

Software Handbook

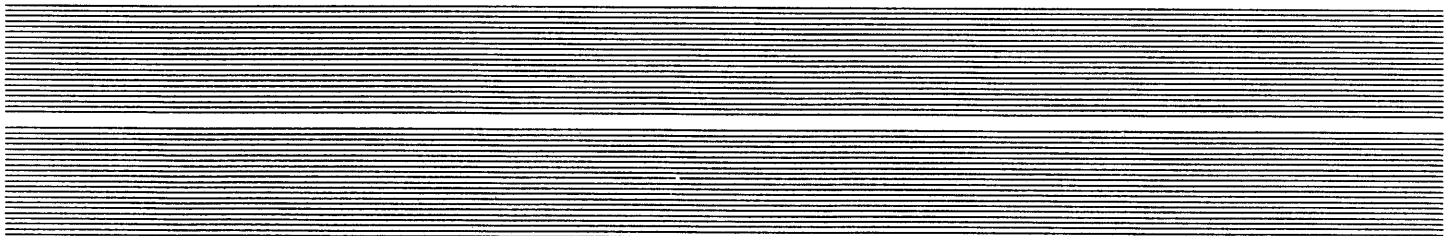
Qualogy Staepac/4140-03

Diagnostic Diskette

QUALOGY

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I N T R O D U C T I O N S H E E T

File Listing for Qualogy StacPac/4140-03 Diagnostic Diskette

Volume ID: 060121-04
 Owner : 07-MAR-85

QMON .SYS	4	13-Feb-85	HELP .TXT	2	07-Mar-85
DUMP .SAV	9	26-Nov-78	DUMP .DOC	3	06-Mar-85
RTFMT .SAV	3	13-Feb-85	RTFMT .DOC	4	13-Feb-85
RTFMT .MAC	7	13-Feb-85	FLPEXR.SAV	50	13-Feb-85
TSEXR .SAV	91	05-Oct-84	GEMEXR.SAV	92	04-Aug-83
RLEXR .SAV	58	19-Feb-85	DSDBR .SAV	74	24-Jan-85
DYV4DS.DOC	5	02-Mar-85	DYV4DS.DIF	3	02-Mar-85
DYV5DS.DOC	27	02-Mar-85	DY18 .SYS	4	22-Jun-84
DY18T .SYS	4	22-Jun-84	DY18E .SYS	4	22-Jun-84
DY18B .SYS	4	22-Jun-84	DY22X .SYS	5	22-Jun-84
DY22XT.SYS	5	22-Jun-84	DY22XE.SYS	5	22-Jun-84
DY22XB.SYS	5	22-Jun-84	DYQ22 .DOC	26	02-Mar-85
LOADY .CMD	1	02-Mar-85	DYQ22 .MAC	77	02-Mar-85
DYQ22 .CMD	2	02-Mar-85	DYDBLD.CMD	2	02-Mar-85
DYRSX .CMD	1	02-Mar-85	UNLDY .CMD	1	02-Mar-85
DECMOD.DOC	3	04-Mar-85	INDEX .TXT	6	07-Mar-85
INDEX .DOC	5	07-Mar-85	RELEAS.DOC	9	07-Mar-85

34 Files, 601 Blocks
 373 Free blocks

This diskette is for use with all Qualogy StacPac Floppy Disk Modules (DS-100, DS-101, DS-105, DS-106), StacPac Winchester Modules using the 8240 Controller (DS-330, DS-331), and StacPac Tape Modules (DS-200, DS-201).

Documentation for all driver and handler modifications are in the .DOC files. This Software Handbook contains a copy of all of the documentation files needed to install software modifications contained on this diskette. By following the instructions exactly, the installation of the modifications should be completed with no difficulty. If a modification will not install, please re-read the instructions and try again. If it still will not install, call your Regional Qualogy Customer Service Center for assistance.

The file DECMOD.DOC lists all of the DEC Handler Modifications currently available from Qualogy. The file INDEX.TXT contains a brief description of all files on this diskette.

Software Handbook P/N 040091-02 Rev. A

QUALOGY STACPAC FLOPPY/4140-03
 DIAGNOSTIC DISKETTE DIRECTORY

QUALOGY P/N 060121-04 REV. A

RELEASE DATE : 07-MAR-85

FILENAME	BLOCKS	DATE	
QMON .SYS	4.	13-FEB-85	;Qualogy Monitor File.
HELP .TXT	2.	07-MAR-85	;Help Instruction File.
DUMP .SAV	9.	26-NOV-78	;RT-11 DSD Program Compare File.
DUMP .DOC	3.	06-MAR-85	;DUMP.SAV Documentation File.
RTEFMT .SAV	3.	13-FEB-85	;RT-11 Format (Set Media Density) Program.
RTEFMT .DOC	4.	13-FEB-85	;RTEFMT.SAV Documentation File.
RTEFMT .MAC	7.	13-FEB-85	;RT-11 Floppy Format Macro File.
FLPEXR.SAV	50.	13-FEB-85	;Qualogy Floppy Diagnostic Program.
TSEXER .SAV	91.	05-OCT-84	;Qualogy Tape Diagnostic Program.
GEMEXR.SAV	92.	04-AUG-83	;Qualogy 8240/Winchester Format Utility.
RLEXR .SAV	58.	19-FEB-85	;Qualogy 890/8240 Winchester Diagnostic.
DSDBR .SAV	74.	24-JAN-85	;Qualogy Image Backup/Restore Utility.
DYV4DS.DOC	5.	02-MAR-85	;RT-11 V4.00 Double-Sided Doc. File.
DYV4DS.DIF	3.	02-MAR-85	;RT-11 V4.00 Double-Sided Dif. File.
DYV5DS.DOC	27.	02-MAR-85	;RT-11 V5.00/V5.01 D.S./Q22 Doc. File.
DY18 .SYS	4.	22-JUN-84	;RT-11 V5.00/V5.01 DS Standard Driver.
DY18T .SYS	4.	22-JUN-84	;RT-11 V5.00/V5.01 DS Timeout Driver.
DY18E .SYS	4.	22-JUN-84	;RT-11 V5.00/V5.01 DS Error Log Driver.
DY18B .SYS	4.	22-JUN-84	;RT-11 V5.00/V5.01 DS Driver w/Both.
DY22X .SYS	5.	22-JUN-84	;RT-11 V5.00/V5.01 Q22/DS Standard Driver.
DY22XT.SYS	5.	22-JUN-84	;RT-11 V5.00/V5.01 Q22/DS Timeout Driver.
DY22XE.SYS	5.	22-JUN-84	;RT-11 V5.00/V5.01 Q22/DS Error Log Driver.
DY22XB.SYS	5.	22-JUN-84	;RT-11 V5.00/V5.01 Q22/DS Driver w/Both.
DYQ22 .DOC	26.	02-MAR-85	;RSX-11M V4.0/V4.1 Q22/DS Doc. File.
LOADY .CMD	1.	02-MAR-85	;RSX-11M V4.0/V4.1 Command File.
DYQ22 .MAC	77.	02-MAR-85	;RSX-11M V4.0/V4.1 Q22/DS Macro File.
DYQ22 .CMD	2.	02-MAR-85	;RSX-11M V4.0/V4.1 Command File.
DYDBLD.CMD	2.	02-MAR-85	;RSX-11M V4.0/V4.1 Command file.
DYRSX .CMD	1.	02-MAR-85	;RSX-11M V4.0/V4.1 Command File.
UNLDY .CMD	1.	02-MAR-85	;RSX-11M V4.0/V4.1 Command File.
DECMOD.DOC	3.	04-MAR-85	;DEC Driver Modifications Doc. File.
INDEX .TXT	6.	07-MAR-85	;Description of Files on This Disk.
INDEX .DOC	5.	07-MAR-85	;Qualogy Program Part Numbers on This Disk.
RELEAS.DOC	9.	07-MAR-85	;Diskette Release Documentation File.

373. FREE BLOCKS

TOTAL OF 601. BLOCKS IN 34. FILES

DEC HANDLER MODIFICATIONS AVAILABLE FROM QUALOGY

Introduction:

Qualogy supports it's products which contain additional capabilities that the DEC products do not have through a number of handler modifications. Some of these modifications allow the user to utilize these additional capabilities, such as support for double-sided floppy drives or using the additional storage available on the D880/8 in extended mode.

Files Available:

The following list are the currently available support files:

RT-11 V3.00B Floppy Double-sided Support
RT-11 V3.00B 880/8 Extended Mode Support

RT-11 V4.00 Floppy Double-sided Support
RT-11 V4.00 880/8 Extended Mode Support

RT-11 V5.00/V5.01 Floppy Double-sided and Q22-Bit Support
RT-11 V5.00 880/8 Extended Mode Support
RT-11 V5.01 880/8 Extended Mode Support

RSX-11M V3.2 Support to Correct "Bug" in Floppy Driver

RSX-11M V4.0 & V4.1 Floppy Double-sided and Q22-Bit Support

All of the above support files are currently available from your Regional Qualogy Customer Service Center on floppy diskette (Qualogy P/N 060111-04 Rev. A). In addition, support for RT-11 V4.00, RT-11 V5.00, RT-11 V5.01, RSX-11M V4.0, and RSX-11M V4.1 are included on this diagnostic diskette.

Qualogy P/N 651462-04 Rev. A

```

! COMMAND AND DOCUMENTATION FILE TO UPDATE THE DISTRIBUTION RT11-V4 HANDLER
!   DYV4DS.DOC   QUALOGY P/N 651210  REV. B   02-MAR-85   D880A VERSION

! THIS FILE BOTH DOCUMENTS THE PROCEDURE AND CONTAINS THE COMMANDS
! REQUIRED TO MODIFY THE DEC RT11-V4 RX02 HANDLER TO SUPPORT DOUBLE
! SIDED OPERATION.
!
! SETUP FOR DUAL FLOPPY SYSTEM
! -----
!
! FIRST MAKE A COPY OF THE RX02 BOOTABLE DISTRIBUTION DISKETTE.
! THEN BOOT THIS DISK IN DY0: (LEFT HAND DRIVE)
! THEN COPY THE FILES (DYV4DS.DOC AND DYV4DS.DIF) FROM THE QUALOGY DIAGNOSTIC
! DISK TO THE BOOTED RT-11 V4 DISKETTE IN DY0:.
!
! NOTE: THERE SHOULD BE AT LEAST 40. CONTIGUOUS FREE BLOCKS ON THIS DISK.
!       AND IT MUST CONTAIN DY.MAC, MACRO.SAV, LINK.SAV, SYSMAC.SML AND DUP.SAV
!
! SETUP FOR SINGLE FLOPPY SYSTEM (D880A)
! -----
!
! 1)   COPY THE BOOTABLE RT-11 DISTRIBUTION DISKETTE ONTO THE WINCHESTER DRIVE
!       INSERT THE BOOTABLE RT-11 DISTRIBUTION DISK INTO DY0: AND BOOT IT.
!       INIT DL0:
!       COPY /SYS DY0:*. * DL0:
!       COPY /BOOT DL0:RT11SJ DL0:
!       BOOT DL0:
!
! 2)   COPY DY.MAC FROM THE DRIVER SOURCE DEC DISTRIBUTION DISKETTE TO DL0:
!       COPY DY0:DY.MAC DL0:
!
! 3)   COPY THE DYV4 FILES FROM THE QUALOGY DIAGNOSTIC DISKETTE TO DL0:
!       COPY DY0:DYV4*. * DL0:
!
! COMMON UPDATE PROCEDURE FOR ALL HARDWARE CONFIGURATIONS.
! -----
!
!
! THE USER SHOULD THEN TYPE THE QUOTED COMMAND TO THE MONITOR PROMPT.
!   ."@DYV4DS.DOC<CR>"
!
! UPDATE THE DY.MAC SOURCE FILE USING SLP (SOURCE LANGUAGE PATCHER)
R SLP
DYV4DS.MAC,=DY.MAC,DYV4DS.DIF

!THIS PRODUCES A REVISED HANDLER SOURCE THAT WILL NOW BE ASSEMBLED
!

```

```
R MACRO
DYV4DS,=DYV4DS
```

```
!
! SAVE THE DEC STANDARD HANDLER BY RENAMING IT.
```

```
!
RENAME /SYS/NOPROTECT DY.SYS DY.SYS
RENAME /SYS DY.SYS DY.DEC
```

```
!
! GENERATE THE NEW DY.SYS HANDLER FILE
```

```
!
R LINK
DY.SYS=DYV4DS
```

```
!
! THE NEW HANDLER SHOULD BE BOUND TO A MONITOR ON THE FLOPPY USING COPY/BOOT
!     INSERT A BOOTABLE RT-11 V4 FLOPPY INTO DY0: FOR HANDLER UPDATE
```

```
COPY /SYS DY.SYS DY0:DY.SYS
COPY/BOOT DY:RT11SJ.SYS DY:
! OR FOR THE FOREGROUND/BACKGROUND MONITOR
! COPY/BOOT DY0:RT11FB.SYS DY:
BOOT DY:
```

RT-11 V5.0/5.1 SUPPORT USING QUALOGY FLOPPY DRIVES

Qualogy supports double-sided diskette drives through both double-sided hardware and corresponding changes to the operating system software. Qualogy also supports 22-bit addressing in the RT-11 extended memory monitor (RT11XM). The supplied drivers will work under both RT-11 V5.00 and RT-11 V5.01 operating systems.

RT-11 SJ/FB SUPPORT

The RT-11 single-job (RT11SJ) and the RT-11 foreground-background (RT11FB) monitors support only 30K words of memory. Qualogy provides a substitute driver which includes double-sided floppy support for these monitors. The RT-11 extended memory monitor (RT11XM) supports up to 1024K words of memory. Qualogy provides a substitute driver for this monitor which includes both double-sided support as well as 22-bit addressing capability. If you are using the RT11XM monitor, go to the section titled RT-11XM SUPPORT and follow the instructions there.

Introduction:

This DY handler supports single- and double-sided RX02-type devices on the LSI-11 16- and 16-bit Q-bus under RT11SJ (single-job monitor) and RT11FB (foreground/background monitor). This handler is generated to support one or two controllers and from one to four drives.

On the initial call to the handler, it determines whether a second controller is present.

Installation:

Four versions of the handler are present on the diagnostic diskette. These handlers are DY18.SYS, DY18T.SYS, DY18E.SYS, and DY18B.SYS which correspond to the standard SJ/FB monitor shipped by DEC, the SJ/FB monitor with Device Timeout Support, the SJ/FB monitor with Error Logging Support, and the SJ/FB monitor with both Timeout and Error Logging Support respectively. All versions support one or two controllers with one to four drives.

To install the handler, select the version that corresponds to the way that your SJ/FB monitor was generated. If you do not know what options your monitor was generated for, the SHOW CONFIGURATION command can be used to determine what options are enabled in your particular RT11 SJ/FB monitor. Copy the version to your operating system disk that corresponds to your monitor options, renaming it to DY.SYS. It is recommended that before the copy operation is started, the original DY.SYS handler be renamed to DY.DEC so that it may be re-installed if problems are encountered. Reboot the system to get the new handler installed.

RT11 XM SUPPORT

Introduction:

This DY handler supports single- and double-sided RX02-type devices on the LSI-11 22-bit Q-bus under RT11XM (extended memory monitor). This handler is generated to support one or two controllers and from one to four drives.

On the initial call to the handler, it determines whether a second controller is present and whether either controller contains direct support for 22-bit DMA transfers.

For each I/O request, the handler checks if the controller implied by the specified unit number can do 22-bit DMA transfers. If so, the request proceeds directly. If not, the physical addresses of the I/O buffer are examined to determine whether the I/O buffer includes any area above the 18-bit (256 KB) limit for direct DMA. If the buffer is entirely within the low 256 KB, the request is handled directly. If the buffer includes any area above the 256 KB limit, the handler performs the transfer through an internal buffer.

Installation:

Four versions of the handler are present on the diagnostic diskette. These handlers are DY22X.SYS, DY22XT.SYS, DY22XE.SYS, and DY22XB.SYS which correspond to the standard XM monitor shipped by DEC, the XM monitor with Device Timeout Support, the XM monitor with Error Logging Support, and the XM monitor with both Timeout and Error Logging Support respectively. All versions support one or two controllers with one to four drives .

To install the handler, select the version that corresponds to the way that your XM monitored was generated. If you do not know what options your monitor was generated for, the SHOW CONFIGURATION command can be used to determine what options are enabled in your particular RT11XM monitor. Copy the version to your system disk that corresponds to your monitor options renaming it to DYX.SYS.

HARDWARE REQUIREMENTS

The handlers are generated with a CSR address of 177170 (to 16 bits) and an interrupt vector of 264 for the primary controller and a CSR address of 177150 and an interrupt vector of 270 for the secondary controller (all values are in octal). The primary controller MUST be present in the system or the handler will not install (either during system bootstrap or with the INSTALL command). The secondary controller need not be present in the system. If this is not the configuration of the controllers in your system, use the SET command when running RT11XM (with the handler on your system disk) to configure the handler for your system.

SET OPTIONS

The SET options are:

Option	Action
CSR=nnnnnn	Set the CSR address for the primary controller to the 16-bit octal value specified. The address must be greater than 160000.
VECTOR=nnn	Set the interrupt VECTOR for the primary controller to the octal value specified. The vector address must be below 500.
CSR2=nnnnnn	Set the CSR address for the secondary controller. Restrictions same as for CSR.
VEC2=nnn	Set the interrupt VECTOR for the secondary controller. Restrictions same as for VECTOR.

This handler assumes that if there is a controller at the address 177150, it will be an RX02-type controller. If your configuration does have a second controller at address 177150 that is not an RX02-type controller, CSR2 MUST BE SET to an address for which no device exists in your system. This is required so that the handler will not erroneously determine that a second RX02-type controller exists in your system.

The SET command needs to be done only when the hardware configuration changes since it modifies the handler image on the system disk.

Once the handler has been configured for your hardware, it can be installed. Either use the REMOVE command to remove the DEC handler and the INSTALL command to install the new handler, or re-boot your system. The handler will be installed automatically during future bootstraps of the system.

USAGE AND FEATURES

If your hardware configuration includes a single controller, it must be configured as the primary controller to the handler and units 0 (DY0:) and 1 (DY1) will correspond to drives 0 and 1 on that controller. Specifying units 2 through 7 will cause the handler to return a hard error (but not a fatal system trap). Note that on the D880A, only one drive (DY0:) exists on each controller.

If your hardware configuration includes two controllers, units 0 (DY0:) and 1 (DY1:) correspond to drives 0 and 1 on the primary controller. Units 2 (DY2:) and 3 (DY3:) correspond to drives 0 and 1 on the secondary controller. Note again, that with a D880A, only one drive (DY0:) exists on one controller. The second controller would also contain only one drive (DY2:).

The handler will also allow software bootstrapping of units on the secondary controller (DY2: and DY3:).

Depending on your hardware, the handler will allow single- or double-density and single- or double-sided media to be used in any drive.

Besides the standard read and write requests, the handler supports the Special Function requests Read Sector, Write Sector, and Write Deleted Data Sector. These requests have been extended to support double-sided drives. For example, if the track number specified is greater than 76 then that number minus 77 will specify the track number on the second side of the diskette that is to be read or written, i.e. Track 1 on Side 1 is accessed by specifying Track 78 (Track 116 Octal).

An additional feature of the handler is a test for diskette drives disconnected or without power. Should this condition occur, any I/O request to the handler will cause it to send an error message directly to the user's terminal and return a hard error to the calling program. This feature is particularly important since drives without power or disconnected will cause the handler to hang. This option is currently enabled when using a D880A or D480. This option does not function using the D4140 controller (D430, D470, and Qualogy StacPac floppy products).

Other SET Commands:

Besides the SET commands used to configure the primary and secondary controller CSR and vector addresses, the handler supports the SET commands `RETRY=n`, `[NO]WRITE`, and `[NO]SUCCE` (the latter only when Error Logging is present) found in the RT-11 V5.00 and V5.01 DY handler.

Performance:

The performance of the handler in buffered mode is nearly identical to its performance in direct mode. When executing a command such as:

```
COPY file/FIL DY0:/DEV
```

the elapsed time to complete the operation will be the same whether operating in buffered or unbuffered mode. Timing has been measured on both D880A and D480 systems with and without another compute-bound job running.

When another job is running doing substantial I/O to a disk other than the floppy (e.g. the Winchester drive in the D880A), the elapsed time to complete the above command increases whether the transfer is done in direct or buffered mode. However, buffered mode may be degraded more than direct mode. This is because the additional CPU time required when running in buffered mode increases the possibility of requesting the next sector on the same track too late, requiring a full diskette revolution to access that sector again. However, even under these conditions, performance under these conditions was degraded only by about 25%.

PROBLEMS

If problems are encountered installing or modifying the handlers and you cannot immediately identify and correct the error, please call your regional Qualogy Customer Service Center for assistance.

CREDITS

DY22: DY Handler for RT11XM on Q-22 Bus

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Qualogy P/N 651453-02 Rev. B

DUMP COMPARE UTILITY DOCUMENTATION

DUMP is operationally a superset of the RT-11 DUMP program which additionally allows comparing two files and outputting any differences encountered to the specified out device (TT: = default)

HELP text which defines all switches is output when a <CR> is typed after DUMP is called in.

<OUTSPEC>=<MAIN INPUT>,<COMPARE INPUT>/SWITCHES

SWITCHES ARE

/S:# STARTING BLOCK # OF DEVICE OR IN FILE
/E:# ENDING BLOCK # ON DEVICE OR IN FILE
/C:# STARTING BLOCK # FOR COMPARE FILE
NOTE: THE BLOCK # DEFAULTS TO OCTAL BUT BLOCK. FORCES DECIMAL
/W DUMP 16 BIT WORDS (DEFAULT MODE)
/B DUMP BYTE AND ASCII VALUES
/A DUMP BUFFER AS ASCII STRINGS ONLY
CAUTION: THIS PRINTS THE BYTES DIRECTLY WITHOUT MAPPING
AND MAY TURN OFF THE KEYBOARD.
/X DUMP RAD50 EQUIVALENTS
/G IGNORE INPUT HARDWARE ERRORS
/T DEFINES TAPE AS NON RT-11 FILE STRUCTURED
TAPE SWITCHES ONLY APPLICABLE TO FIRST FILE SPEC
/N SUPPRESS ASCII PRINTOUT
/D DUMP ALL DATA WHEN IN COMPARE MODE
ELSE DUMP ONLY DIFFERENCES

DUMP.DOC Qualogy P/N 651243 Rev. B

for: DUMP.SAV Qualogy P/N 650107 Rev. A

This driver will provide a combination Double-sided and Q22 driver for RSX-11M V4.0 and V4.1 Operating Systems. If only double-sided support for FLX is desired, the installation may begin at Step 9 although Qualogy recommends that the complete installation process be done for both Double-Sided/Q22 installations as well as for Double-Sided only installations.

NOTE: THE DEC DYDRV.TSK FILES IN RSX-11M V4.0 AND V4.1 DO NOT WORK IN MORE THAN AN 18 BIT ENVIRONMENT ON THE QBUS. SEE DEC u NOTE #112 OF 2/17/83 FOR DEC'S SOLUTION. ADDITIONAL INFORMATION CAN ALSO BE FOUND IN THE JANUARY AND MARCH, 1984 ISSUES OF THE RSX-11M SOFTWARE DISPATCH. THE QUALOGY DYQ22 DRIVER ALSO SOLVES THIS PROBLEM, ALTHOUGH IN A MORE GENERAL WAY. THE DYQ22 FILES MUST BE COPIED INITIALLY USING A 16- OR 18-BIT (<124KW) SYSGEN IF THESE MODIFICATIONS ARE GOING TO BE INSTALLED IN RSX-11M V 4.0 OR RSX-11M V4.1 PRIOR TO AUTOPATCH B. WITHOUT EITHER THE DEC OR THE QUALOGY DRIVER MODIFICATIONS INSTALLED, ANY FLOPPY ACCESS WILL CRASH THE SYSTEM.

- 1) The instructions and command files used in the command files and documentation use MCR format. If you are currently using DCL format, then ENTER "SET /MCR=TI:<CR>".
- 2) Check that the following exist on your RSX11M V4.n system.
 - a) UIC for accounts [1,24] and [11,34]. Enter "UFD SY0:[1,24]<CR>" and "UFD SY0:[11,34]<CR>".
 - b) EXEMC.MLB AND EXELIB.OLB are in [1,1] on LB0:.
 - c) RSXMC.MAC (with macro definitions) is in [11,10] on LB0:.
The date of RSXMC.MAC and the date of [1,54]RSX11M.TSK should correspond.
 - d) The sysgen contains loadable driver support and has been generated to include support for the DY (RX02) device. See "Guide to Writing an I/O Driver" for setting up a loadable DY SYSTBL if no support exists.
 - e) The system that this driver will be installed in has been sysgenned for EIS support and has the appropriate CPU with EIS support. EIS support can be verified by examining the file SYSSAVED.CMD in account [200,200] and verifying the the label \$EIS has a SETT before it and not SETF. If EIS has not been sysgenned in, a new sysgen must be performed before attempting to install this driver. If EIS support cannot be verified, then continue to install this driver. Two assembly errors will occur during the assembly phase of installation if EIS has not been sysgenned in this system.
- 3) Log on into a privileged account.
- 4) Enter "SET /UIC=[200,200]<CR>".
- 5) Copy the Qualogy Double-Sided / Q22 driver files into this account.
 - a) Enter "FLX LB0:/RS=DY0:DYRSX.CMD/RT<CR>".
 - b) Enter "@DYRSX<CR>" to invoke the copy indirect command file
or
Enter "FLX SY0:=DY0:.* /RT<CR>" to copy all of the files on this disk. Files copied to support RSX-11M are DYQ22.CMD,DYQ22.DOC,DYQ22.MAC, DYDBLD.CMD,and DOUSID.DOC.

NOTE: If this procedure is being done for an extended memory unibus machine, such as the PDP 11/24, 11/44, or 11/70, the symbol definition Q\$\$22=1 should be commented out. This is line 31 in the file DYQ22.MAC.

- 6) Enter "@DYQ22<CR>" to assemble and task build your new driver. The previous DY driver will be removed and the new driver loaded.
 NOTE: If the message "APR Allocation Failure" occurs during load, check that sufficient space is allowed in the PAR command in DYDBLD.COMD. Increase this value as required for your particular system. If an error occurs in the assembly and the symbols DY and \$DYINT are undefined in TKB, the the incorrect version of RSXMC.MAC was used.

THE FOLLOWING 2 STEPS NEED ONLY BE DONE FOR A Q-BUS TYPE SYSGEN.
 DO NOT DO THESE STEPS FOR A UNIBUS-TARGETED SYSGEN.

The device table in the sysgen (SYSTBL.MAC) must be patched to set the DV.EXT bit in all dy UCB's (.DY0, .DY1,DYn). This tells the driver that Unibus Mapping Registers (UMR's) are not to be used. If this patch is not applied, any access to DYDRV will crash the system. (This is also true for the distributed DEC driver).

- 7) Locate the file RSX11M.MAP for the sysgen and lookup .DY0, .DY1,DYn) in the map. If a map is not available, one can be produced from the RSX11M.STB file.

```
>"SET /UIC=[1,54]<CR>".
>"TKB<CR>".
TKB>,"TI:/-WI=[1,54]RSX11M.STB/MA<CR>".
TKB>"//CR>".
```

NOTE THE VALUES FOR .DY0, .DY1,DYn. and \$DY0. THE VALUE FOR U.CW1 SHOULD BE 10.

- 8) Patch the RSX11M.SYS module using ZAP. The word at offset U.CW1 in all the DY UCB's needs to have the DV.EXT bit turned on using the following procedure:

```
"RUN $ZAP<CR>"
ZAP>"RSX11M.SYS/LI<CR>"           ; Lists the segment sizes.
"2:37470/<CR>"                     ; specify the .DY0 value from step 7.
_002:037470/ 037420                 ; should list the DCB value (.DCn) in
_<CR>"                               ; SYSTB but not global.
_002:037472/ 037470                 ; should point back to .DYn as used
_<CR>"
_002:037474/ 040301                 ; flag word
_<CR>"
_002:037476/ 000000
_<CR>"
_002:037500/ 140110                 ; U.CW1 word - must set 400 bit.
_"140510<CR>"                       ; use contents above with 400 bit set.
```

_002:37540/<CR>" ; REPEAT ABOVE PROCEDURE FOR .DY1, .DY2, .. .DYn.
 THIS STEP SETS THE FLAG TELLING RSX11M AND THE DRIVER THAT DIRECT
 22 BIT ADDRESSING (or buffered move) SHOULD BE DONE. THIS BIT
 MUST BE SET FOR ALL DRIVES TO BE ACCESSED.

- 9) THIS STEP MUST BE DONE ONLY IF YOUR SYSTEM REQUIRES DOUBLE-SIDED DOUBLE-DENSITY SUPPORT.
Qualogy supports double-sided diskette drives through both double-sided hardware and corresponding changes to the operating system software.

For RSX-11M and RSX-11M PLUS, the software changes required consist of installing the Qualogy driver and patching a table internal to FLX to allow another device size. If this FLX patch is not done, any FLX access to a double-sided double-density diskette will give the FLX error message "FLX -- Invalid device " and not complete the command. FLX contains a table of device names (ASCII 1 word) and device sizes which reside in an overlay segment in FLX. The differences between FLX in RSX-11M V4.0 and V4.1 are due to changes in the task build command file which allow for more efficient packing of overlays into blocks. The following procedure shows how to patch FLX for RSX-11M V4.0 and for V4.1:

```

Enter "SET /UIC=[1,54]<CR>"
Enter "PIP FLX.TSK/NV=FLX.TSK<CR>"
Enter "PIP FLX.TSK/LI<CR>"
                                     ;MAKE A WORKING COPY FIRST!
                                     ;Determine task build type.
                                     ;If the file is 132 blocks
                                     ;long, use the RSX-11M V4.0
                                     ;instructions.

                                     ;If the file is 98 blocks
                                     ;long, use the RSX-11M V4.1
                                     ;instructions.
Enter "FLX/ID<CR>"
    FLX Version (M15 or 16.00)
                                     ;Determine FLX version.
                                     ;Computer prints version
                                     ;number of FLX.

```

*****INSTRUCTIONS FOR PATCHING RSX-11M V4.0 FLX VERSION M15 OR 16.00*****

CAUTION: The next steps use the ZAP program. Once a location is opened using ZAP, any number followed by a <CR> will modify that location. ALWAYS type number and then slash "/"!!

```

Enter "RUN $ZAP<CR>"
Enter "[1,54]FLX/LI<CR>"
                                     ;Run ZAP program.
                                     ;List overlay segments.

```

SEGMENT TABLE (FOR FLX VERSION M15 as in RSX-11M V4.0)

START BLOCK #	VIRTUAL ADDRESS RANGE	TYPE
000002:	000000-023133	Root
.....	
000133:	032104-033643	Overlay (RSX-11M V4.0 FLX V M15)
.....	
000204:	037724-037723	Null

The segment starting at block number 133 contains the device specific table. If the segment is not at block 133, the segment should try to be located by looking for a segment which is 1530 bytes long. This segment is labelled GETDEV if module names are listed when using the ZAP/LI command. This segment can also be located by looking at FLX.MAP if maps were saved on the disk during SYSGEN.

The contents is listed below (FLX.TSK Version M15 or 16.00):

Set up ZAP offset register R3 to point to the beginning of the GETDEV module.

```

_"133:32074;3R<CR>"      ;Use offset Reg. #3 to offset to beginning of segment.
_"3,1366/<CR>"           ;Open around beginning of following table depending
                          ;on autopatch level. In RSX-11M Autopatch Level C and
                          ;D, the table begins around 1600.
133:3,001366/ 152103     ;If this value found, then versions agree.
_"<CR>"                 ;Keep typing <CR> until CS entry found or whatever
...                     ;other entry has been chosen to be replaced.
133:3,001472/ 51703     ;Using CS entry . . .
_"133:3,1472/<CR>"
_051703
_"54704<CR>"
_"<CR>"
133:3,1474/ 000756
_"3670<CR>"
_"<CR>"
_"<CTRL Z>"

```

MODULE GETDEV

;can also find location by task building FLX.

133:3,001366	CT	152103	14	
133:3,001372	DK	145704	11300	
133:3,001376	DT	152304	1102	
133:3,001402	MF	143115	12	
133:3,001406	MM	146515	12	
133:3,001412	MS	151515	12	
133:3,001416	MT	152115	12	
133:3,001422	PP	150120	6	
133:3,001426	PR	151120	10	
133:3,001432	DD	042304	1000	
133:3,001436	DL	042304	24000	
133:3,001442	DL	042304	50000	
133:3,001446	DM	046704	64766	
133:3,001452	DM	046704	151036	
133:3,001456	DX	054304	756	
133:3,001462	DY	054704	756	
133:3,001466	DY	054704	1734	
133:3,001472	CS	051703	756	*This device chosen for replacement.*
133:3,001476	CS	051703	1000	
133:3,001502	<2 WORDS OF ZEROES FOR TERMINATOR>			
133:3,001506	<EXECUTABLE CODE BEGINS HERE>			

One of the above device entries must be replaced with an entry for the DY double-sided double-density length. Note that the parity bit in the device names is used to specify support for DOS-11 (2nd character set) or RT-11 (high order set).

*****INSTRUCTIONS FOR PATCHING RSX-11M V4.1 FLX V16.00 (98 blocks)*****

CAUTION: The next steps use the ZAP program. Once a location is opened using ZAP, any number followed by a <CR> will modify that location! ALWAYS type number followed by a slash "/"!!

Enter "RUN \$ZAP<CR>"
 Enter "[1,54]FLX/LI<CR>" ;List out overlay segments.

SEGMENT TABLE (For FLX Version 16.00 as in RSX-11M V4.1)

START BLOCK #	VIRTUAL ADDRESS RANGE	SEGMENT NAME	TYPE
000002:	000000 - 024443	ROOTT	Root
.....		
000071:	030764 - 032513	GETDEV	Overlay
.....		
000142:	036564 - 036563	SYSLIB	Null

Set up ZAP offset register R3 to point to the beginning of the GETDEV module.

```

_ "71:30764;3R<CR>" ;Use offset Reg. #3 to offset to beginning of segment.
_ "3,1366/<CR>" ;Open around beginning of following table depending
;on autopatch level. Note that with RSX-11M V4.1
;Autopatch C or D installed, the table begins around
;1600.
071:3,001366/ 152103 ;If this value found, then versions agree.
_ "<CR>" ;Keep typing "<CR>" until CS entry is found or
;other entry chosen to be replaced.
_ "....."
_ "071:3,001472/ 051703 ;If using CS entry. . .
_ "071:3,1472/<CR>"
_ "071:3,001472/ 051703
_ "54704<CR>"
_ "<CR>"
_ "071:3,001474/ 000756
_ "3670<CR>"
_ "<CR>"
_ "071:3,001476/ 051703
_ "<CTRL Z>"
  
```

The segment starting at block number 71 contains the device specific table. The contents is listed below (FLX.TSK Version 16.00 RSX-11M V4.1):

MODULE GETDEV

;can also find location by task building FLX.

```

71:3,001366 CT 152103      14
71:3,001372 DK 145704    11300
71:3,001376 DT 152304    1102
71:3,001402 MF 143115     12
71:3,001406 MM 146515     12
71:3,001412 MS 151515     12
71:3,001416 MT 152115     12
71:3,001422 PP 150120      6
71:3,001426 PR 151120     10
71:3,001432 DD 042304    1000
71:3,001436 DL 042304    24000
71:3,001442 DL 042304    50000
71:3,001446 DM 046704    64766
71:3,001452 DM 046704    151036
71:3,001456 DX 054304      756
71:3,001462 DY 054704      756
71:3,001466 DY 054704    1734
71:3,001472 CS 051703      756 * This device chosen for replacement. *
71:3,001476 CS 051703    1000
71:3,001502 DU 052704    140310
71:3,001506 <4 WORDS OF ZEROES FOR TERMINATOR>
71:3,001516 <EXECUTABLE CODE BEGINS HERE>

```

One of these entries must be replaced with an entry for the DY double-sided double-density length as above. Note that the parity bit in the device names is used to specify support for DOS-11 (2nd character set) or RT-11 (High-order set).

10. When the installed driver has been tested and verified to be operating properly, re-install the DY driver in RSX11M.SYS using VMR. This may be accomplished using a command file.

Enter "VMR @[200,200]LOADY<CR>"

DO NOT EXECUTE THIS COMMAND UNTIL THE DRIVER IS WORKING PROPERLY. IF IT DOES NOT WORK, CONSULT YOUR DOCUMENTATION OR CALL YOUR REGIONAL QUALOGY CUSTOMER SERVICE CENTER.

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