTILITIES.

ERROR MESSAGES

THE AU BIT MAP OF THE CURRENT DISC TYPE HAS ALLOCATED
AU PAST THE SIZE OF THE REQUESTED DISC TYPE

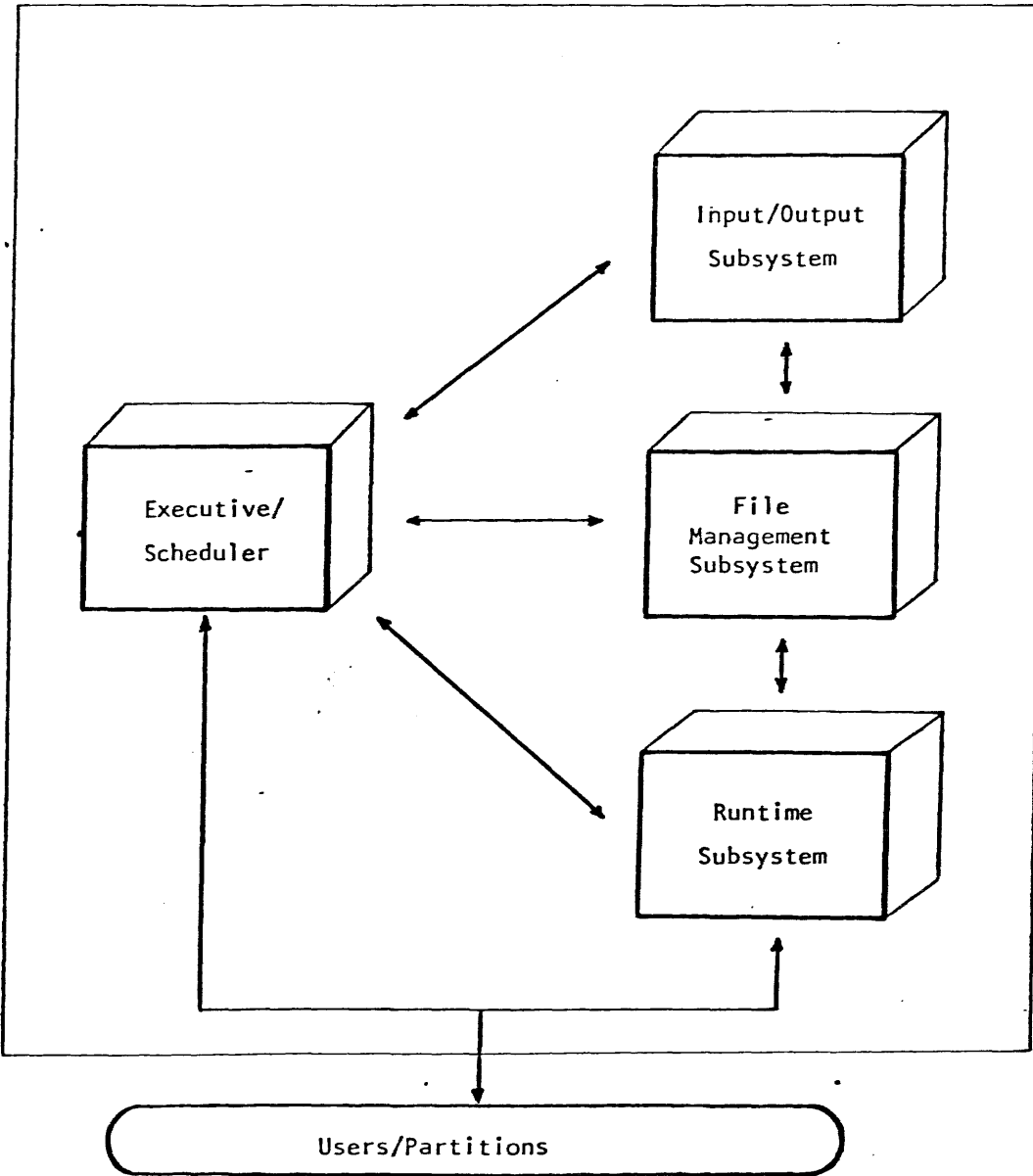
The bit map has been extended (used) past sector 29. The move will not be performed and the utility will return to the options menu.

DISC SIZE CONVERSION COMPLETED
--DISC FORMAT CONVERSION FAILED--

More than 50 directories are already allocated. The move will not be performed and the utility will return to the options menu.

Q

Elements of BEST



Executive/Scheduler
Subsystem:

The Executive and Scheduler provide the control and management of the major functions and operations of the overall system. The Scheduler is an element of the Executive.

The **Executive** portion of this Subsystem is responsible for handling the following functions:

- *Controlling the possession of the non-sharable devices in a system*
It allocates unused devices to requesting users.
- *Managing and performing the mapping of memory with the use of base registers*
It controls the currently active sections of RAM memory.
- *Handling and performing the functions required for error processing*
It processes 'escape' requests, errors, and exception conditions.

The **Scheduler** portion of this Subsystem performs all the task scheduling functions required for the concurrent processing of multiple programs. It controls the timesharing between partitions to ensure the most efficient use of the central processor. The Scheduler utilizes a 'Queue-Driven' method of servicing tasks.

The sharing of processor time is controlled with the use of *Task Breaks*. Task Breaks are performed during I/O processing and for certain operations performed during execution of application programs.

Queue-Driven Scheduling

The method for servicing tasks is controlled and performed by placing users in a queue appropriate for the task to be performed. The relative placement within the queues is governed by the partition's (user) Priority Level. The appropriate queues are the DISC (one for each disc), READY, PAUSE, and IDLE Queues.

The DISC Queue contains users currently waiting for the disc as well as the user currently owning the disc.

The READY Queue contains users that can execute (waiting for processor time) but are not waiting for a disc.

The PAUSE Queue contains users that have been suspended by the executing application program. This is accomplished by executing the PAUSE Statement in the application program. Users are placed in this queue in 'wake-up time' order and not by Priority Level order.

The IDLE Queue contains users waiting for operator input or not running at all. Although the term 'queue' is applied to this list of users, the queuing method is not actually used when scheduling these users.

On completion of I/O operations, the user is placed in the READY Queue, based on the user-priority level.

Priority Scheme

At system configuration time, each partition is assigned a Priority Level by the user. This Priority Level governs the partition's placement in a queue, with the exception of the PAUSE Queue as discussed above.

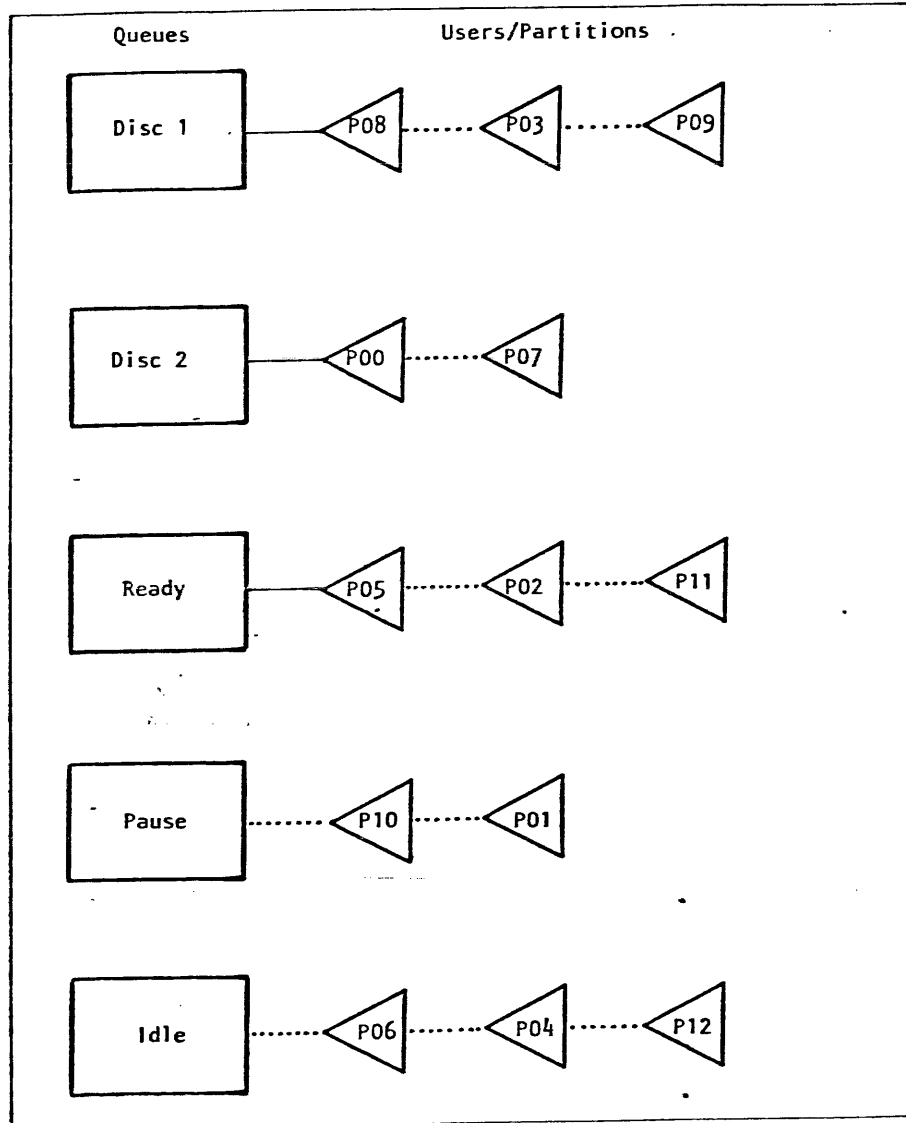
The Priority Level of a partition may be 1 through 9 inclusive. Priority Level 1 is the highest and Priority Level 9 is the lowest.

During the actual existence in the queue, the Priority Level is decremented so that all users in the queue will be serviced.

20%-35% faster
 Than old scheduling
 on other op.sys.

Interrupt Driven

Queue-Driven Scheduling



The following Priority Levels are assigned to partitions:

- | | | |
|---------|---------|----------------------|
| P00 - 1 | P06 - 2 | P11 - 8 (background) |
| P01 - 8 | P07 - 1 | P12 - 9 (background) |
| P02 - 4 | P08 - 2 | |
| P03 - 4 | P09 - 7 | |
| P04 - 3 | P10 - 6 | |
| P05 - 1 | | |

Handles Priority
 1-99

User Partitions

Each user on the system is defined as a 'partition'. A partition may be one of three types: Foreground, assigned to a terminal; Background, a free-standing amount of memory that can be activated by other users on the system; or a Surrogate partition, utilized only by systems with the BEST/NET feature implemented. When a program is executed in a partition, the entire program is loaded into the partition's assigned memory which eliminates the overhead of 'paging'.

For Foreground and Background partitions, a specific amount of memory is assigned for each partition during system configuration. The size of a user partition can vary from 0K to 30K and is dependent on the application programs of each individual system. The partition must accommodate the largest sized program that will be executed in it. BEST/AOS provides an additional feature of Dynamic Memory Allocation which eliminates the need for assigning 'maximum' partition sizes. Standard BEST supports a limited amount of Dynamic Memory Allocation.

Task Headers

The Task Header provides the means for the operating system to manage partitions. A Task Header exists for every partition. The Task Header contains all the information necessary for the execution of the job in that partition including details such as the next instruction address, the last exception detected, and the execution start address. The information in the Task Header is used to re-initiate a partition after it has been suspended.

Elements Determining Memory Requirements

Under the BEST Operating System, all attributes in a particular hardware system are defined prior to loading the operating system. These attributes are stored in the System Configuration Table (stored in the reserved sectors on a disc) and, upon loading the operating system, this table is used to map memory, establish system control tables, and load the required Drivers. Once the System Configuration Table is established, it need only be maintained when additional devices or features are implemented in the system.

COBOL

The COBOL language developed for the QANTEL business system supports the ANSI X3.23-1974 level 1 (plus some level 2) requirements including additional functions to execute with greater efficiency on the QANTEL system.

The COBOL Runtime Subsystem is a configurable feature of the BEST Operating System and is handled similar to a Driver at system start-up. When a COBOL object program is executed, the COBOL Runtime Subsystem is invoked and is treated as a user by the operating system. All file management and input/output functions are handled by the appropriate Subsystems of the BEST Operating System. The COBOL Runtime emulates a virtual COBOL machine for the user program.

In addition to standard COBOL, several functions have been incorporated for execution on QANTEL systems. These functions are referred to as 'QANTEL Extensions' and perform operations provided in QICBASIC. The functions of the QANTEL Extensions are invoked by the COBOL CALL Statement and perform operations including:

- screen handling
- 'default' sector promotion modification
- status inquiry on devices, partitions, and files
- file erasing and locking
- record locking
- program execution
- specialized device controls

Uses 28K

LISTING DEVICE:

CURRENT CONFIGURATION

MODULE MESSAGE: BEST 408-1 COBOL,IPC
128K TOTAL MEMORY 23 SECTOR POOL BUFFERS
20 FILE AFL ENTRIES 5 EXTRACT ENTRIES
5 DEVICES 1 PARTITIONS
10 2K PARTITION EXTENSIONS 0 NTWK SURROGATES

#	DESCRIPTION	NAME	DEV#	TYPE	DETAIL
1	TERMINALS	T00	000	C27	P00
1	PARTITIONS	P00		01	(01AC47,0800)
1	DISCS	DK1	1D		
1	LINE PRINTERS	LP1	00F	S	
1	MAGNETIC TAPES	MT1	08	02	

NO SPOOL PRINTERS

NO CLOCK

NO FILE TRANSFER

NO NETWORK

NO CARD READERS

NO SPECIAL DEVICES

S/W OPTION 1	COBOL	ACTIVE	RUNTIME
S/W OPTION 2	IPC	ACTIVE	PSEUDO DEVICE
BEST TABLE AREA: \$7BF9 TO \$7FFF			LAST USED: \$7C25

*used for
branches during runs*

E - END, C - CONFIGURE, P - PRINT CONFIGURATION
ENTER CHOICE:

GENERAL PURPOSE BACKUP UTILITY (**BACKUP06.03081883)
COPYRIGHT MDS QANTEL, INC. 1983.

SINGLE-USER MODE SET.
COMMAND FILE "#BACKUP " NOT FOUND.
ENTER COMMAND FILE NAME (OR "HELP"): HELP

1-BACKUP, 2-TIC BACKUP, 3-RESTORE
SELECT BACKUP TYPE (1,2,3): 1

*** B A C K U P ***

1-DISC TO TAPE
2-DISC TO DISKETTE
3-DISKETTE TO DISKETTE
4-DISC TO DISC
SELECT DEVICE TYPE (1,2,3,4): 1

SPECIFY DEVICE BY NAME OR HEX ADDRESS...
INPUT DISC: 1D
TAPE: 08

SECTOR COUNT: 004600
TAPE IS INOPERABLE.
CHECK THAT TAPE IS READY.
TRANSMIT TO CONTINUE.

KNOWN PROBLEM AREAS: SYSTEM AND UTILITIES

SYSTEM

1. With a Model 4211 printer powered off, the system will not always perform a soft IPL function.
2. Error messages from ØK background partitions ending in error termination may be unpredictable -- as seen through *CONSOLE. To avoid this problem, do not use ØK background partitions.
3. Doing repeated F3/TRANSMIT's with access across the network may hang the local machine.
4. If the spooler is in forever mode and files have been written to it before the printer is powered on, the first spool job may be lost.
5. The use of an unformatted INPUT statement with multiple variables may hang all the terminals on that controller. (An example of an unformatted INPUT statement: INPUT(Ø)A\$;B\$;C\$)

UTILITIES

1. **BACKUP -- The verification of backup tapes on the streaming tape drive may fail regularly. This problem is being corrected for the next release. When verification does fail, the number of expected blocks may be out of range; this problem will also be corrected shortly.
2. BFILFIL -- The utility will process sector numbers and sector counts of only 5 characters or fewer. An attempt to use more will result in the truncating of characters.
3. CFGI
 - a. If BESTNET is configured incorrectly, spurious characters may sometimes appear on the screen while exiting CFGI and during the loading of BEST.
 - b. At this time, the VT4 (4041) terminal should be configured as a VT3, type 4, for the proper operation of *QICWORD.
4. *COBOL -- If an attempt is made to compile a QICBASIC program using the COBOL compiler (*COBOL), the system may hang.
5. *CONDENS
 - a. An attempt to use *CONDENS on a completely full disc could result in the loss of data and possible system problems. *CONDENS requires a minimum of 5 sectors available on the disc to function correctly.

-
- b. If there is a directory on the disc that does not contain any files, the final verification may indicate erroneously that there are "invalid sector numbers" and that "some files are inaccessible." Running *FILCHEK on the disc after the *CONDENS will verify whether there really is a problem.
6. DKIN -- If option 4 in DKIN is used to convert the disc size, the AU bit map is improperly relocated. The AU bit map must be reformatted (moved) using option 6 prior to using option 4 to convert the disc size. The following steps must be done in order to assure a proper disc size conversion:
 1. Reformat the AU bit map to the new 408 format (option 6)
 2. Convert the disc (option 4)
 3. Optional: The AU bit map may be reformatted to the earlier format, if desired.
 7. *DFCOPY -- On CRTII's, the screen is not cleared before the program is run. The READY: prompt remains displayed on the screen.
 8. *MAINT -- On CRTII's, the screen is not cleared before the program is run. The READY: prompt remains displayed on the screen.
 9. *MAINTS -- The utility does not set the terminal into normal mode in its initialization, and as a result, the screen may be displaced. Run *MAINTS from READY: only.
 10. *SPOOL
 - a. On CRTII's, the screen is not cleared before the program is run. The READY: prompt remains displayed on the screen.
 - b. If the spooler is in forever mode and files have been written to it before the printer is powered on, the first spool job may be lost.
 11. *QIC -- If an attempt is made to compile a COBOL program using the QICBASIC compiler (*QIC), the results may be aberrant.
 12. *QICWORD
 - a. *QICWORD requires a VT4 (model 4041) terminal to function. An attempt to run *QICWORD on any other terminal may produce aberrant results.
 - b. If a data file is referenced, where the data file is defined in #FILES and the field type of a variable is blank (option R of *FILES), then QICWORD will assume the variable is an expression, rather than a field. As a result, mail generation will not work properly.
-

14. *TAPE

- a. On CRTIII's, the screen is not cleared before the program is run. The READY: prompt remains displayed on the screen.
- b. In an attempt to append to the end of a tape without a write ring, the original files on the tape may be overwritten. To avoid this loss of data, when a tape inop occurs, exit the utility before attempting to correct the inop state.

SYSTEM UPDATES

1. Disc organization/file management

- a. The larger bit map will support discs up to 768MB. (Currently, the largest QANTEL disc size is 400MB.) The old bit map resided in sectors 10 through 19 (for a length of 10 sectors). It supported up to 150MB. The new bit map resides in sectors 25 through 49 (for a length of 25 sectors).
- b. There are now 100 directories available per disc. The bit map must be moved to accommodate 100 directories. If the bit map is not moved, the maximum number of directories is 50. Refer to DKIN Option 6 - REFORMAT BIT MAP in Section C of this document for procedures describing how to move the bit map.
- c. The keys for keyed files may now be up to 64 bytes long. A number of utilities have screen format changes as a result. A list of these utilities is presented in Section C. The Report Generator Version 11.6 is required to support keys larger than 32 bytes.

2. Runtime -- BEST/NET now supports local RUN, ACTIVATE, and EXECUTE of remote programs across the network.

An object file resident on a remote (public) directory can be run in a local foreground or background partition. A local object file, however, cannot use a remote partition across the network in which to run.

3. Scheduler

- a. Task headers are now accessed via a base register.

The moving of task headers has been eliminated. Instead, they are accessed via a base register (register 0). Using a base register to point to data is much faster than doing large moves, and the operating system will now switch from one user to another more quickly.

- b. The scheduler is now queue-driven.

Previously the operating system had to poll each user in turn to determine whether the user qualified for service. Now a user is routed to one of three types of queue, which are ordered by time and priority of the requesting user.

These three distinct queues are as follows:

Queue	Operation
ready	The ready queue is made up of users who are ready to be dispatched and are only waiting to be scheduled. The queue is ordered by user priority.
disc	One user at a time uses (or "owns") the disc -- for a seek or a write. The disc queue is therefore made up of the remainder of the users who are waiting for disc access. The queue is ordered by time of request and partition priority.
pause	The pause queue is made up of users whose programs have executed a pause. The queue is ordered by the time of expiration of the various pauses.

Because queue-driven scheduling provides that only those users who are ready for dispatch are looked at, users not in need of service are ignored. The result is that processor operation is streamlined, and the next user to run is selected more rapidly than in round-robin scheduling.

4. Memory management

- a. The minimum partition size that may be configured is now 0K. (Previously it was 2K.) Partition overhead is not eliminated by configuring a partition as 0K. That is, for a partition configured as 0K, the partition overhead will remain, simply because the partition is configured. Because partition overhead is a parameter used in calculating system memory size, partitions configured as 0K cannot be ignored in these calculations.

Note: P00 will be no less than 2K even if configured as 0K. This allocation is performed automatically by CFG and is required in the release update process for message passing. All other partitions may be configured as 0K so that these partitions require memory only when active.

- b. On the System 64 -- and only on the System 64 -- a non-configurable 4K of memory is reserved. The system must be configured by 4K less than its actual hardware capacity.

The following table lists actual memory sizes and size of memory to be CFG'd:

SYSTEM 64
CFG Memory Table

Actual size of memory (K)	Size of memory for CFG (K)
512	508
1024	1020
1536	1532
2046	2042
2560	2556
3072	3068
3584	3580
4096	4092

- c. The size of BEST on a given system can be determined by using the BEST 408 System Size Worksheet (see Appendix).

5. New hardware

- a. Now supported is the new VT4 (or Model 4041) QANTEL "smart" terminal. The terminal functions in two modes. In data processing mode, the terminal emulates the VT3. In word processing mode, the terminal supports *QICWORD, the new QANTEL word processing program.

For details on the operation of the VT4 and QICWORD, refer to the QICWORD Word Processing System Documentation. This document takes the new user from an introduction to the products through familiarization with the features and their use. There are four sections:

1. QICWORD/4041 Terminal Product Features
2. Model 4041 Terminal Operating Instructions
3. Teach Yourself QICWORD (a self-paced tutorial)
4. QICWORD Reference Guide

The document will be supplied under separate cover.

- b. The 400MB disc (with the IOU54 controller) is now supported. A total of 570,420 sectors are available. This disc must be software initialized (DKIN'd) as a system disc, reserving the first 1,000 sectors for system use.