EMULEX

DISK CAPACITY

PATCHES TO DEC PDP-11

OPERATING SYSTEMS

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PDP	**VAX**	**MASSBUS**
RSTS	**VMS**	

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PREFACE

This document represents the accumulation of all of the patches, written by employees of the Emulex Corporation, for the purpose of altering Digital Software to use non-standard capacity sizes when accessing disks used with Emulex disk controllers.

Emulex will supply patches to RT11, RSX-11M, RSX-11M Plus, RSTS/E, and VMS, to support hardware running in either extended capacity or reduced capacity mode. The patches will be distributed as a document at no charge.

To apply a patch follow the installation procedure found at the beginning of each section. These procedures will define the patch conditions and give an example of a patch installation. These examples should be used for demonstration purposes only - DO NOT attempt to apply them.

Though a number of patches were written for older versions of some operating systems, they have not been included here to minimize the size of this document. Should patches be needed for older versions of some operating systems, not found in this document, contact Emulex at the address listed on the first page of this document and one will be forwarded to you (if it exists).

Conventions:

1. Assume all integer values are expressed in octal.

2. Numbers that include a decimal point represent decimal values.

If you have any questions about this document or need any additional information please contact Emulex or your Emulex representative.

SOFTWARE WARRANTY

Any Software supplied by Emulex other than diagnostics is warranted for a period of six (6) months from date of shipment. During the warranty period Emulex will provide the following:

1. Telephone Support will be provided by our staff of Product Support Specialists anytime during the working day, (Pacific Standard Time).

2. Software Product and Documentation updates will be provided if we have received your Warranty Card. Each update provides the latest technical changes required to improve its performance or maintainability.

3. Software problem reports let you submit your problems directly to Emulex. Our staff of Specialists will review each report and if necessary work with our Engineering Department to develop a solution.

4. Remedial Service: If a problem is encountered with any Emulex Software in its unaltered version and Emulex determines it to be defective, Emulex will provide the following Remedial Services:

   A. Make a tempoary correction.

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SECTION 1

RT11 Patches

1.1 RT11 Patch Explanation

Document Description:

This document explains the general procedure for patching the RT11 operating system for use with modified-capacity disk controllers and drives available from Emulex Corporation. No specific information on any patch or emulation is given in this document; this information is available in other documents following this one.

Intended Audience:

This document is designed for use by the System Manager of a given site, or by an agent of the System Manager assigned the task of installing an RT11 system or doing a system generation. This manual assumes a fairly high familiarity with RT11 operations, management, and utility procedures.

Required Patches:

There is only one area of the RT11 system that requires patching to modify the capacity of an RP type disk drive.

DP.MAC — This is the source file in the executive that contains the standard driver for RP02/03 disks. The source to DP is edited prior to a system generation. Be sure to make a backup copy of the origional file before making any alterations.

Patch Procedure -- Disk Distributions:

Systems that have a standard DEC disk (RK05, RK06/7, RL01/2) in addition to their modified Emulex disk can order and receive an RT-11 disk distribution from DEC. The SYSGEN procedure will execute from the standard DEC disk, and the patches for the modified disk are installed during the SYSGEN. When the SYSGEN is complete, the modified disk can be formatted and initialized.

Patch Procedure -- Tape Distributions:

Customers that receive a magtape distribution of RT-11 must specify the type of disk that the magtape is to be copied to. This disk must be either a DEC disk, or an exact emulation of a DEC disk (not a modified-capacity emulation). Customers that have only a tape drive, and a modified-capacity Emulex disk on their systems will not be able to install the patches for the modified capacity; these customers could run at a standard capacity if their controller and disk will support it.

```
* * * * * * * * * * *
*   W A R N I N G   *
* * * * * * * * * * *
```

Please note that you will not be able to choose an emulation that divides a single physical drive into two logical RP03 drives numbered 0 & 4, 1 & 5, etc. RT11 will attempt to sub-divided the logical units into two smaller logical units also numbered 0 & 4, 1 & 5, etc. This will cause an assignment conflict and an error in your system.

1.2 RT11 V3B Patches

1.2.1 RT11 V3B Patches for RP02/03

Patch Description:

This patch modifies RT11 V3B to permit the use of non-standard disk drive sizes with the Emulex SCXX/A controllers (RP02/03 emulations).

Patch Explanation:

The configuration of a drive is determined by three things; The number of usable surfaces (called tracks or heads), the number of usable cylinders (similar to the grooves in a record), and the number of sectors (similar to the pieces of a pie). The DEC standard RP02 has 20 heads, 200 cylinders, and 10 sectors. The DEC standard RP03 has 20 heads, 400 cylinders, and 10 sectors. The EMULEX SCXX/A controllers operate on many different sizes of disk drives with varying physical configurations. It is therefore necessary for the controller to do a 'remapping' of a logical drive(s) onto the physical drive. The EMULEX controllers do this in such a way that the number of heads is always 20 and the number of sectors is always 10 to agree with the DEC standard. Therefore, the only difference between drives on EMULEX controllers and DEC drives is the number of cylinders per drive. The configuration on the standard DEC RP02 and RP03 is coded into the operating system in may locations. The purpose of this patch is to change those locations so that the operating system 'believes' that an RP02 or RP03 has a configuration that differs from the DEC standard. This is done by changing only the number of cylinders. Of course, by changing the configuration of a drive, many other values defined by the configuration (such as the total number of blocks) are also changed and these also have to be patched. These locations, and the values that must be at those locations, are also given in the patch procedure.

The EMULEX controllers perform a logical mapping of the sectors onto the drive so that only the number of logical cylinders per drive needs to be changed. The number of logical cylinders for the SC01/AX and SC11/AX controllers are in Appendix A of this document. The number of logical cylinders for the SC02/AX and SC12/AX controllers is in the Drive Configuration Section in Appendix B of the applicable controller manual.

Modifing the logical size of a drive requires that the baseline operating system be patched for a modified number of blocks. In particular, the variable (literal) DPDSIZ must be patched from 40000. (116100 octal) to the approiate size. This literal appears two places in the driver DP.SYS, and two places in the single job monitor (DPMNSJ.SYS) and the foreground/background monitor (DPMNFB.SYS). In all cases, the old contents at the location to be patched is 116100, and the new value is the number of blocks (in octal). The PATCH program is used to patch the file on disk, or the driver can be reassembled and resysgened with DPDSIZ changed.

Although the RP03 is a supported disk under the RT11 operating system, it's size presents a problem; the number of blocks (234200 octal) is too large to fit into 16 bits. The RT11 operating system compensates for this by breaking the physical unit into two logical units (numbers 0 and 4), equivelent in size to a single RP02.

Therefore, when applying this patch use the integer value of the cylinders divided by two for the number of cylinders in section 3 below (the largest size that can be represented in 16 bits is 65535, so the maximum number of cylinders should never exceed 327 cylinders).

Patch Procedure:

1. Make a backup copy of the file DP.MAC and give it the name DP.DEC; this is the standard driver for RP02/03 disks.

2. Calculate the number of cylinders used per logical drive. If you have an SC01/A or SC11/A controllers, then the number of cylinders can be found in Appendix A of this document. If you have an SC02/A or SC12/A controller, then the number of cylinders can be found in Appendix B of the appropriate controller technical manual.

3. Record the number of cylinders on the line labeled CYLINDERS below.

   CYLINDERS. _____

   Record the number of cylinders - 1 on the line labeled MAXCYL below.

   MAXCYL. _____

   Multiply the number of cylinders by 200. decimal and record the product on the line labeled BLOCKS below.

   BLOCKS. _____

   You will be substituting these values for their variable names in the edit session later.

4. Locate the line defining the symbol DPDSIZ. This symbol is defined to have a value of 40000. Change its value to that calculated as BLOCKS.

5. Next, locate the label 'L1:'. Advance one line. It should read:

```
CMP     R3, #202.
```

Change this line to read:

```
CMP     R3, #MAXCYL.
```

again substituting the value from the table for 'MAXCYL.'

6. This next location is only to be patched if you are using an RP03 emulation, NOT AN RP02 EMULATION. Proceed to step 7 if you are using an RP02 emulation. If the using an RP03 emulation, move back three lines in the file. This line should read:

```
ADD     #202.,R3    .
```

Change it to read:

```
ADD     #CYLINDERS.,R3
```

again substituting the value in the table for 'CYLINDERS.'

7. Exit the edit session and proceed with the system generation procedure, through the section where you rename the '.SYG' files from the SYSGEN to '.SYS' files.

8. If you have been running from the SCXX/AX disk, be sure to do a "SQUEEZE SY:" command now to compress your system disk; this will modify the stored capacity of your disk to reflect the actual number of blocks on the drive.

9. Your patch is now complete.

1.3 RT11 V4.0 Patches

1.3.1 RT11 V4.0 Patches for RP02/03

Patch Description:

This patch modifies RT11 V4.0 to permit the use of non-standard disk drive sizes with the Emulex SCXX/A controllers (RP02/03 emulations).

Patch Explaination:

The configuration of a drive is determined by three things; The number of usable surfaces (called tracks or heads), the number of usable cylinders (similar to the grooves in a record), and the number of

sectors (similar to the pieces of a pie). The DEC standard RP02 has 20 heads, 200 cylinders, and 10 sectors. The DEC standard RP03 has 20 heads, 400 cylinders, and 10 sectors. The EMULEX SCXX/A controllers operate on many different sizes of disk drives with varying physical configurations. It is therefore necessary for the controller to do a 'remapping' of a logical drive(s) onto the physical drive. The EMULEX controllers do this in such a way that the number of heads is always 20 and the number of sectors is always 10 to agree with the DEC standard. Therefore, the only difference between drives on EMULEX controllers and DEC drives is the number of cylinders per drive. The configuration on the standard DEC RP02 and RP03 is coded into the operating system in may locations. The purpose of this patch is to change those locations so that the operating system 'believes' that an RP02 or RP03 has a configuration that differs from the DEC standard. This is done by changing only the number of cylinders. Of course, by changing the configuration of a drive, many other values defined by the configuration (such as the total number of blocks) are also changed and these also have to be patched. These locations, and the values that must be at those locations, are also given in the patch procedure.

The EMULEX controllers perform a logical mapping of the sectors onto the drive so that only the number of logical cylinders per drive needs to be changed. The number of logical cylinders for the SC01/AX and SC11/AX controllers are in Appendix A of this document. The number of logical cylinders for the SC02/AX and SC12/AX controllers is in the Drive Configuration Section in Appendix B of the applicable controller manual.

Modifing the logical size of a drive requires that the baseline operating system be patched for a modified number of blocks. In particular, the variable (literal) DPDSIZ must be patched from 40000. (116100 octal) to the approiate size. This literal appears two places in the driver DP.SYS, and two places in the single job monitor (DPMNSJ.SYS) and the foreground/background monitor (DPMNFB.SYS). In all cases, the old contents at the location to be patched is 116100, and the new value is the number of blocks (in octal). The PATCH program is used to patch the file on disk, or the driver can be reassembled and resysgened with DPDSIZ changed.

Although the RP03 is a supported disk under the RT11 operating system, it's size presents a problem; the number of blocks (234200 octal) is too large to fit into 16 bits. The RT11 operating system compensates for this by breaking the physical unit into two logical units (numbers 0 and 4), equivelent in size to a single RP02.

Therefore, when applying this patch use the integer value of the cylinders divided by two for the number of cylinders in section 3 below (the largest size that can be represented in 16 bits is 65535, so the maximum number of cylinders should never exceed 327 cylinders).

Patch Procedure:

1. Make a backup copy of the file DP.MAC and give it the name DP.DEC; this is the standard driver for RP02/03 disks.

2. Calculate the number of cylinders used per logical drive. If you have an SC01/A or SC11/A controllers, then the number of cylinders can be found in Appendix A of this document. If you have an SC02/A or SC12/A controller, then the number of cylinders can be found in Appendix B of the appropriate controller technical manual.

3. Record the number of cylinders on the line labeled CYLINDERS below.

   CYLINDERS. _____

   Record the number of cylinders - 1 on the line labeled MAXCYL below.

   MAXCYL. _____

   Multiply the number of cylinders by 200. decimal and record the product on the line labeled BLOCKS below.

   BLOCKS. _____

   You will be substituting these values for their variable names in the edit session later.

4. Edit the file DP.MAC, making the following changes (**remember to place trailing decimal points on the inserted numbers**):

   Locate the following line:

   ```
   .DRDEF    DP,21,FILST$,40000.,176710,254
   ```

   Change it to read:

   ```
   .DRDEF    DP,21,FILST$,BLOCKS.,176710,254
   ```

   where BLOCKS. is the value from the drive size table.

5. Next, locate the label 'L1:'. Advance one line. It should read:

   ```
   CMP       R3,#202.
   ```

   Change this line to read:

   ```
   CMP       R3,#MAXCYL.
   ```

   again substituting the value from the table for 'MAXCYL.'

6. This next location is only to be patched if you are using an RP03 emulation, NOT AN RP02 EMULATION. Proceed to step 7 if you are

using an RP02 emulation. If the using an RP03 emulation, move back three lines in the file. This line should read:

```
ADD        #202.,R3
```

Change it to read:

```
ADD        #CYLINDERS.,R3
```

again substituting the value in the table for 'CYLINDERS.'

7. Exit the edit session and proceed with the system generation procedure, through the section where you rename the '.SYG' files from the SYSGEN to '.SYS' files.

8. If you have been running from the SCXX/AX disk, be sure to do a "SQUEEZE SY:" command now to compress your system disk; this will modify the stored capacity of your disk to reflect the actual number of blocks on the drive.

9. Your patch is now complete.

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SECTION 2

RSX-11M Patches

2.1 RSX-11M Patch Explanation

Document Description:

This document explains the general procedure for patching the RSX-11M operating system for use with modified-capacity disk controllers and drives available from EMULEX Corporation. No specific information on any patch or emulation is given in this document; this information is available in other documents following this one.

Intended Audience:

This document is designed for use by the System Manager of a given site, or by an agent of the System Manager assigned the task of installing an RSX11M system or doing a system generation. This manual assumes a fairly high familiarity with RSX11M operations, management, and utility procedures.

Required Patches:

There are four areas of RSX11M that may require patching to fully modify the capacity of a type of disk drive:

SYSTB.MAC This is a source file in the executive that contains a table of the device sizes for each unit on the system. Any emulation that changes the number of logical blocks on a disk type will need a corresponding patch installed in SYSTB. This applies to all modified /A and /B emulations available from Emulex. The source to SYSTB is edited at a breakpoint in the SYSGEN command procedure specifically for executive modifications.

xxDRV.MAC If the modified size of the disk includes a geometry change (modifying the number of sectors or the number of heads), the corresponding driver will need to be changed to modify the algorithms it uses to convert a logical block number into a drive location. This does not include the /A emulations from Emulex, but does include most of the /B emulations. The driver source is edited at the same breakpoint in the SYSGEN command procedure as SYSTB.MAC.

SAVSUB.MAC This routine also contains the block counts for many of the drive types; it is included in some of the privileged tasks that may need to access the drives without going through SYSTB or the driver. In some of the patches, SAVSUB.MAC is edited and re-built into the privileged tasks; in other cases, the privileged tasks (such as BOO and SAV) are ZAPed after they are built. SAVSUB can be edited before the SYSGEN procedure is started, or at any breakpoint before the privileged tasks are built.

DSCS8.SYS
BADSYS.SYS

If the size or the geometry of the disks is changed, and you wish to use the standalone versions of DSC and BAD, these programs will also have to be patched. Standalone PRESRV is not supported. The standalone programs can be patched any time before they are used. Please note that if you get a tape distribution from DEC, it must be one that can be copied onto a disk other than the modified-capacity Emulex disk. This is because it is not possible to copy the system onto the disk without patching the standalone utilities, and it is not possible to patch the utilities without copying the system onto the disk (Catch-22).

Patch Procedure -- Disk Distributions:

Systems that have a standard DEC disk (RK05, RK06/7, RL01/2) in addition to their modified Emulex disk can order and receive an RSX11M disk distribution from DEC. The SYSGEN procedure will execute from the standard DEC disk, and the patches for the modified disk are installed during the SYSGEN. When the SYSGEN is complete, the modified disk can be formatted, BADded, and INITialized.

Patch Procedure -- Tape Distributions:

Customers that receive a magtape distribution of RSX11M must specify the type of disk that the magtape is to be copied to. This disk must be a DEC disk, or an exact emulation of a DEC disk (not a modified-capacity emulation). Customers that have only a tape drive, and a modified-capacity Emulex disk on their systems will not be able to install the patches for the modified capacity; these customers could run at a standard capacity if their controller and disk will support it.

```
* * * * * * * * * * *
*   W A R N I N G   *
* * * * * * * * * * *
```

When patching tasks through the ZAP program, you will be given a base, an offset, a value that should be at that location, and a value to change that location to. If the value that is at that offset is not what it should be, DO NOT APPLY THE PATCH. There is something wrong and applying the patch will only worsen things. Please call Software Support at Emulex to straighten things out.

Patch Conditions:

This patch assumes that you are doing a system generation on a disk other than the modified RP02/03. If you have only the Emulex RP03 disks (and a tape drive) on the system, you will need to execute the following steps to expand the capacity of your system disk:

1. Use the standard distribution DSCS8 tape to copy your baseline tape onto the system disk.
2. Boot the system disk and type ^Z (control-Z) to halt the execution of the startup file when you are prompted for the date and time.
3. Set your UIC to [1,51] and use ZAP to modify the file DSCS8.SYS as shown in the patch procedure section of this document.
4. Use the VMR 'SAVE' command to make a bootable tape containing the modified DSCS8 standalone.
5. Boot the modified DSCS8 tape, and use it to re-copy the baseline tape onto the system disk. It will write over the old system and re-initialize the disk to the new (expanded) size.
6. Boot the new system disk and proceed with the system generation as normal.

2.2 RSX-11M V3.1 Patches

2.2.1 RSX-11M V3.1 Patches for RP02/03

Program Description:

This patch modifies RSX-11M V3.1 to permit the use of non-standard disk drive sizes with the EMULEX SCXX/A controllers (RP02/03 emulations).

Patch Explanation:

The configuration of a drive is determined by three things; The number of usable surfaces (called tracks or heads), the number of usable cylinders (similar to the grooves in a record), and the number of sectors (similar to the pieces of a pie). The DEC standard RP02 has 20 heads, 200 cylinders, and 10 sectors. The DEC standard RP03 has 20 heads, 400 cylinders, and 10 sectors. The EMULEX SCXX/A controllers operate on many different sizes of disk drives with varying physical configurations. It is therefore necessary for the controller to do a 'remapping' of a logical drive(s) onto the physical drive. The EMULEX controllers do this in such a way that the number of heads is always 20 and the number of sectors is always 10 to agree with the DEC

standard. Therefore, the only difference between drives on EMULEX controllers and DEC drives is the number of cylinders per drive. The configuration on the standard DEC RP02 and RP03 is coded into the operating system in may locations. The purpose of this patch is to change those locations so that the operating system 'believes' that an RP02 or RP03 has a configuration that differs from the DEC standard. This is done by changing only the number of cylinders. Of course, by changing the configuration of a drive, many other values defined by the configuration (such as the total number of blocks) are also changed and these also have to be patched. These locations, and the values that must be at those locations, are also given in the patch procedure.

Since the disk size is the only area requiring modification for the RP02/03 patch, the RP driver needs no patching. The only areas that require patching is to the device table SYSTB.MAC and a few utilities.

Patch Procedure:

1. Perform a normal SYSGEN, as if building a system to include an RP03 for each drive you are adding. Even if your controller emulates the RP02, specify RP03 to the drive type; the only thing this affects is the default drive size, which we will be editing, anyway. Specifying all drives as RP03's makes the edit somewhat easier.

2. After the query section has finished, SYSGEN will ask:

>* Do you want to edit any of the query section output files [Y/N]: Y

   Answer 'Y' as shown above to cause the indirect command processor to pause and print the following message:

   AT. -- PAUSING. TO CONTINUE TYPE "RES ...AT."

3. Find the number of cylinders used per logical drive for your controller. If you have an SC01/A or SC11/A controllers, then the number of cylinders can be found in Appendix A of this document. If you have an SC02/A or SC12/A controller, then the number of cylinders can be found in Appendix B of the appropriate controller technical manual.

4. Record the number of cylinders on the line labeled CYLINDERS below.

   CYLINDERS. _____

   Multiply the number of cylinders by 200. decimal and record the product on the line labeled BLOCKS below.

   BLOCKS. _____

Convert the number of BLOCKS to octal and store on the line labeled 'blocks' below.

blocks _____

Divide the octal number of blocks by 2 and store the result on the line labeled 'smallsize' below.

smallsize _____

Divide the octal number of blocks into two 16-bit words and store the most significant 16-bit word on the line labeled 'msblock' and the least significant 16-bit word on the line labeled 'lsblock'.

msblock _____

lsblock _____

You will be substituting.these values for their variable names in the edit session later.

5. Edit the file SYSTB.MAC as shown in the following example, replacing the variable names given with their corresponding values as calculated above:

```
>INS $EDI
>EDI SYSTB.MAC
[00080 LINES READ IN]
[PAGE 0]
*PL .DP0::
.DP0::
*PL 034200
     .WORD   034200
*C/034200/lsblock/
     .WORD   lsblock
*N-1
*P
     .WORD   100001
*C/01/msblock/
     .WORD   1000msblock
*
```

Please note that we are only changing the last two digits of the most significant word of the block count, not the entire word. It is important that you not change the whole word as the upper bits are used by RSX.

6. If you have SYSGENed more than one RP02/03 drive, repeat step 5 for each drive SYSGENed, substituting the logical drive mnemonic for '.DP0::' (i.e. '.DP1::', '.DP2::', etc.).

7. When all drive table entries have been edited, exit from the editor:

```
*ED
[EXIT]
```

8. Resume the SYSGEN command procedure with the command:

```
>RES ...AT.
```

9. The SYSGEN may now continue to completion, but should be stopped before SAVing the system so the following patch may be applied.

Patch SAV.TSK as follows:

```
>SET /UIC=[1,54]
>INS $ZAP
>ZAP SAV.TSK/AB
_52700/
000:052700/ 116100      .
_smallsize              ; from the drive size table
_X                      ; 'X' to exit from ZAP.
```

10. The system may now be SAVed. Use BAD.TSK and INI.TSK utilities to initialize your new modified-capacity RP02/03. Use the SAV/WB option when you have verified that the new system is working properly.

11. If you wish to use any of the standalone utilities (BADSYS or DSCSYS), you will need to patch them as shown to recognize the modified size of the RP02/03 disks.

A) BADSYS.SYS:

```
>SET /UIC=[1,51]
>ZAP BADSYS.SYS/AB
_76064/
000:076064/ 116100
_lsblock            ; from the drive size table
_X
>
```

B) DSCSYS.SYS:

```
>SET /UIC=[1,51]
>ZAP DSCSYS.SYS/AB
_64562/
000:64562/ 116100
_lsblock            ; from the drive size table
_X
>
```

12. Your patch is now complete.

2.2.2 RSX-11M V3.1 Patches for RM02/03

Patch Description:

This patch modifies RSX-11M V3.1 to permit the use of non-standard disk drive sizes with the EMULEX SCXX/B1 and SCXX/B3 controllers (RM02/03 emulations).

Patch Explanation:

The configuration of a drive is determined by three things; The number of usable surfaces (called tracks or heads), the number of usable cylinders (similar to the grooves in a record), and the number of sectors (similar to the pieces of a pie). The DEC standard RM02 and RM03 has 5 heads, 823 cylinders and 32 sectors. This configuration is coded into the operating system in many locations. The purpose of this patch is to change those locations so that the operating system 'believes' that an RM02 or RM03 has a configuration that differs from the DEC standard. This is done by changing the number of heads, cylinders, or sectors. Of course, by changing the configuration of a drive, many other values define by the configuration (such as the total number of blocks) are also changed and these also have to be patched. These locations, and the values that must be at those locations, are also given in the patch procedure.

There are three areas in the RSX system that may require patching; the system device table SYSTB.MAC to show the extended or contracted capicity, the approiate driver, and the various disk utilities that use that driver.

The patches to the device table and the device driver are done to the macro source code using an editor, while the patching to the various utilities are made to the task images using the RSX ZAP utility.

Patch Procedure:

1. Perform a normal sysgen, as if building a system to include an RM02/03 disk system.

2. After the query section has finished SYSGEN will ask:

   >* 1. Do you wish to edit any of the Executive files? [Y/N]: Y

   Answer 'Y' to the SYSGEN question. The indirect command file processor will suspend itself to allow the editing.

   AT. -- PAUSING. TO CONTINUE, TYPE "RES ...AT."

3. Refer to the table in appendix A for entry that matches the configuration of your drive. Substitute the values found in that entry for the variables called out in the rest of this patch.

4. Edit the file SYSTB.MAC as shown, substituting the values from the table for their variable names.

```
>EDI SYSTB.MAC
[00039 LINES READ IN]
[PAGE 0]
*PL .DR0::
.DR0::
*PL 1140
     .WORD    001140
*C/001140/lsblock/
     .WORD    lsblock
*N-1
*C/000002/msblock/
     .WORD    msblock
```

5. If you have SYSGENed more than one RM02/03 drive, repeat step 4 for each drive SYSGENed, substituting the logical drive mnemonic for '.DR0::' (i.e. '.DR1::', '.DR2::', etc.).

6. When all drive table entries have been edited, exit from the editor:

```
*ED
[EXIT]
```

7. Now edit the driver, DRDRV.MAC:

```
>EDI DRDRV.MAC
[00039 LINES READ IN]
[PAGE 0]
*PL #5.*32.
     CMP  R2,#5.*32.      ;
*C/5.*32./tracks*sectors/
     CMP  RS,#tracks*sectors  ;
*PL  #5.*32.
     SUB  #5.*32.,R2      ;
*C/5.*32./tracks*sectors/
     SUB  #tracks*sectors,R2  ;
*ED
[EXIT]
```

8. Resume the SYSGEN command procedure with the command:

```
>RES ...AT.
```

9. Be certain to obtain the LOAD Maps for SAV.TSK, BOO.TSK, and INI.TSK as these files must be patched. The SYSGEN may now continue to completion, but should be stopped before SAVing the new system so the following patches may be applied:

A) Patch SAV.TSK as follows:

1) SET /UIC=[1,54]
2) RUN $ZAP
3) Answer with "SAV.TSK/LI"
4) Locate section <SAVSUB> on the load map SAV.TSK
5) Change <SAVSUB> + 122 from 000002 to msblock
6) Change <SAVSUB> + 124 from 001140 to lsblock
7) Locate section <SPCDRV> on the load map of SAV.TSK
8) Change <SPCDRV> + 2162 from 000005 to tracks
9) Exit from ZAP

B) Patch BOO.TSK as follows:

1) SET /UIC=[1,54]
2) RUN $ZAP
3) ANSWER WITH "BOO.TSK/LI"
4) Locate section <SPCDRV> on the load map of BOO.TSK
5) Change <SPCDRV> + 2162 from 000005 to tracks
6) Exit from ZAP .

C) Patch INI.TSK as follows:

1) SET /UIC=[1,54]
2) RUN $ZAP
3) ANSWER WITH "INI.TSK/LI"
4) Locate section <INIBAD> on the load map of INI.TSK
5) Change <INIBAD> + 2110 from 000002 to msblock
6) Change <INIBAD> + 2112 from 001140 to lsblock
7) Change <INIBAD> + 2114 from 001467 to cylinders
8) Change <INIBAD> + 2116 from 000005 to tracks
9) Exit from ZAP

D) Patch BAD.TSK as follows:

1) SET /UIC=[1,54]
2) RUN $ZAP
3) ANSWER WITH "BAD.TSK/AB"
4) Change 2:27452 from 000002 to msblock
5) Change 2:27454 from 001140 to lsblock
6) Exit from ZAP

10. The system may now be SAVed. Use the new BAD.TSK and INI.TSK utilities to initialize a new system disk, then transfer all files required for the system operation to the new disk. Now BOOT the new system just created and SAVE it (/WB) with a bootstrap on the new disk.

11. Now patch the stand-alone programs DSCS8.SYS and BADSYS.SYS.

A) Patch DSCSYS.SYS as follows:

```
1)  SET /UIC=[1,54]
2)  RUN $ZAP
3)  ANSWER WITH "DSCSYS.SYS/AB"
4)  Change 020504 from 000240 to tracks*sectors
5)  Change 020512 from 000240 to tracks*sectors
6)  Change 033002 from 000002 to msblock
7)  Change 033004 from 001140 to lsblock
8)  Change 033040 from 000002 to msblock
9)  Change 033042 from 001140 to lsblock
10) Change 117266 from 000002 to msblock
11) Change 117274 from 001140 to lsblock
12) Exit from ZAP
```

B) Patch BADSYS.SYS as follows:

```
1)  SET /UIC=[1,54]
2)  RUN $ZAP
3)  ANSWER WITH "BADSYS.SYS/AB"
4)  Change 020636 from 000240 to tracks*sectors
5)  Change 020644 from 000240 to tracks*sectors
6)  Change 030476 from 000002 to msblock
7)  Change 030500 from 001140 to lsblock
7)  Change 030534 from 000002 to msblock
8)  Change 030536 from 001140 to lsblock
9)  Change 072070 from 000002 to msblock
10) Change 072072 from 001140 to lsblock
11) Change 072074 from 000005 to tracks
12) Change 072104 from 000240 to tracks*sectors
13) Exit from ZAP
```

2.2.3 RSX-11M V3.1 Patches for RP06

Patch Description:

This patch modifed RSX-11M V3.1 to permit the use of non-standard disk drive sizes with the EMULEX SCXX/B2 and SCXX/B4 controllers (RP06 emulations).

Patch Explanation:

The configuration of a drive is determined by three things; The number of usable surfaces (called tracks or heads), the number of usable cylinders (similar to the grooves in a record), and the number of sectors (similar to the pieces of a pie). The DEC standard RP06 has 19 heads, 815 cylinders and 22 sectors. This configuration is coded into the operating system in many locations. The purpose of this patch is to change those locations so that the operating system 'believes' that an RP06 has a configuration that differs from the DEC

standard. This is done by changing the number of heads, cylinders, or sectors. Of course, by changing the configuration of a drive, many other values defined by the configuration (such as the total number of blocks) are also changed and these also have to be patched. These locations, and the values that must be at those locations, are also given in the patch procedure.

There are three areas in the RSX system that may require patching; the system device table SYSTB.MAC to show the extended or contracted capicity, the approiate driver, and the various disk utilities that use that driver.

The patches to the device table and the device driver are done to the macro source code using an editor, while the patching to the various utilities are made to the task images using the RSX ZAP utility.

Patch Procedure:

1. Perform a normal sysgen, as if building a system to include an RP06 disk system.

2. After the query section has finished SYSGEN will ask:

   ```
   >*  1. Do you wish to edit any of the Executive files? [Y/N]: Y
   ```

   Answer 'Y' as in the example above. The indirect command file processor will suspend itself to allow the editing.

   ```
   AT. -- PAUSING.  TO CONTINUE, TYPE "RES ...AT."
   ```

3. Refer to the table in appendix A for entry that matches the configuration of your drive. Substitute the values found in that entry for the variables called out in the rest of this patch.

4. Edit the file SYSTB.MAC as shown, substituting the values from the table for their variable names.

   ```
   >EDI SYSTB.MAC
   [00039 LINES READ IN]
   [PAGE 0]
   *PL .DB0::
   .DB0::
   *PL 31276
        .WORD    31276
   *C/31276/lsblock/
        .WORD    lsblock
   *N-1
   *C/000005/msblock/
        .WORD    msblock
   ```

5. If you have SYSGENed more than one RP06 drive, repeat step 4 for each drive SYSGENed, substituting the logical drive mnemonic for '.DB0::' (i.e. '.DB1::', '.DB2::', etc.).

6. When all drive table entries have been edited, exit from the editor:

```
*ED
[EXIT]
```

7. Now edit the driver, DBDRV. MAC:

```
>EDI DBDRV.MAC
[00039 LINES READ IN]
[PAGE 0]
*PL 22.
     CMP    R2,#19.*22.
*C/#19.*22./tracks*sectors/
     CMP    R2,#tracks*sectors
*PL 22.
     SUB    #19.*22.,R2
*C/#19.*22./#tracks*sectors/
     SUB    #tracks*sectors,R2
*PL 22.
160$:  CMPB #22.,R0
*C/22./sectors/
160$:  CMPB #sectors,R0
*PL 22.
     SUB    #22.,R0
*C/22./sectors/
     SUB    #sectors,R0
*ED
[EXIT]
```

8. Resume the SYSGEN command procedure with the command:

```
>RES ...AT.
```

9. Be certain to obtain the LOAD Maps for SAV.TSK and BOO.TSK as these files must be patched. The SYSGEN may now continue to completion, but should be stopped before SAVing the new system so the following patches may be applied:

   A) Patch SAV.TSK as follows:

```
1)   SET /UIC=[1,54]
2)   RUN $ZAP
3)   Answer with "SAV.TSK/LI"
4)   Locate section <SAVSUB> on the load map SAV.TSK
5)   Locate the GLOBAL "$TYPE"
6)   Change "$TYPE" - 372 from 000005 to msblock
7)   Change "$TYPE" - 364 from 031276 to lsblock
8)   Locate section <SPCDRV> on the load map of SAV.TSK
9)   Locate GLOBAL "$DBDRV"
10)  Change "$DBDRV" + 54 from 000026 to sectors
11)  Exit from ZAP
```

B) Patch BOO.TSK as follows:

```
1)  SET /UIC=[1,54]
2)  RUN $ZAP
3)  ANSWER WITH "BOO.TSK/LI"
4)  Locate section <SPCDRV> on the load map of BOO.TSK
5)  Locate GLOBAL "$DBDRV"
6)  Change "$DBDRV" + 54 from 000026 to sectors
6)  Exit from ZAP
```

10. The system may now be SAVed. Use the BAD.TSK and INI.TSK utilities to initialize a new system disk, then transfer all files required for the system operation to the new disk. Now BOOT the new system just created and SAVE it (/WB) with a bootstrap on the new disk.

11. Patch the stand-alone programs DSCSYS.SYS and BADSYS.SYS as follows:

A) BADSYS.SYS

```
1)  SET /UIC=[1,54]
2)  RUN $ZAP
3)  BADSYS.SYS/AB
4)  Change 27302 from 000005 to msblock
5)  Change 27304 from 031276 to lsblock
6)  Change 27340 from 000005 to msblock
7)  Change 27342 from 031276 to lsblock
8)  Change 76210 from 000005 to msblock
9)  Change 76216 from 031276 to lsblock
10) Change 12700 from 000642 to tracks*sectors
11) Change 12706 from 000642 to tracks*sectors
12) Change 12726 from 000026 to sectors
13) Exit from ZAP
```

B) DSCSYS.SYS

```
1)  SET /UIC=[1,54]
2)  RUN $ZAP
3)  DSCSYS.SYS/AB
4)  Change 31726 from 000005 to msblock
5)  Change 31730 from 031276 to lsblock
6)  Change 31764 from 000005 to msblock
7)  Change 31766 from 031276 to lsblock
8)  Change 12752 from 000642 to tracks*sectors
9)  Change 12760 from 000642 to tracks*sectors
10) Change 13000 from 000026 to sectors
11) Change 64716 from 000005 to msblock
12) Change 64724 from 031276 to lsblock
13) Exit from ZAP
```

C) PRESRV.SYS

```
1)  SET /UIC=[1,54]
2)  RUN $ZAP
3)  PRESRV.SYS
4)  Change 27224 from 000005 to msblock
5)  Change 27226 from 031276 to lsblock
6)  Change 27262 from 000005 to msblock
7)  Change 27264 from 031276 to lsblock
8)  Change 60506 from 000005 to msblock
9)  Change 60514 from 031276 to lsblock
10) Change 13656 from 000642 to tracks*sectors
11) Change 13664 from 000642 to tracks*sectors
12) Change 13704 from 000026 to sectors
13) Exit from ZAP
```

2.3 RSX-11M V3.2 Patches

2.3.1 RSX-11M V3.2 Patches for RP02/03

Patch Description:

This patch modifies RSX-11M V3.2 to permit the use of non-standard disk drive sizes with the SCXX/A controllers (RP02/03 emulations).

Patch Explanation:

The configuration of a drive is determined by three things; The number of usable surfaces (called tracks or heads), the number of usable cylinders (similar to the grooves in a record), and the number of sectors (similar to the pieces of a pie). The DEC standard RP02 has 20 heads, 200 cylinders, and 10 sectors. The DEC standard RP03 has 20 heads, 400 cylinders, and 10 sectors. The EMULEX SCXX/A controllers operate on many different sizes of disk drives with varying physical configurations. It is therefore necessary for the controller to do a 'remapping' of a logical drive(s) onto the physical drive. The EMULEX controllers do this in such a way that the number of heads is always 20 and the number of sectors is always 10 to agree with the DEC standard. Therefore, the only difference between drives on EMULEX controllers and DEC drives is the number of cylinders per drive. The configuration on the standard DEC RP02 and RP03 is coded into the operating system in may locations. The purpose of this patch is to change those locations so that the operating system 'believes' that an RP02 or RP03 has a configuration that differs from the DEC standard. This is done by changing only the number of cylinders. Of course, by changing the configuration of a drive, many other values defined by the configuration (such as the total number of blocks) are also changed and these also have to be patched. These locations, and the values that must be at those locations, are also given in the patch procedure.

There are three areas in the RSX system that may require patching; the system device table SYSTB.MAC to show the extended or contracted capicity, the approiate driver, and the various disk utilities that use that driver.

The patches to the device table and the device driver are done to the macro source code using an editor, while the patching to the various utilities are made to the task images using the RSX ZAP utility.

Since the disk size is the only area requiring modification for the RP02/03 patch, the RP driver needs no patching. The only areas that require patching is to the device table SYSTB.MAC and a few utilities.

Patch Procedure:

1. Find the number of cylinders used per logical drive for your controller. If you have an SC01/A or SC11/A controllers, then the number of cylinders can be found in Appendix A of this document. If you have an SC02/A or SC12/A controller, then the number of cylinders can be found in Appendix B of the appropriate controller technical manual.

2. Record the number of cylinders on the line labeled CYLINDERS below.

   CYLINDERS. _____

   Multiply the number of cylinders by 200. decimal and record the product on the line labeled BLOCKS below.

   BLOCKS. _____

   Convert the number of BLOCKS to octal and store on the line labeled 'blocks' below.

   blocks _____

   Divide the number of blocks into two 16-bit words and store the most significant 16-bit word on the line labeled 'msblock' and the least significant 16-bit word on the line labeled 'lsblock'.

   msblock _____

   lsblock _____

   You will be substituting these values for their variable names in the edit session later.

3. Edit the source distribution file [12,10]SAVSUB.MAC.

```
>SET/UIC=[12,10]
>INS $EDI
>EDI SAVSUB.MAC
[00080 LINES READ IN]
[PAGE 0]
*PL 40000.
     .WORD     0,40000.    ;RP02
*C/0,40000./msblock,lsblock/
     .WORD     msblock,lsblock    ;RP02
*EX
```

4. Now assemble SAVSUB.MAC.

```
>INS $MAC
>MAC [12,10]SAVSUB,[12,34]SAVSUB/-SP=[1,1]EXEMC/ML,
[11,10]RSXMC/PA:1,[12,10]SAVSUB
```

5. And replace the object module in the object module library, SAV.OLB.

```
>LBR [1,24]SAV/RP=[12,10]SAVSUB
MODULE "SAVSUB" REPLACED
```

6. Perform a normal SYSGEN, as if building a system to include an RP03 for each drive you are adding. Even if your controller emulates the RP02, specify RP03 to the drive type; the only thing this affects is the default drive size, which we will be editing, anyway. Specifying all drives as RP03's makes the edit somewhat easier.

7. After the query section has finished, SYSGEN will ask:

```
>* Do you want to edit any of the query section output files [Y/N]: Y
```

Answer 'Y' as shown above to cause the indirect command processor to pause and print the following message:

```
AT. -- PAUSING.  TO CONTINUE TYPE "RES ...AT."
```

8. Edit the file SYSTB.MAC as shown in the following example, replacing the variable names given with their corresponding values as calculated above:

```
>EDI SYSTB.MAC
[00080 LINES READ IN]
[PAGE 0]
*PL .DP0::
.DP0::
*PL 034200
     .WORD   034200
*C/034200/lsblock/
     .WORD   lsblock
```

```
*N-1
*C/01/msblock/
     .WORD   1000msblock
*
```

Please note that we are only changing the last two digits of the most significant word of the block count, not the entire word. It is important that you not change the whole word as the upper bits are used by RSX.

9. If you have SYSGENed more than one RP02/03 drive, repeat step 5 for each drive SYSGENed, substituting the logical drive mnemonic for '.DP0::' (i.e. '.DP1::', '.DP2::', etc.).

10. When all drive table entries have been edited, exit from the editor:

```
*ED
[EXIT]
```

11. Resume the SYSGEN command procedure with the command:

```
>RES ...AT.
```

12. The SYSGEN may now continue to completion. Afterwards, boot in the target RSX11M system SYSGENed. Run the on-line utility BAD on the RP02/03 to locate and record bad block information on the RP03. Then initialize (INI) the RP02/03 using the /BAD=AUTO option.

13. Remember to SAV the system with a /WB to the system disk. Your patch is now complete.

2.3.2 RSX-11M V3.2 Patches for RM02/03

Patch Description:

This patch modifies RSX-11M V3.1 to permit the use of non-standard disk drive sizes with the EMULEX SCXX/B1 and SCXX/B3 controllers (RM02/03 emulations).

Patch Explanation:

The configuration of a drive is determined by three things; The number of usable surfaces (called tracks or heads), the number of usable cylinders (similar to the grooves in a record), and the number of sectors (similar to the pieces of a pie). The DEC standard RM02 and RM03 has 5 heads, 823 cylinders and 32 sectors. This configuration is coded into the operating system in many locations. The purpose of this patch is to change those locations so that the operating system 'believes' that an RM02 or RM03 has a configuration that differs from the DEC standard. This is done by changing the number of heads,

cylinders, or sectors. Of course, by changing the configuration of a drive, many other values define by the configuration (such as the total number of blocks) are also changed and these also have to be patched. These locations, and the values that must be at those locations, are also given in the patch procedure.

There are three areas in the RSX system that may require patching; the system device table SYSTB.MAC to show the extended or contracted capicity, the approiate driver, and the various disk utilities that use that driver.

The patches to the device table and the device driver are done to the macro source code using an editor, while the patching to the various utilities are made to the task images using the RSX ZAP utility.

```
* * * * * * * * * * *
*  W A R N I N G  *
* * * * * * * * * * *
```

THIS PATCH ONLY APPLYS TO.RSX-11M V3.2 AUTOPATCH LEVEL C, D AND E. ATTEMPING TO APPLY THE PATCH TO ANY OTHER AUTOPATCH LEVEL OR A NON AUTOPATCHED SYSTEM WILL NOT WORK.

Patch Procedure:

1. Perform a normal sysgen, as if building a system to include an RM02/03 disk system.

2. After the query section has finished SYSGEN will ask:

   ```
   >*  1. Do you wish to edit any of the Executive files? [Y/N]: Y
   ```

   Answer 'Y' to the SYSGEN question. The indirect command file processor will suspend itself to allow the editing.

   ```
   AT. -- PAUSING.  TO CONTINUE, TYPE "RES ...AT."
   ```

3. Refer to the table in appendix A for entry that matches the configuration of your drive. Substitute the values found in that entry for the variables called out in the rest of this patch.

4. Edit the file SYSTB.MAC as shown, substituting the values from the table for their variable names.

```
>EDI SYSTB.MAC
[00039 LINES READ IN]
[PAGE 0]
*PL .DR0::
.DR0::
*PL 1140
     .WORD    001140
*C/001140/lsblock/
     .WORD    lsblock
```

```
*N-1
*C/000002/msblock/
     .WORD    msblock
```

5. If you have SYSGENed more than one RM02/03 drive, repeat step 4 for each drive SYSGENed, substituting the logical drive mnemonic for '.DR0::' (i.e. '.DR1::', '.DR2::', etc.).

6. When all drive table entries have been edited, exit from the editor:

```
*ED
[EXIT]
```

7. Now edit the driver, DRDRV.MAC:

```
>EDI DRDRV.MAC
[00039 LINES READ IN]
[PAGE 0]
*PL #5*32.
     MOV    #5*32.,R1
*C/5*32./tracks*sectors/
     MOV    #tracks*sectors,R1
*PL #5.*256.
     CMP    #5.*256.,R0
*C/5./tracks/
     CMP    #tracks*256.,R0
*PL #5.*256.
     SUB    #5.*256.,R0
*C/5./tracks/
     SUB    #tracks*256.,R0
*ED
[EXIT]
```

8. Resume the SYSGEN command procedure with the command:

```
>RES ...AT.
```

9. Be certain to obtain the LOAD Maps for SAV.TSK, BOO.TSK, and INI.TSK as these files MUST be patched. The SYSGEN may now continue to completion, but should be stopped before SAVing the new system so the following patches may be applied:

A) Patch SAV.TSK as follows:

1) SET /UIC=[1,54]
2) RUN $ZAP
3) Answer with "SAV.TSK/LI"
4) Locate section <SAVSUB> on the load map SAV.TSK
5) Change <SAVSUB> + 132 from 000002 to msblock
6) Change <SAVSUB> + 134 from 001140 to lsblock
7) Locate section <SPCDRV> on the load map of SAV.TSK
8) Change <SPCDRV> + 4460 from 000005 to tracks
9) Exit from ZAP

B) Patch BOO.TSK as follows:

```
1)  SET /UIC=[1,54]
2)  RUN $ZAP
3)  ANSWER WITH "BOO.TSK/LI"
4)  Locate section <SPCDRV> on the load map of BOO.TSK
5)  Change <SPCDRV> + 4460 from 000005 to tracks
6)  Exit from ZAP
```

C) Patch INI.TSK as follows:

```
1)  SET /UIC=[1,54]
2)  RUN $ZAP
3)  ANSWER WITH "INI.TSK/LI"
4)  Locate section <INIBAD> on the load map of INI.TSK
5)  Change <INIBAD> + 2162 from 000002 to msblock
6)  Change <INIBAD> + 2164 from 001140 to lsblock
7)  Change <INIBAD> + 2166 from 001467 to cylinders
8)  Change <INIBAD> + 2170 from 020005 to tracks!020000
9)  Exit from ZAP
```

D) Patch BAD.TSK as follows:

```
1)  SET /UIC=[1,54]
2)  RUN $ZAP
3)  ANSWER WITH "BAD.TSK/AB"
4)  Change 6:662 from 000002 to msblock
5)  Change 6:664 from 001140 to lsblock
6)  change 6:666 from 000005 to tracks
7)  Exit from ZAP
```

10. The system may now be SAVed. Use the new BAD.TSK and INI.TSK utilities to initialize a new system disk, then transfer all files required for the system operation to the new disk. Now BOOT the new system just created and SAVE it (/WB) with a bootstrap on the new disk.

11. Now patch the stand-alone programs DSCS8.SYS and BADSYS.SYS.

A) Patch DSCS8 as follows:

```
1)  SET /UIC=[1,54]
2)  RUN $ZAP
3)  ANSWER WITH "DSCS8.SYS/AB"
4)  Change 021362 from 000240 to tracks*sectors
5)  Change 034560 from 000002 to msblock
6)  Change 034562 from 001140 to lsblock
7)  Change 034616 from 000002 to msblock
8)  Change 034620 from 001140 to lsblock
9)  Change 057324 from 000002 to msblock
10) Change 057332 from 001140 to lsblock
11) Change 113426 from 000002 to msblock
12) Change 113434 from 001140 to lsblock
13) Exit from ZAP
```

B) Patch BADSYS.SYS as follows:

```
1)  SET /UIC=[1,54]
2)  RUN $ZAP
3)  ANSWER WITH "BADSYS.SYS/AB"
4)  Change 023750 from 000240 to tracks*sectors
5)  Change 036050 from 000002 to msblock
6)  Change 036052 from 001140 to lsblock
7)  Change 053170 from 000002 to msblock
8)  Change 053176 from 001140 to lsblock
9)  Change 045734 from 000002 to msblock
10) Change 045736 from 001140 to lsblock
11) Change 045740 from 000005 to tracks
12) Change 045750 from 000240 to tracks*sectors
13) Exit from ZAP
```

2.3.3 RSX-11M V3.2 Patches for RP06

Patch Description:

This patch modifed RSX-11M V3.2 to permit the use of non-standard disk drive sizes with the EMULEX SCXX/B2 and SCXX/B4 controllers (RP06 emulations).

Patch Explanation:

The configuration of a drive is determined by three things; The number of usable surfaces (called tracks or heads), the number of usable cylinders (similar to the grooves in a record), and the number of sectors (similar to the pieces of a pie). The DEC standard RP06 has 19 heads, 815 cylinders and 22 sectors. This configuration is coded into the operating system in many locations. The purpose of this patch is to change those locations so that the operating system 'believes' that an RP06 has a configuration that differs from the DEC standard. This is done by changing the number of heads, cylinders, or sectors. Of course, by changing the configuration of a drive, many other values defined by the configuration (such as the total number of blocks) are also changed and these also have to be patched. These locations, and the values that must be at those locations, are also given in the patch procedure.

There are three areas in the RSX system that may require patching; the system device table SYSTB.MAC to show the extended or contracted capicity, the approiate driver, and the various disk utilities that use that driver.

The patches to the device table and the device driver are done to the macro source code using an editor, while the patching to the various utilities are made to the task images using the RSX ZAP utility.

```
* * * * * * * * * *
*  W A R N I N G  *
* * * * * * * * * *
```

THIS PATCH ONLY APPLYS TO RSX-11M V3.2 AUTOPATCH LEVEL C, D, AND E. AUTOPATCH LEVEL E DIFFERS FROM C AND D ONLY IN THE MODULE SAV.TSK. THIS DIFFERENCE IS CALLED OUT IN THE PATCH. PLEASE USE THE LEVEL E OFFSETS IF YOU HAVE APPLIED AUTOPATCH LEVEL E OR THE PATCH WILL NOT WORK.

Patch Procedure:

1. Perform a normal sysgen, as if building a system to include an RP06 disk system.

2. After the query section has finished SYSGEN will ask:

```
>*  1. Do you wish to edit any of the Executive files? [Y/N]: Y
```

   Answer 'Y' as in the example above. The indirect command file processor will suspend itself to allow the editing.

```
AT. -- PAUSING.  TO CONTINUE, TYPE "RES ...AT."
```

3. Type the following:

```
>EDI SYSTB.MAC
[00039 LINES READ IN]
[PAGE 0]
*
```

4. The file "SYSTB.MAC" is now avilable for editing.

5. Refer to Appendix B for the table of values that match the configuration of your drive. Use the octal values from this table to for the variables used in the rest of this patch.

```
*PL .DB0::
.DB0::
*PL 31276
     .WORD    31276
*C/31276/lsblock/
     .WORD    lsblock
*N-1
*C/000005/msblock/
     .WORD    msblock
```

6. If you have SYSGENed more than one RP06 drive, repeat step 5 for each drive SYSGENed, substituting the logical drive mnemonic for '.DB0::' (i.e. '.DB1::', '.DB2::', etc.).

7. When all drive table entries have been edited, exit from the editor:

```
*ED
[EXIT]
```

8. Now edit the driver, DBDRV. MAC:

```
>EDI DBDRV.MAC
[00039 LINES READ IN]
[PAGE 0]
*PL 22.
     CMP    R2,#19.*22.
*C/#19.*22./tracks*sectors/
     CMP    R2,#tracks*sectors
*PL 22.
     SUB    #19.*22.,R2
*C/#19.*22./#tracks*sectors/
     SUB    #tracks*sectors,R2
*PL 22.
     MOV    #22.,R1
*C/22./sectors/
     MOV    #sectors,R1
*PL 22.
160$:  CMPB #22.,R0
*C/22./sectors/
160$:  CMPB #sectors,R0
*PL 22.
     SUB    #22.,R0
*C/22./sectors/
     SUB    #sectors,R0
*ED
[EXIT]
```

9. Resume the SYSGEN command procedure with the command:

```
>RES ...AT.
```

10. Be certain to obtain the LOAD Maps for SAV.TSK and BOO.TSK as these files must be patched. The SYSGEN may now continue to completion, but should be stopped before SAVing the new system so the following patches may be applied:

A) Patch SAV.TSK as follows:

FOR PATCH LEVELS C AND D DO THE FOLLOWING:

1) SET /UIC=[1,54]
2) RUN $ZAP
3) Answer with "SAV.TSK/LI"
4) Locate section <SAVSUB> on the load map SAV.TSK
5) Change <SAVSUB> + 2032 from 000005 to msblock
6) Change <SAVSUB> + 2040 from 031276 to lsblock
7) Locate section <SPCDRV> on the load map of SAV.TSK

8) Change <SPCDRV> + 2162 from 000023 to tracks
9) Exit from ZAP

FOR AUTOPATCH LEVEL E DO THE FOLLOWING:

1) SET /UIC=[1,54]
2) RUN $ZAP
3) Answer with "SAV.TSK/LI"
4) Locate section <SAVSUB> on the load map SAV.TSK
5) Change <SAVSUB> + 2104 from 000005 to msblock
6) Change <SAVSUB> + 2112 from 031276 to lsblock
7) Locate section <SPCDRV> on the load map of SAV.TSK
8) Change <SPCDRV> + 2162 from 000023 to tracks
9) Exit from ZAP

B) Patch BOO.TSK as follows:

1) SET /UIC=[1,54]
2) RUN $ZAP
3) ANSWER WITH "BOO.TSK/LI"
4) Locate section <SPCDRV> on the load map of BOO.TSK
5) Change <SPCDRV> + 2162 from 000023 to tracks
6) Exit from ZAP

11. The system may now be SAVed. Use the BAD.TSK and INI.TSK utilities to initialize a new system disk, then transfer all files required for the system operation to the new disk. Now BOOT the new system just created and SAVE it (/WB) with a bootstrap on the new disk.

12. Patch the stand-alone programs DSCS8.SYS and BADSYS.SYS as follows:

A) DSCS8.SYS

1) SET /UIC=[1,54]
2) RUN $ZAP
3) DSCS8.SYS/AB
4) Change 33504 from 000005 to msblock
5) Change 33506 from 031276 to lsblock
6) Change 33542 from 000005 to msblock
7) Change 33544 from 031276 to lsblock
8) Change 13160 from 000642 to tracks*sectors
9) Change 13166 from 000642 to tracks*sectors
10) Change 13206 from 000026 to sectors
11) Change 57130 from 000005 to msblock
12) Change 57136 from 031276 to lsblock
13) Exit from ZAP

B) BADSYS.SYS

1) SET /UIC=[1,54]
2) RUN $ZAP
3) BADSYS.SYS/AB

```
4)   Change 34764 from 000005 to msblock
5)   Change 34766 from 031276 to lsblock
6)   Change 52736 from 000005 to msblock
7)   Change 52744 from 031276 to lsblock
8)   Change 15422 from 000642 to tracks*sectors
9)   Change 15430 from 000642 to tracks*sectors
10)  Change 15450 from 000026 to sectors
11)  Exit from ZAP
```

2.4 RSX-11M V4.0 Patches

2.4.1 RSX-11M V4.0 Patches for RP02/03

Patch Description:

This patch modifies RSX-11M V4.0 to permit the use of non-standard disk drive sizes with the SCXX/A controllers (RP02/03 emulations).

Patch Explanation:

The configuration of a drive is determined by three things; The number of usable surfaces (called tracks or heads), the number of usable cylinders (similar to the grooves in a record), and the number of sectors (similar to the pieces of a pie). The DEC standard RP02 has 20 heads, 200 cylinders, and 10 sectors. The DEC standard RP03 has 20 heads, 400 cylinders, and 10 sectors. The EMULEX SCXX/A controllers operate on many different sizes of disk drives with varying physical configurations. It is therefore necessary for the controller to do a 'remapping' of a logical drive(s) onto the physical drive. The EMULEX controllers do this in such a way that the number of heads is always 20 and the number of sectors is always 10 to agree with the DEC standard. Therefore, the only difference between drives on EMULEX controllers and DEC drives is the number of cylinders per drive. The configuration on the standard DEC RP02 and RP03 is coded into the operating system in may locations. The purpose of this patch is to change those locations so that the operating system 'believes' that an RP02 or RP03 has a configuration that differs from the DEC standard. This is done by changing only the number of cylinders. Of course, by changing the configuration of a drive, many other values defined by the configuration (such as the total number of blocks) are also changed and these also have to be patched. These locations, and the values that must be at those locations, are also given in the patch procedure.

Since the disk size is the only area requiring modification for the RP02/03 patch, the RP driver needs no patching. The only areas that require patching is to the device table SYSTB.MAC and a few utilities.

Patch Procedure:

1. Find the number of cylinders used per logical drive for your controller. If you have an SC01/A or SC11/A controllers, then the number of cylinders can be found in Appendix A of this document. If you have an SC02/A or SC12/A controller, then the number of cylinders can be found in Appendix B of the appropriate controller technical manual.

2. Record the number of cylinders on the line labeled CYLINDERS below.

   CYLINDERS. _____

   Multiply the number of cylinders by 200. decimal and record the product on the line labeled BLOCKS below.

   BLOCKS. _____

   Convert the number of BLOCKS to octal and store on the line labeled 'blocks' below.

   blocks _____

   Divide the number of blocks into two 16-bit words and store the most significant 16-bit word on the line labeled 'msblock' and the least significant 16-bit word on the line labeled 'lsblock'.

   msblock _____

   lsblock _____

   You will be substituting these values for their variable names in the edit session later.

3. Perform a normal SYSGEN, as if building a system to include an RP02/03 disk subsystem.

4. After the query section has finished, SYSGEN will ask:

```
>* Do you want to edit any of the query section output files [Y/N]: Y
```

   Answer 'Y' as shown above to cause the indirect command processor to pause and print the following message:

```
AT. -- PAUSING.  TO CONTINUE TYPE "RES ...AT."
```

5. Edit the file SYSTB.MAC as shown in the following example, replacing the variable names given with their corresponding values as calculated above.

If the drive is configured as an RP02 then type:

```
>EDI SYSTB.MAC
[000XX LINES READ IN]
[PAGE 0]
*PL .DP0::
.DP0::
*PL 116100
     .WORD     116100
*C/116100/lsblock/
     .WORD     lsblock
*N-1
     .WORD     0
*C/0/msblock/
     .WORD     msblock
*
```

If the drive is configured as an RP03 then type:

```
>EDI SYSTB.MAC
[000XX LINES READ IN]
[PAGE 0]
*PL .DP0::
.DP0::
*PL 034200
     .WORD   034200
*C/034200/lsblock/
     .WORD   lsblock
*N-1
     .WORD     100001
*C/100001/lmsblock/
     .WORD     lmsblock
*
```

Please note that we are only changing the last two digits of the most significant word of the block count, not the entire word. It is important that you not change the whole word as the upper bits are used by RSX.

6. If you have SYSGENed more than one RP02/03 drive, repeat step 5 for each drive SYSGENed, substituting the logical drive mnemonic for '.DP0::' (i.e. '.DP1::', '.DP2::', etc.).

7. When all drive table entries have been edited, exit from the editor:

```
*ED
[EXIT]
```

8. Resume the SYSGEN command procedure with the command:

```
>RES ...AT.
```

9. The SYSGEN may now continue to completion. Now, find the map for the file SAV.TSK (it should be in [1,34]). If it is not there then you didn't specify SY: as the map device. You will have to edit the file [1,24]SAVBLD.CMD and change the NL: in the map file specification to SY:. Then set your UCI to [1,54] and re-TKB the file by typing:

   ```
   >TKB @SAVBLD
   ```

   This should get you the map file. Once that is done, lookup the offset for SAVSIZ. Now patch the file SAV.TSK. Type:

   ```
   SET /UIC=[1,54]
   RUN $ZAP
   ANSWER WITH "SAV.TSK/LI"
   Locate the section with SAVSIZ in the map of SAV.TSK
   Change location <SAVSIZ>+46 to msblock
   Change location <SAVSIZ>+50 to lsblock
   Exit from ZAP
   ```

10. Boot in the new RSX11M system SYSGENed. It should respond with the RSX-11M header and a prompt (>). Hit carriage return and enter the time in the form "TIM HH:MM DD-MMM-YY". If the system doesn't accept the time then you made a mistake in your gen somewhere and the system won't boot. DO NOT save this system! Go back and try to find your mistake. If it does accept the time SAV the system with a /WB to the system disk.

11. Your patch is now complete.

2.4.2 RSX-11M V4.0 Patches for RM02/03/05

Patch Description:

This patch modifies RSX-11M V4.0 to permit the use of non-standard disk drive sizes with the EMULEX SCXX/B1 and SCXX/B3 controllers (RM02/03/05 emulations).

Patch Explanation:

The configuration of a drive is determined by three things; The number of usable surfaces (called tracks or heads), the number of usable cylinders (similar to the grooves in a record), and the number of sectors (similar to the pieces of a pie). The DEC standard RM02 and RM03 has 5 heads, 823 cylinders, and 32 sectors. The DEC standard RM05 has 19 heads, 823 cylinders, and 32 sectors. This configuration is coded into the operating system in many locations. The purpose of this patch is to change those locations so that the operating system 'believes' that an RM02, RM03, or RM05 has a configuration that differs from the DEC standard. This is done by changing the number of heads, cylinders, or sectors. Of course, by changing the configuration of a drive, many other values define by the

configuration (such as the total number of blocks) are also changed and these also have to be patched. These locations, and the values that must be at those locations, are also given in the patch procedure.

There are three areas in the RSX system that may require patching; the system device table SYSTB.MAC to show the extended or contracted capicity, the approiate driver, and the various disk utilities that use that driver.

The patches to the device table and the device driver are done to the macro source code using an editor, while the patching to the various utilities are made to the task images using the RSX ZAP utility.

Patch Procedure:

1. Perform a normal sysgen, as if building a system to include an RM02/03/05 disk system. It is recommended that you do a "prep-gen" first to create the "SYSSAVED.CMD" file. Then execute the sysgen procedure using the saved command file. Answer "NO" to the question:

   "Skip end of section breakpoints?"

2. After the query section has finished SYSGEN will ask:

   >* EOS * DO YOU WANT TO: <CR>-CONTINUE R-REPEAT E-EXIT P-PAUSE [S]:

   Answer 'P' to the SYSGEN question. The indirect command file processor will suspend itself to allow the editing.

   AT. -- PAUSING. TO CONTINUE, TYPE "RES ...AT."

3. Refer to the table in Appendix B for the entry that matches the configuration of your drive. Substitute the values found in that entry for the variables called out in the rest of this patch.

4. Edit the file SYSTB.MAC as shown, substituting the values from the table for their variable names.

```
>EDI SYSTB.MAC
[00039 LINES READ IN]
[PAGE 0]
*PL .DR0::
.DR0::
*PL 1140
     .WORD    001140
*C/001140/lsblock/
     .WORD    lsblock
*N-1
*C/000002/msblock/
     .WORD    msblock
```

5. If you have SYSGENed more than one RM02/03/05 drive, repeat step 4 for each drive SYSGENed, substituting the logical drive mnemonic for '.DR0::' (i.e. '.DR1::', '.DR2::', etc.).

6. When all drive table entries have been edited, exit from the editor:

```
*ED
[EXIT]
```

7. Now edit the driver, DRDRV.MAC:

```
>EDI DRDRV.MAC
[00039 LINES READ IN]
[PAGE 0]
*PL PRMTBL:
PRMTBL:
*<cr>
DVPRM     <2,1140>,5,32.,0
*C/2,1140>,5/msblock,lsblock>,tracks/
DVPRM     <msblock,lsblock>,tracks,32.,0
*<cr>
DVPRM     <2,1140>,5,32.,0
*C/2,1140>,5/msblock,lsblock>,tracks/
DVPRM     <msblock,lsblock>,tracks,32.,0
*ED
[EXIT]
```

8. Resume the SYSGEN command procedure with the command:

```
>RES ...AT.<ESC>
```

9. Be certain to obtain the LOAD Maps for SAV.TSK, BOO.TSK, BAD.TSK and INI.TSK as these files MUST be patched. The SYSGEN may now continue to completion, but should be stopped before SAVing the new system so the following patches may be applied:

   A) Patch SAV.TSK as follows:

      1) SET /UIC=[1,54]
      2) RUN $ZAP
      3) Answer with "SAV.TSK/LI"
      4) Locate section <SAVSIZ> on the load map SAV.TSK
      5) Change <SAVSIZ> + 56 from 000002 to msblock
      6) Change <SAVSIZ> + 60 from 001140 to lsblock
      7) Locate section <SAVDR> on the load map of SAV.TSK
      8) Change <SAVDR> + 160 from 000005 to tracks
      9) Exit from ZAP

   NOTE: SAV.TSK must be patched irregardless if the disk is not the system disk. SAV.TSK updates system tables on disk storage sizes and if not patched, INI.TSK will init the disk with the origional block count.

B) Patch BOO.TSK as follows:

```
1)  SET /UIC=[1,54]
2)  RUN $ZAP
3)  ANSWER WITH "BOO.TSK/LI"
4)  Locate section <SAVDR> on the load map of BOO.TSK
5)  Change <SAVDR> + 160 from 000005 to tracks
6)  Exit from ZAP
```

C) Patch BAD.TSK as follows:

```
1)  SET /UIC=[1,54]
2)  RUN $ZAP
3)  ANSWER WITH "BAD.TSK/LI"
4)  Locate section <BADDAT> on the load map of BAD.TSK
5)  Change <BADDAT> + 2016 from 000002 to msblock
6)  Change <BADDAT> + 2020 from 001140 to lsblock
7)  Change <BADDAT> + 2022 from 000005 to tracks
8)  Change <BADDAT> + 2032 from 000240 to tracks*sectors
9)  Exit from ZAP .
```

D) Patch INI.TSK as follows:

```
1)  SET /UIC=[1,54]
2)  RUN $ZAP
3)  ANSWER WITH "INI.TSK/LI"
4)  Locate section <INIBAD> on the load map of INI.TSK
5)  Change <INIBAD> + 2214 from 000002 to msblock
6)  Change <INIBAD> + 2216 from 001140 to lsblock
7)  Change <INIBAD> + 2220 from 001467 to cylinders
8)  Change <INIBAD> + 2222 from 020005 to <sectors*256.>+tracks
9)  Change <INIBAD> + 2224 from 020001 to <sectors*256.>+1
10) Exit from ZAP
```

E) Patch FMT.TSK as follows:

```
1)  SET /UIC=[1,54]
2)  RUN $ZAP
3)  ANSWER WITH "FMT.TSK/LI"
4)  Locate section <FMTDAT> on the load map of FMT.TSK
5)  Change <FMTDAT> + 44216 from 000002 to msblock
6)  Change <FMTDAT> + 44220 from 001140 to lsblock
7)  Change <FMTDAT> + 44222 from 001467 to cylinders
8)  Change <FMTDAT> + 44224 from 000005 to tracks
9)  Exit from ZAP
```

10. The SYSGEN may now continue to completion. Use the BAD.TSK and INI.TSK utilities to initialize a new system disk, then transfer all files required for the system operation to the new disk. If you use FMT remember to use the /WLT (write last track) switch to update the manufactures bad block file. Now BOOT the new system just created and SAVE it (/WB) with a bootstrap on the new disk.

2.4.3 RSX-11M V4.0 Patches for RP06

Patch Description:

This patch modifed RSX-11M V4.0 to permit the use of non-standard disk drive sizes with the EMULEX SCXX/B2 and SCXX/B4 controllers (RP06 emulations).

Patch Explanation:

The configuration of a drive is determined by three things; The number of usable surfaces (called tracks or heads), the number of usable cylinders (similar to the grooves in a record), and the number of sectors (similar to the pieces of a pie). The DEC standard RP06 has 19 heads, 815 cylinders and 22 sectors. This configuration is coded into the operating system in many locations. The purpose of this patch is to change those locations so that the operating system 'believes' that an RP06 has a configuration that differs from the DEC standard. This is done by changing the number of heads, cylinders, or sectors. Of course, by changing the configuration of a drive, many other values defined by the configuration (such as the total number of blocks) are also changed and these also have to be patched. These locations, and the values that must be at those locations, are also given in the patch procedure.

There are three areas in the RSX system that may require patching; the system device table SYSTB.MAC to show the extended or contracted capicity, the approiate driver, and the various disk utilities that use that driver.

The patches to the device table and the device driver are done to the macro source code using an editor, while the patching to the various utilities are made to the task images using the RSX ZAP utility.

Patch Procedure:

1. Perform a normal sysgen, as if building a system to include an RP06 disk system. It is recommended that you do a "prep-gen" first to create the "SYSSAVED.CMD" file. Then execute the sysgen procedure using the saved command file. Answer "YES" to the question:

   Skip end of section breakpoints?

2. After the query section has finished SYSGEN will ask:

   >* EOS * DO YOU WANT TO: <CR>-CONTINUE R-REPEAT E-EXIT P-PAUSE [S]:

   Answer 'P'. The indirect command file processor will suspend itself to allow the editing.

3. Type the following:

```
>EDI SYSTB.MAC
[00036 LINES READ IN]
[PAGE 0]
*
```

4. The file "SYSTB.MAC" is now avilable for editing.

5. Refer to Appendix B for the table of values that match the configuration of your drive. Use the octal values from this table to for the variables used in the rest of this patch.

```
*PL .DB0::
.DB0::
*PL 31276
        .WORD    31276
*C/31276/lsblock/
        .WORD    lsblock
*N-1
*C/000005/msblock/
        .WORD    msblock
```

6. If you have SYSGENed more than one RP06 drive, repeat step 5 for each drive SYSGENed, substituting the logical drive mnemonic for '.DB0::' (i.e. '.DB1::', '.DB2::', etc.).

7. When all drive table entries have been edited, exit from the editor:

```
*ED
[EXIT]
```

8. Now edit the driver, DBDRV.MAC:

```
>EDI DBDRV.MAC
[00036 LINES READ IN]
[PAGE 0]
*PL 22.
        DIV  #22.,R0
*C/22./sectors/
        DIV  #sectors,R0
*PL 22.
        CMP    R2,#19.*22.
*C/19.*22./tracks*sectors/
        CMP    R2,#tracks*sectors
*PL 22.
        SUB    #19.*22.,R2
*C/19.*22./tracks*sectors/
        SUB    #tracks*sectors,R2
*PL 22.
        MOV    #22.,R1
*C/22./sectors/
        MOV    #sectors,R1
```

```
*PL 22.
460$:  CMPB #22.,R0
*C/22./sectors/
460$:  CMPB #sectors,R0
*PL 22.
       SUB    #22.,R0
*C/22./sectors/
       SUB    #sectors,R0
*ED
[EXIT]
```

9. Resume the SYSGEN command procedure with the command:

   >RES ...AT.<ESC>

10. Be certain to obtain the LOAD Maps for SAV.TSK and BOO.TSK as these files must be patched. The SYSGEN may now continue to completion, but should be stopped before SAVing the new system so the following patches may be applied:

    A) Patch SAV.TSK as follows:

       1) SET /UIC=[1,54]
       2) RUN $ZAP
       3) Answer with "SAV.TSK/LI"
       4) Locate section <SAVSIZ> on the load map SAV.TSK
       5) Change <SAVSIZ> + 752 from 000005 to msblock
       6) Change <SAVSIZ> + 760 from 031276 to lsblock
       7) Locate section <SAVDB> on the load map of SAV.TSK
       8) Change <SAVDB> + 54 from 000026 to tracks
       9) Exit from ZAP

    B) Patch BOO.TSK as follows:

       1) SET /UIC=[1,54]
       2) RUN $ZAP
       3) ANSWER WITH "BOO.TSK/LI"
       4) Locate section <SAVDB> on the load map of BOO.TSK
       5) Change <SAVDB> + 54 from 000026 to tracks
       6) Exit from ZAP

    Note that INI.TSK and BAD.TSK do not require patching in Version 4.0 of RSX-11M. Both of these tasks were changed to use the disk size table.

11. The SYGEN may now continue to completion. Use the BAD.TSK and INI.TSK utilities to initialize a new system disk, then transfer all files required for the system operation to the new disk. Now BOOT the new system just created and SAVE it (/WB) with a bootstrap on the new disk.

SECTION 3

RSX-11M Plus Patches

3.1 RSX-11M Plus Patch Explanation

Document Description:

This document explains the general procedure for patching the RSX-11M Plus operating system for use with modified-capacity disk controllers and drives available from EMULEX Corporation. No specific information on any patch or emulation is given in this document; this information is available in other documents following this one.

Intended Audience:

This document is designed for use by the System Manager of a given site, or by an agent of the System Manager assigned the task of installing an RSX-11M Plus system or doing a system generation. This manual assumes a fairly high familiarity with RSX-11M Plus operations, management, and utility procedures.

Patch Procedure:

Systems that have a standard DEC disk (RK05, RK06/7, RL01/2) in addition to their modified Emulex disk can order and receive an RSX-11M Plus disk distribution from DEC. The SYSGEN procedure will execute from the standard DEC disk, and the patches for the modified disk are installed during the SYSGEN. When the SYSGEN is complete, the modified disk can be formatted, BADded, and INITialized.

Patch Procedure -- Tape Distributions:

Customers that receive a magtape distribution of RSX-11M Plus must specify the type of disk that the magtape is to be copied to. This disk must be a DEC disk, or an exact emulation of a DEC disk (not a modified-capacity emulation). Customers that have only a tape drive, and a modified-capacity Emulex disk on their systems will not be able to install the patches for the modified capacity; these customers could run at a standard capacity if their controller and disk will support it.

```
* * * * * * * * * * *
*   W A R N I N G   *
* * * * * * * * * * *
```

When patching tasks through the ZAP program, you will be given a base, an offset, a value that should be at that location, and a value to change that location to. If the value that is at that offset is not what it should be, DO NOT APPLY THE PATCH. There is something wrong and applying the patch will only worsen things. Please call Software Support at Emulex to straighten things out.

3.2 RSX-11M Plus V1.0 Patches

3.2.1 RSX-11M Plus V1.0 Patches for RM02/03/05

Patch Description:

This patch modifies RSX-11M Plus V1.0 to permit the use of non-standard disk drive sizes with the EMULEX SCXX/B1 and SCXX/B3 controllers (RM02/03/05 emulations).

Patch Explanation:

The configuration of a drive is determined by three things; The number of usable surfaces (called tracks or heads), the number of usable cylinders (similar to the grooves in a record), and the number of sectors (similar to the pieces of a pie). The DEC standard RM02 and RM03 has 5 heads, 823 cylinders, and 32 sectors. The DEC standard RM05 has 19 heads, 823 cylinders, and 32 sectors. This configuration is coded into the operating system in many locations. The purpose of this patch is to change those locations so that the operating system 'believes' that an RM02, RM03, or RM05 has a configuration that differs from the DEC standard. This is done by changing the number of heads, cylinders, or sectors. Of course, by changing the configuration of a drive, many other values define by the configuration (such as the total number of blocks) are also changed and these also have to be patched. These locations, and the values that must be at those locations, are also given in the patch procedure.

There are three areas in the RSX system that may require patching; the system device table SYSTB.MAC to show the extended or contracted capicity, the approiate driver, and the various disk utilities that use that driver.

The patches to the device table and the device driver are done to the macro source code using an editor, while the patching to the various utilities are made to the task images using the RSX ZAP utility.

Patch Procedure:

1. Perform a normal sysgen, as if building a system to include an RM02/03 disk system. Use BRU to bring the sysgen files from tate to disk. Then execute the sysgen indirect command file.

   >@[200,200]SYSGEN

2. Do the sysgen up to the point just before the sysgen does the macro compilation of the files. At this point the sysgen will ask:

>* DO YOU WISH TO PAUSE TO EDIT ANY OF THE SGN OUTPUT FILES? [Y/N]: Y

Answer "Y" as in the example above. The indirect command file processor will suspend itself to allow editing.

```
AT. -- PAUSING. TO CONTINUE TYPE "UNS AT.T0 <ESC>"
```

3. Type the following:

```
>SET /UIC=[11,10]
>EDI SYSTB.MAC
[00060 LINES READ IN]
[PAGE 0]
*PL .DR0::
[60 LINES READ IN]
.DR0::
*P 1140
     .WORD      1140
*C/1140/lsblock/
     .WORD      lsblock
*N-1
*P
     .WORD      2
*C/2/msblock/
     .WORD      msblock
*P 32.,5.
     .BYTE      32.,5.
*C/32.,5./sectors,tracks/
     .BYTE      sectors,tracks
```

4. If you have SYSGENed for more than one RM02/03, repeat step 3 for each drive SYSGENed, substituting the logical drive mnemonic for 'DB0::' (ie. '.DB1::', '.DB2::', etc.).

5. When all drives table entries have been edited, exit from the editor.

```
*ED
[EXIT]
```

6. Now edit the file HRSIZ.MAC

```
>SET /UIC=[27,10]
>EDI HRSIZ.MAC
[00060 LINES READ IN]
[PAGE 0]
*PL RM03
[00060 LINES READ IN]
[00060 LINES READ IN]
[00060 LINES READ IN]
     DEVICE DR,DR,RM03,DISK,<24,00>
*<RETURN>
     SIZE   2,1140,32.,5.,823.       ;RM03
*C/2,1140,32.,5.,823./msblock,lsblock,sectors,tracks,cylinders/
     SIZE   msblock,lsblock,sectors,tracks,cylinders   ;RM03
*ED
[EXIT]
```

7. And assemble the file HRSIZ.MAC

```
>MAC [27,10]HRSIZ=[1,1]EXEMC/ML,[11,10]RSXCM/PA:1,[27,10]HRPRE,HRSIZ
```

8. Now edit the file SAVDR.MAC

```
>SET /UIC=[12,10]
>EDI SAVDR.MAC
[00060 LINES READ IN]
[PAGE 0]
*PL 5.
[00044 LINES READ IN]
[00020 LINES READ IN]
[00026 LINES READ IN]
[00060 LINES READ IN]
10$:   DIV   #<32.*5.>,R2          ;;; CALCULATE CYLINDER NUMBER
*C/32.*5./sectors*tracks/
10$:   DIV   #<sectors*tracks>,R2 ;;; CALCULATE CYLINDER NUMBER
*ED
[EXIT]
```

9. And assemble the file SAVDR.MAC

```
>MAC [12,10]SAVDR=[1,1]EXEMC/ML,[11,10]RSXMC/PA:1,[12,10]SAVDR
```

10. Put the object files into their object libraries

```
>SET /UIC=[1,24]
>LBR [1,24]SAV/RP=[12,10]SAVDR
>LBR [1,24]OLR/CO::128.:128.=[1,24]OLR
>LBR [1,24]OLR/RP=[27,10]HRSIZ
```

11. Resume the SYSGEN command procedure with the command:

```
>UNS AT.T0 <ESC>
```

12. The SYSGEN may now continue to completion. Remember to save the system with a SAV /WB/NOCON.

3.2.2 RSX-11M Plus V1.0 Patches for RP06

Patch Description:

This patch modifies RSX-11M Plus V1.0 to permit the use of non-standard disk drive sizes with the EMULEX SCXX/B2 and SCXX/B4 controllers (RP06 emulation).

Patch Explanation:

The configuration of a drive is determined by three things; The number of usable surfaces (called tracks or heads), the number of usable

cylinders (similar to the grooves in a record), and the number of sectors (similar to the pieces of a pie). The DEC standard RP06 has 19 heads, 815 cylinders and 22 sectors. This configuration is coded into the operating system in many locations. The purpose of this patch is to change those locations so that the operating system 'believes' that an RP06 has a configuration that differs from the DEC standard. This is done by changing the number of heads, cylinders, or sectors. Of course, by changing the configuration of a drive, many other values defined by the configuration (such as the total number of blocks) are also changed and these also have to be patched. These locations, and the values that must be at those locations, are also given in the patch procedure.

There are three areas in the RSX system that may require patching; the system device table SYSTB.MAC to show the extended or contracted capicity, the approiate driver, and the various disk utilities that use that driver.

The patches to the device table and the device driver are done to the macro source code using an editor, while the patching to the various utilities are made to the task images using the RSX ZAP utility.

Patch Procedure:

1. Perform a normal sysgen, as if building a system to include a RP06 disk system. Use BRU to bring the sysgen files from tape to disk. Then execute the sysgen indirect command file.

   ```
   >@[200,200]SYSGEN
   ```

2. Do the systen up to the point just before the sysgen does the macro compilation of the files. At that point the sysgen will ask:

```
>* DO YOU WISH TO PAUSE TO EDIT ANY OF THE SGN OUTPUT FILES? [Y,N]: Y
```

   Answer "Y" as in the example above. The indirect command file processor will suspend itself to allow the editing.

```
        AT. -- PAUSING. TO CONTINUE TYPE "UNS AT.T0<ESC>"
```

3. Type the following:

```
>SET /UIC=[11,10]
>INS $EDI
>EDI SYSTB.MAC
[00060 LINES READ IN]
[PAGE 0]
*
```

4. The file "SYSTB.MAC" is now available for editing.

5. Refer to Appendix B for the table of values that match the configuration of your drive. Use the octal values from this table to for the variables used in the rest of this patch.

```
*PL .DB0::
[00060 LINES READ IN]
.DB0::
*PL 5
     .WORD     5
*C/5/msblock/
     .WORD     msblock
*<RETURN>
     .WORD     31276
*C/31276/lsblock/
     .WORD     lsblock
*N+4
*P
     .BYTE     22.,19.
*C/22./sectors/
     .BYTE     sectors,19.
```

6. If you have SYSGENed more than one RP06 drive, repeat step 5 for each drive SYSGENed, substituting the logical drive mnemonic for '.DB0::' (i.e. '.DB1::', '.DB2::', etc.).

7. When all drive table entries have been edited, exit from the editor.

```
*ED
[EXIT]
```

8. Now edit the file HRSIZ.MAC

```
>SET /UIC=[27,10]
>EDI HRSIZ.MAC
[00060 LINES READ IN]
[PAGE 0]
*PL RP06
[00060 LINES READ IN]
[00060 LINES READ IN]
[00060 LINES READ IN]
     DEVICE DB,DB,RP06,DISK,<22,00>
*<RETURN>
     SIZE 5.,31276,22.,19.,815.
*C/5.,31276,22.,19.,815./msblock,lsblock,sectors,tracks,
     cylinders/SIZE msblock, lsblock, sectors, tracks, cylinders
*ED
```

9. And assemble the file HRSIZ.MAC

```
>MAC [27,10]HRSIZ=[1,1]EXEMC/ML,[11,10]RSXMC/PA:1,[27,10]HRPRE,HRSIZ
```

10. Now edit the file SAVDB.MAC

```
>SET /UIC=[12,10]
>EDI SAVDB.MAC
[00060 LINES READ IN]
[PAGE 0]
*PL 22.
[00044 LINES READ IN]
[00020 LINES READ IN]
[00024 LINES READ IN]
[00060 LINES READ IN]
     DIV  #<22.*19.>,R2 ;;; CALCULATE CYLINDER NUMBER
*C/22.*19./sectors*tracks/
     DIV  #<sectors*tracks>,R2 ;;; CALCULATE CYLINDER NUMBER
*N+3
*P
     DIV  #22.,R2       ; CALCULATE TRACK AND SECTOR
*C/22./sectors/
     DIV  #sectors,R2   ; CALCULATE TRACK AND SECTOR
*ED
```

11. And assemble the file SAVDB.MAC

```
>MAC [12,10]SAVDB=[1,1]EXEMC/ML,[11,10]RSXMC/PA:1,[12,10]SAVDB
```

12. Put the new object files into their object libraries

```
>SET /UIC=[1,24]
>INS $LBR
>LBR [1,24]SAV/RP=[12,10]SAVDB
>LBR [1,24]OLR/CO::128.:128.=[1,24]OLR
>LBR [1,24]OLR/RO=[27,10]HRSIZ
```

13. And finish the SYSGEN

```
>UNS AT.T0<ESC>
```

14. The sysgen should now run to normal completion.

3.3 RSX-11M+ V2.0 Patches

3.3.1 RSX-11M+ V2.0 Patches for RM02/03

Patch Description:

This patch modifies RSX-11M+ V2.0 to permit the use of non-standard disk sizes with the EMULEX SCXX/B1 and SCXX/B3 controllers (RM02/03 emulations).

Patch Explanation:

The configuration of a drive is determined by three things; The number of usable surfaces (called tracks or heads), the number of usable cylinders (similar to the grooves in a record), and the number of sectors (similar to the pieces of a pie). The DEC standard RM02 and RM03 has 5 heads, 823 cylinders, and 32 sectors. This configuration is coded into the operating system in many locations. The purpose of this patch is to change those locations so that the operating system 'believes' that an RM02 or RM03 has a configuration that differs from the DEC standard. This is done by changing the number of heads, cylinders, or sectors. Of course, by changing the configuration of a drive, many other values define by the configuration (such as the total number of blocks) are also changed and these also have to be patched. These locations, and the values that must be at those locations, are also given in the patch procedure.

There are three areas in the RSX system that may require patching; the appropriate driver, and the various disk utilities that use that driver.

The patches to the device table and the device driver are done to the macro source code using an editor, while the patching to the various utilities are made to the task images using the RSX ZAP utility.

Patch Procedure:

1. Perform a normal sysgen, as if building a system to include an RM02/03 disk system. Use BRU to bring the sysgen files from tape to disk. Then execute the sysgen indirect command file.

   ```
   >@[200,200]SYSGEN
   ```

2. Do the sysgen up to the point just before the sysgen does the macro compilation of the files. At this point the sysgen will ask:

```
>* DO YOU WISH TO PAUSE TO EDIT ANY FILES BEFORE ASSEMBLING? [Y/N]: Y
```

   Answer "Y" as in the example above. The indirect command file processor will suspend itself to allow editing.

```
AT. -- PAUSING. TO CONTINUE TYPE "UNS AT.T0 <ESC>"
```

3. Type the following:

```
>SET /UIC=[11,10]
>EDI DRTAB.MAC
[00060 LINES READ IN]
[PAGE 0]
*PL .DR0::
[60 LINES READ IN]
.DR0::
*P 1140
     .WORD     1140
*C/1140/lsblock/
     .WORD     lsblock
*N-1
*P
     .WORD     2
*C/2/msblock/
     .WORD     msblock
*P 32.,5.
     .BYTE     32.,5.    .
*C/32.,5./sectors,tracks/
     .BYTE     sectors,tracks
```

4. If you have SYSGENed for more than one RM02/03/05, repeat step 3 for each drive SYSGENed, substituting the logical drive mnemonic for 'DB0::' (ie. '.DB1::', '.DB2::', etc.).

5. When all drives table entries have been edited, exit from the editor.

```
*ED
[EXIT]
```

6. Now edit the file SAVCM.MAC

```
>SET /UIC=[12,10]
>EDI SAVCM.MAC
[00060 LINES READ IN]
[PAGE 0]
*PL RM02
*C/5./tracks/
*PL RM03
*C/5./tracks/
*ED
[EXIT]
```

7. And assemble the file SAVCM.MAC

```
>MAC [12,10]SAVCM=[1,1]EXEMC/ML,[11,10]RSXMC/PA:1,[12,10]SAVCM
```

8. Put the object file into its object library

```
>SET /UIC=[1,24]
>LBR [1,24]SAV/RP=[12,10]SAVCM
```

9. Now set up an object file for patching using the ZAP utility

```
>LBR HRSIZ=SAV/EX:HRSIZ
>RUN $ZAP
ZAP>HRSIZ.OBJ
_2674/
0:002674/ 000002
_msblock
_2720/
0:002720/ 001140
_lsblock
_2770/
0:002770/ 002440
_hedsec
_3172/
0:003172/ 000002
_msblock
_3216/
0:003216/ 001140
_lsblock
_3266/
0:003266/ 002440
_hedsec
_X

>LBR SAV/RP=HRSIZ
>LBR HRSIZ=OLR/EX:HRSIZ
>RUN $ZAP
ZAP>HRSIZ.OBJ
_3530/
0:003530/ 000002
_msblock
_3554/
0:003554/ 001140
_lsblock
_3624/
0:003624/ 002440
_hedsec
_4026/
0:004026/ 000002
_msblock
_4052/
0:004052/ 001140
_lsblock
_4122/
0:004122/ 002440
_hedsec
_X

>LBR [1,24]OLR/CO::128.=[1,24]OLR
>LBR OLR/RP=HRSIZ
```

10. Resume the SYSGEN command procedure with the command:

    >UNS AT.T0 <ESC>

11. Be certain to obtain the LOAD maps for BAD.TSK and FMT.TSK as these files must be patched. The SYSGEN may now continue to completion, but should be stopped before SAVing the new system so the following patches may be applied:

    A) Patch BAD.TSK as follows:

    1) SET /UIC=[1,54]
    2) RUN $ZAP
    3) Answer with "BAD.TSK/LI"
    4) Locate section <BADDAT> on the load map BAD.TSK
    5) Change <BADDAT> + 2016 from 000002 to msblock
    6) Change <BADDAT> + 2020 from 001140 to lsblock
    7) Change <BADDAT> + 2022 from 000005 to tracks
    8) Change <BADDAT> + 2032 from 000240 to tracks*sectors
    9) Exit from ZAP

    B) Patch FMT.TSK as follows:

    1) SET /UIC=[1,54]
    2) RUN $ZAP
    3) Answer with "FMT.TSK/LI"
    4) Locate section <FMTDAT> on the load map FMT.TSK
    5) Change <FMTDAT> + 44216 from 000002 to msblock
    6) Change <FMTDAT> + 44220 from 001140 to lsblock
    7) Change <FMTDAT> + 44224 from 000005 to tracks
    8) Exit from ZAP

12. The SYSGEN may now continue to completion. Remember to save the system with a SAV /WB.

3.3.2 RSX-11M+ V2.0 Patches for RP06

Patch Description:

This patch modifies RSX-11M+ V2.0 to permit the use of non-standard disk sizes with the EMULEX SCXX/B1 and SCXX/B3 controllers (RP06 emulations).

Patch Explanation:

The configuration of a drive is determined by three things; The number of usable surfaces (called tracks or heads), the number of usable cylinders (similar to the grooves in a record), and the number of sectors (similar to the pieces of a pie). The DEC standard RP06 has 19 heads, 815 cylinders and 22 sectors. This configuration is coded into the operating system in many locations. The purpose of this patch is to change those locations so that the operating system

'believes' that an RP06 has a configuration that differs from the DEC standard. This is done by changing the number of heads, cylinders, or sectors. Of course, by changing the configuration of a drive, many other values defined by the configuration (such as the total number of blocks) are also changed and these also have to be patched. These locations, and the values that must be at those locations, are also given in the patch procedure.

There are three areas in the RSX system that may require patching; the system device table SYSTB.MAC to show the extended or contracted capicity, the approiate driver, and the various disk utilities that use that driver.

The patches to the device table and the device driver are done to the macro source code using an editor, while the patching to the various utilities are made to the task images using the RSX ZAP utility.

Patch Procedure:

1. Perform a normal sysgen, as if building a system to include a RP06 disk system. Use BRU to bring the sysgen files from tape to disk. Then execute the sysgen indirect command file.

   ```
   >@[200,200]SYSGEN
   ```

2. Do the systen up to the point just before the sysgen does the macro compilation of the files. At that point the sysgen will ask:

```
>* DO YOU WISH TO PAUSE TO EDIT ANY FILES BEFORE ASSEMBLING? [Y,N]: Y
```

   Answer "Y" as in the example above. The indirect command file processor will suspend itself to allow the editing.

```
        AT. -- PAUSING. TO CONTINUE TYPE "UNS AT.T0 <ESC>"
```

3. Type the following:

```
>SET /UIC=[11,10]
>INS $EDI
>EDI DBTAB.MAC
[00060 LINES READ IN]
[PAGE 0]
*
```

4. The file "DBTAB.MAC" is now available for editing.

5. Refer to Appendix B for the table of values that match the configuration of your drive. Use the octal values from this table to for the variables used in the rest of this patch.

```
*PL .DB0::
[00060 LINES READ IN]
.DB0::
*PL 5
     .WORD     5
*C/5/msblock/
     .WORD     msblock
*<RETURN>
     .WORD     31276
*C/31276/lsblock/
     .WORD     lsblock
*PL 22.
     .BYTE     22.,19.
*C/22.,19./sectors,tracks/
     .BYTE     sectors,tracks
*PL 815.
     .WORD     815.
*C/815./cylinders/
     .WORD     cylinders
```

6. If you have SYSGENed more than one RP06 drive, repeat step 5 for each drive SYSGENed, substituting the logical drive mnemonic for '.DB0::' (i.e. '.DB1::', '.DB2::', etc.).

7. When all drive table entries have been edited, exit from the editor.

```
*ED
[EXIT]
```

8. Now edit the file SAVCM.MAC

```
>SET /UIC=[12,10]
>EDI SAVCM.MAC
[00060 LINES READ IN]
[PAGE 0]
*PL RP06
[00060 LINES READ IN]
[00060 LINES READ IN]
[00060 LINES READ IN]
     DEVICE DB,DB,RP06,DISK,<22,00>
*<RETURN>
     SIZE      5.,31276,22.,19.,815.
*C/5.,31276,22.,19.,815./msblock,lsblock,sectors,tracks,cylinders/
     SIZE      msblock,lsblock,sectors,tracks,cylinders
*ED
```

9. And assemble the file SAVCM.MAC

```
>MAC [12,10]SAVCM=[1,1]EXEMC/ML,[11,10]RSXMC/PA:1,[12,10]SAVCM
```

10. Put the new object file into its object library

```
>SET /UIC=[1,24]
>LBR [1,24]SAV/RP=[12,10]SAVCM
```

11. Now setup an object file for patching using the ZAP utility

```
>LBR HRSIZ=SAV/EX:HRSIZ
>RUN $ZAP
ZAP>HRSIZ.OBJ
_2100/
0:002100/ 000005
_msblock
_2124/
0:002124/ 031276
_lsblock
_2150/
0:002150/ 001457
_cylinders
_2174/
0:002174/ 011426
_hedsec
_X

>LBR SAV/RP=HRSIZ
>LBR HRSIZ=OLR/EX:HRSIZ
>RUN $ZAP
ZAP>HRSIZ.OBJ
_2124/
0:002124/ 000005
_msblock
_2150/
0:002150/ 031276
_lsblock
_2174/
0:002174/ 001457
_cylinders
_2220/
0:002220/ 011426
_hedsec
_X

>LBR [1,24]OLR/CO::128.:128.=[1,24]OLR
>LBR [1,24]OLR/RP=[12,10]HRSIZ
```

12. Resume the SYSGEN command procedure with the command:

```
>UNS AT.T0 <ESC>
```

13. The sysgen should now run to normal completion.

SECTION 4

RSTS/E Patches

4.1 RSTS/E Patch Explanation

Document Description:

This document explains the general procedure for patching the RSTS/E operating system, Version 7, for use with modified-capacity disk controllers and drives available from Emulex Corporation. No specific information on any patch or emulation is given in this document; this information is available in other documents following this one.

Intended Audience:

This document is designed for use by the System Manager of a given site, or by an agent of the System Manager assigned the task of installing a RSTS system or doing a system generation. This manual assumes a fairly high familiarity with RSTS operations, management, and utility procedures.

Required Patches:

There are five areas of RSTS that may require patching to fully modify the capacity of a type of disk drives:

INIT.SYS This is the program that, when booted, sizes the system and maps out the devices on the bus. Options to INIT allow disks to be formatted and initialized, and the monitor to be installed and configured. Because INIT passes the device size (in blocks) to the monitor, any emulation that changes the size of the device will need a corresponding patch installed in INIT.SYS.

SYSGEN.SIL This is the default monitor that is sent with the system to allow the user to do a system generation. Any emulation that modifies the disk geometry (number of sectors or number of heads) from the default will need a patch installed in the driver in SYSGEN.SIL to make the disk usable. This includes most expanded RP06 and RM02/3/5 emulations, but not the RP02/3 emulations.

RSTS.SIL This monitor, or any monitor that is generated, will also need a driver patch if the disk geometry has been changed.

HOOK.SAV This program is used to make media bootable, and must be patched if the device cluster size of a device has been modified by expanding the size of the device.

SAVRES.SAV This program is used for backups, and must also be patched if the device cluster size is modified.

Patch Procedure (outline):

The RSTS system to be patched must be resident on a disk (other than the one whose size is being modified) while the patch is being installed. The following paragraphs explain how this is done for the various types of RSTS distributions: disk, tape for DEC disk, and tape for Emulex disk.

If your RSTS distribution is on disk, use the first procedure shown below. If your RSTS distribution is on tape, and you have a supported DEC disk, or exact DEC emulation, use the second procedure below (tape to DEC-standard disk). This would include the Emulex SCXX/CX and some of the SCXX/BX emulations. If you have only a tape drive, and a modified-capacity disk, use the third procedure below.

Patch Procedure -- Disk Distribution:

1. Make a copy of the SYSGEN disk. No modifications should ever be made to the original of this disk, including the DEC autopatch. This disk contains all of the files needed to do a system generation, and all of the files that will need to be patched by Emulex.

2. Perform a normal system generation, while running from the standard DEC disk.

3. Install the patches to INIT; and, if required, to the SYSGEN.SIL monitor, the RSTS.SIL target monitor, and the optional files.

4. Reboot your disk, and initialize your Emulex disk to its modified capacity. Copy over to this disk any files you will need.

Patch Procedure -- Tape to DEC-standard Disk:

1. Boot the SYSGEN tape, and use the DSKINT and COPY options to initialize your DEC disk and copy the [0,1] files down to it.

2. Perform a normal system generation, while running from the DEC-standard disk.

3. Install the patches to INIT; and, if required, to the SYSGEN.SIL monitor, the RSTS.SIL target monitor, and the optional files.

4. Reboot your DEC-standard disk, and initialize your Emulex disk to its modified capacity. Copy over to the Emulex disk any files you will need.

Patch Procedure -- Tape to Emulex Disk:

1. Set up your Emulex controller to run in 'standard' DEC-compatible mode, if possible.

2. Boot the SYSGEN tape, and use the DSKINT and COPY options to initialize your DEC disk and copy the [0,1] files down to it.

3. Perform a normal system generation, while running from the DEC-standard disk.

4. While running from the target monitor, use ONLPAT to install the patches to INIT; and, if required, to the SYSGEN.SIL monitor, the RSTS.SIL target monitor, and the optional files.

5. Mount a scratch tape on the tape transport. Use (1,2) HOOK.SAV to generate a bootable patched system generation volume:

```
RUN $HOOK.SAV
*MT0:(0,1)INIT.SYS,SY:(0,1)INIT.SYS
Hook complete.
*^Z
```

6. Use PIP to copy all files from (0,1) on the disk to (0,1) on the tape, EXCEPT the files that have extension '.SYS', and to copy all the files from (1,2) on the disk to (1,2) on the tape:

```
RUN $PIP.SAV
*MT0:(0,1) = SY:(0,1)*.*/IN
SATT   .SYS ?
BADB   .SYS ?
INIT   .SYS ?
SYSGEN.SIL ? Y
RT11   .RTS ? Y
ERR    .ERR ? Y
SWAP   .SYS ?
RSTS   .SIL ? Y
BASIC  .RTS ? Y
*MT0:(1,2) = SY:(1,2)*.*
*^Z
```

7. Halt the system. Do not use SHUTUP or UTILTY to bring down the system, as the patches that are installed in INIT will cause it not to work. Do not worry about your disk; you are going to scratch the data on it, anyway.

8. Power down the system, and reconfigure the Emulex controller and disk drive to the modified capacity, if it not already so. Do a hardware format of the disk, and a diagnostic format if it is necessary to create a manufacturer's bad block file on the disk.

9. Boot the patched magtape created in steps 6 and 7 above. Use the DSKINT option to initialize and pattern your Emulex disk at the modified capacity.

10. Use the INIT option 'COPY ddu:/A' to copy all of the (0,1) files from the magtape to the target disk; substitute the disk mnemonic for 'ddu:'. The COPY option will boot the target disk.

11. INSTALL the target monitor, set the DEFAULTs, REFRESH the disk to set up the system files, and START up timesharing; be sure to use the RT11 run-time system as your default for this step.

12. RUN MT0:PIP.SAV, and use PIP to copy the (1,2) files back to the disk from the magtape. Continue with the system generation and create the system library, optional libraries, RSX, etc.

Sample Patch Installation:

The following is a sample patch document, and the listing of what the user might see as he installs the patch. **THIS IS NOT AN ACTUAL PATCH; IT IS FOR ILLUSTRATION PURPOSES ONLY!**

Note that this is a simplified example: In some patches the user may have to install parts of the patch conditionally, based upon the driver used (overlapped or non-overlapped seeks), on some system generation option specified (i.e. Disk Driver Phase), or on the drive type specified for the controller (24=RM03, 25=RM02, 27=RM05).

INIT.SYS Patches:

BASE	OFFSET	IS	CHANGE TO
SATBUF	14332	2	4
SATBUF	14344	10646	17440
ROOT	5546	2440	6440

SYSGEN.SIL Patches:

BASE	MODULE	OFFSET	IS	CHANGE TO
DBDSK	DSK	72	26	40
DBDSK	DSK	1370	2440	6440

Sample Installation:

```
<Customer Boot>

INIT Vnnnnn RSTS Vnnnnn <system name>

Option: PATCH
File to patch? INIT.SYS
Base address? SATBUF
Offset address? 14332
 Base   Offset  Old     New?
057000  014332  000002  ? 4
057000  014334  067324  ? ^Z                <Control/Z for new offset>
Offset address? 14344
 Base   Offset  Old     New?
057000  014344  010646  ? 17440
057000  014346  012737  ? ^Z                <Control/Z for new offset>
Offset address? ^Z                          <Control/Z for new base>
Base address? ROOT
Offset address? 5546
 Base   Offset  Old     New?
013560  005546  002440  ? 6440
013562  005550  105737  ? ^Z                <Control/Z for new offset>
Offset address? ^Z                          <Control/Z for new base>
Base address? ^Z                            <control/Z for new file>

File to patch? SYSGEN.SIL
Module name? DSK
Base address? DBDSK
Offset address? 72
 Base   Offset  Old     New?
041440  000072  000026  ? 40
041440  000074  012767  ? ^Z                <Control/Z for new offset>
Offset address? 1370
 Base   Offset  Old     New?
041440  001370  002440  ? 6440
041440  001372  104040  ? ^Z                <Control/Z for new offset>
Offset address? ^Z                          <Control/Z for new base>
Base address? ^Z                            <Control/Z for new module>
Module name? ^Z                             <Control/Z for new file>
File to patch? ^Z                           <Control/Z to exit>

Option: BOOT SY:                            <Reboot disk to load INIT>
```

Your patch should now be applied. You should continue by initializing the EMULEX disk. Note: If the values in the "old" column do not match what the old values should be (as per the patch), discontinue any patching as something is wrong. Either you are applying the wrong patch or wrong version of ONLPAT program.

```
* * * * * * * * * * *
*   W A R N I N G   *
* * * * * * * * * * *
```

If the values specified under the 'IS' coluMN is not displayed when the base and offset are entered, DO NOT APPLY THE PATCH TO THAT LOCATION. Something is wrong and applying the patch will only make things worse. In this case call Emulex Software Support to straighten things out.

Patch Conditions:

These patches may only be applied if all disks, of the type being patched, on the system are of the same modified logical size. This patch must be applied to a disk other than one on the Emulex controller. If the only disk on the system is a modified disk, and the RSTS distribution is on magtape, the following steps must be taken:

1. Use the internal format routine of the Emulex controller to format a disk on unit 0. Please note that this will destroy any data previously on the disk.

2. Boot the distribution magtape, and use the DSKINT option to initialize Dx0:. DO NOT FORMAT OR RUN PATTERNS. This will initialize the disk at the standard (incorrect) size, but we will reinitialize the disk before this becomes a problem.

3. Use the COPY option to copy the [0,1] system files from tape to disk and boot the disk. Use the INSTALL command to install SYSGEN.SIL and the DEFAULT command to set the default run-time system to RT11.

4. Use the START option to bring up the system. Use the program 'MT0:PIP.SAV' to copy all files from MT0:[1,2] (on the tape) into SY:[1,2] (on the disk).

5. Use ONLPAT as shown in the patch procedure to apply the patch to INIT.SYS. Dismount the SYSGEN tape and mount a scratch tape on the magtape unit. Use the command:

   ```
   RUN HOOK
   *MT0:[0,1]INIT.SYS,Dx0:[0,1]INIT.SYS
   ```

   to make the tape bootable. Use PIP to copy onto that magtape all the files in [0,1] except for those ending in '.SYS', and all the files in [1,2]. Make sure that the files that were i [0,1] are in [0,1] on the tape, and the files that were in [1,2] are in [1,2] on the tape.

6. You now have a (modified) SYSGEN tape that has all the previous information on it that the old one had, except it has the patch to INIT.SYS applied. Boot this new tape, use DSKINT to re-initialize the disk, and start your SYSGEN over.

4.2 RSTS/E V6C Patches

4.2.1 RSTS/E V6C Patches for RP02/03

Patch Description:

This patch modifies RSTS V6C to permit the use of non-standard disk drive sizes with the Emulex SCXX/A controllers (RP02/03 emulations).

Patch Explanation:

The configuration of a drive is determined by three things; The number of usable surfaces (called tracks or heads), the number of usable cylinders (similar to the grooves in a record), and the number of sectors (similar to the pieces of a pie). The DEC standard RP02 has 20 heads, 200 cylinders, and 10 sectors. The DEC standard RP03 has 20 heads, 400 cylinders, and 10 sectors. The EMULEX SCXX/A controllers operate on many different sizes of disk drives with varying physical configurations. It is therefore necessary for the controller to do a 'remapping' of a logical drive(s) onto the physical drive. The EMULEX controllers do this in such a way that the number of heads is always 20 and the number of sectors is always 10 to agree with the DEC standard. Therefore, the only difference between drives on EMULEX controllers and DEC drives is the number of cylinders per drive. The configuration on the standard DEC RP02 and RP03 is coded into the operating system in may locations. The purpose of this patch is to change those locations so that the operating system 'believes' that an RP02 or RP03 has a configuration that differs from the DEC standard. This is done by changing only the number of cylinders. Of course, by changing the configuration of a drive, many other values defined by the configuration (such as the total number of blocks) are also changed and these also have to be patched. These locations, and the values that must be at those locations, are also given in the patch procedure.

Only one location in the INIT.SYS system program will be patched. This location contains the block count for an RP02, which is one-half of the block count for an RP03. The DEC standard RP02 is 40000 decimal blocks, and the standard RP03 is 80000 decimal blocks; thus, the normal value at this location is 116100 octal, or 40000 decimal. You will be replacing this value with the octal disk block count if you have an RP02 emulation, or one-half of the block count if you have an RP03 emulation (in which case RSTS will double it to get the real block count). The octal disk block count if computed by taking the number of logical cylinders mapped by the controller, multiplying by 200, and converting to octal. The number of logical cylinders for the SC01/AX and SC11/AX controllers can be found in appendix A at the back of this document. The number of logical cylinders for the SC02/AX and SC12/AX controllers can be found in the Drive Configuration Appendix at the back of the controller manual.

Patch Procedure:

1. Boot your system, and from the INIT 'Option:' prompt, execute the following commands:

```
Option: PATCH
File to patch? INIT.SYS
Base address? 63500
Offset address? 0
 Base   Offset  Old     New?
063500  000000  116100  ? (octal block count)
057000  013714  016100  ? ^Z                    <Control-Z>
Offset address? ^Z                              <Control-Z>
Base address? ^Z                                <Control-Z>
File to patch? ^Z                               <Control-Z>

Option: BOOT SY:
```

   The 'BOOT SY:' command is used to reboot the system, to bring the patched version into memory; the PATCH command only changes the disk file INIT.SYS.

2. Your patch is now complete.

4.2.2 RSTS/E V6C Patches for RM02/03

Patch Description:

This patch modifies RSTS/E V6C to permit the use of non-standard disk drive sizes with the EMULEX SCXX/B1 and SCXX/B3 controllers (RM02/03 emulations).

Patch Explanation:

The configuration of a drive is determined by three things; The number of usable surfaces (called tracks or heads), the number of usable cylinders (similar to the grooves in a record), and the number of sectors (similar to the pieces of a pie). The DEC standard RM02 and RM03 has 5 heads, 823 cylinders and 32 sectors. This configuration is coded into the operating system in many locations. The purpose of this patch is to change those locations so that the operating system 'believes' that an RM02 or RM03 has a configuration that differs from the DEC standard. This is done by changing the number of heads, cylinders, or sectors. Of course, by changing the configuration of a drive, many other values define by the configuration (such as the total number of blocks) are also changed and these also have to be patched. These locations, and the values that must be at those locations, are also given in the patch procedure.

The patch itself consists of a file to patch, a module in the file (if the file is a SIL), a base address, an offset from the base, a value that defines what is currently at the offset defined by the base and

offset, and a variable or expression designating what value is to be placed at that address. The value for the expression can be found in the table in Appendix B of this document.

Patch Procedure:

File to Patch: INIT.SYS

BASE	OFFSET	IS	CHANGE TO	FOR
053000	011140	000002	msblock	RM03
053000	011142	000002	msblock	RM02
053000	011220	001100	lsblock	RM03
053000	011222	001100	lsblock	RM02
053000	011300	000004	devclus	RM03
053000	011302	000004	devclus	RM02
006004	000040	000240	tracks*sectors	Both
006004	000614	002400	tracks*400	Both
113170	000062	151466	150000!cylinders-1	RM03
113170	000070	151466	150000!cylinders-1	RM02
113170	000064	002037	hedsec-401	RM03
113170	000072	002037	hedsec-401	RM02
124000	011050	000240	tracks*sectors	Both
124000	010660	000004	devclus	Both
124000	010664	002000	devclus*400	Both

File to Patch: SYSGEN.SIL and RSTS.SIL

Module to patch: RSTS

For non-overlap seek driver:

QDS$DR	000006	000240	tracks*sectors	Both
QDS$DR	000562	002400	tracks*400	Both

For overlap seek driver:

QDS$DR	000010	000240	tracks*sectors	Both
QDS$DR	000742	002400	tracks*400	Both

4.2.3 RSTS/E V6C Patches for RP06

Patch Description:

This patch modifies RSTS/E V6C to permit the use of non-standard disk drive sizes with the Emulex SCXX/B2 and SCXX/B4 controllers (RP06 emulations).

Patch Explanation:

The configuration of a drive is determined by three things; The number of usable surfaces (called tracks or heads), the number of usable cylinders (similar to the grooves in a record), and the number of sectors (similar to the pieces of a pie). The DEC standard RP06 has 19 heads, 815 cylinders and 22 sectors. This configuration is coded into the operating system in many locations. The purpose of this patch is to change those locations so that the operating system 'believes' that an RP06 has a configuration that differs from the DEC standard. This is done by changing the number of heads, cylinders, or sectors. Of course, by changing the configuration of a drive, many other values defined by the configuration (such as the total number of blocks) are also changed and these also have to be patched. These locations, and the values that must be at those locations, are also given in the patch procedure.

The patch itself consists of a file to patch, a module in the file (if the file is a SIL), a base address, an offset from the base, a value that defines what is currently at the offset defined by the base and offset, and a variable or expression designating what value is to be placed at that address. The value for the expression can be found in the table in Appendix B of this document.

Patch Procedure:

File to Patch: INIT.SYS

BASE	OFFSET	IS	CHANGE TO
053000	011134	000005	msblock
053000	011214	015100	lsblock
006004	000064	000642	tracks*sectors
006004	000070	000026	sectors
006004	000632	177426	177400!sectors
113170	000046	011456	010000!cylinders-1
113170	000050	011025	hedsec-401
124000	010050	000642	tracks*sectors
124000	010062	000026	sectors

File to Patch: SYSGEN.SIL and RSTS.SIL:

Module to Patch: RSTS

For non-overlap seek driver:

```
    QDS$DB      000032      000642      tracks*sectors
    QDS$DB      000036      000026      sectors
    QDS$DB      000600      177426      177400!sectors
```

For overlap seek driver:

```
    QDS$DB      000034      000642      tracks*sectors
    QDS$DB      000040      000026      sectors
    QDS$DB      000760      177426      177400!sectors
```

4.3 RSTS/E V7.0-07 "G" Patches

4.3.1 RSTS/E V7.0-07 "G" Patches for RP02/03

Patch Description:

This patch modifies RSTS V7.0-07 (SYSGEN level 'G') to permit the use of non-standard disk drive sizes with the Emulex SCXX/A controllers (RP02/03 emulations).

Patch Explanation:

The configuration of a drive is determined by three things; The number of usable surfaces (called tracks or heads), the number of usable cylinders (similar to the grooves in a record), and the number of sectors (similar to the pieces of a pie). The DEC standard RP02 has 20 heads, 200 cylinders, and 10 sectors. The DEC standard RP03 has 20 heads, 400 cylinders, and 10 sectors. The EMULEX SCXX/A controllers operate on many different sizes of disk drives with varying physical configurations. It is therefore necessary for the controller to do a 'remapping' of a logical drive(s) onto the physical drive. The EMULEX controllers do this in such a way that the number of heads is always 20 and the number of sectors is always 10 to agree with the DEC standard. Therefore, the only difference between drives on EMULEX controllers and DEC drives is the number of cylinders per drive. The configuration on the standard DEC RP02 and RP03 is coded into the operating system in may locations. The purpose of this patch is to change those locations so that the operating system 'believes' that an RP02 or RP03 has a configuration that differs from the DEC standard. This is done by changing only the number of cylinders. Of course, by changing the configuration of a drive, many other values defined by the configuration (such as the total number of blocks) are also changed and these also have to be patched. These locations, and the values that must be at those locations, are also given in the patch procedure.

Only one location in the INIT.SYS system program will be patched. This location contains the block count for an RP02, which is one-half of the block count for an RP03. The DEC standard RP02 is 40000

decimal blocks, and the standard RP03 is 80000 decimal blocks; thus, the normal value at this location is 116100 octal, or 40000 decimal. You will be replacing this value with the octal disk block count if you have an RP02 emulation, or one-half of the block count if you have an RP03 emulation (in which case RSTS will double it to get the real block count). The octal disk block count if computed by taking the number of logical cylinders mapped by the controller, multiplying by 200, and converting to octal. The number of logical cylinders for the SC01/AX and SC11/AX controllers can be found in appendix A at the back of this document. The number of logical cylinders for the SC02/AX and SC12/AX controllers can be found in the Drive Configuration Appendix at the back of the controller manual.

Patch Procedure:

1. Boot your system, and from the INIT 'Option:' prompt, execute the following commands:

```
Option: PATCH    .
File to patch? INIT.SYS
Base address? SATBUF
Offset address? 13712
 Base   Offset  Old     New?
057000  013712  116100  ? smallsize  (See table)
057000  013714  016100  ? ^Z         <Control-Z>
Offset address? ^Z                   <Control-Z>
Base address? ^Z                     <Control-Z>
File to patch? ^Z                    <Control-Z>

Option: BOOT SY:
```

   The 'BOOT SY:' command is used to reboot the system, to bring the patched version into memory; the PATCH command only changes the disk file INIT.SYS.

2. Your patch is now complete.

4.3.2 RSTS/E V7.0-07 "G" Patches for RM02/03

Patch Description:

This patch modifies RSTS/E V7.0-07 (SYSGEN level 'G') to permit the use of non-standard disk drive sizes with the EMULEX SCXX/B1 and SCXX/B3 controllers (RM02/03 emulations).

Patch Explanation:

The configuration of a drive is determined by three things; The number of usable surfaces (called tracks or heads), the number of usable cylinders (similar to the grooves in a record), and the number of sectors (similar to the pieces of a pie). The DEC standard RM02

and RM03 has 5 heads, 823 cylinders and 32 sectors. This configuration is coded into the operating system in many locations. The purpose of this patch is to change those locations so that the operating system 'believes' that an RM02 or RM03 has a configuration that differs from the DEC standard. This is done by changing the number of heads, cylinders, or sectors. Of course, by changing the configuration of a drive, many other values define by the configuration (such as the total number of blocks) are also changed and these also have to be patched. These locations, and the values that must be at those locations, are also given in the patch procedure.

The patch itself consists of a file to patch, a module in the file (if the file is a SIL), a base address, an offset from the base, a value that defines what is currently at the offset defined by the base and offset, and a variable or expression designating what value is to be placed at that address. The value for the expression can be found in the table in Appendix B of this document.

Patch Procedure:

File to Patch: INIT.SYS

BASE	OFFSET	IS	CHANGE TO	FOR
SATBUF	014212	001454	000240	RM03 if msblock=0
SATBUF	014362	000002	msblock	RM03
SATBUF	014364	000002	msblock	RM02
SATBUF	014442	001100	lsblock	RM03
SATBUF	014444	001100	lsblock	RM02
SATBUF	014522	000004	devclus	RM03
SATBUF	014524	000004	devclus	RM02
DBDSK	000036	000240	tracks*sectors	Both
DBDSK	000710	002400	tracks*400	Both
DSIDAT	000064	151466	150000!cylinders-1	RM03
DSIDAT	000072	151466	150000!cylinders-1	RM02
DSIDAT	000066	002037	hedsec-401	RM03
DSIDAT	000074	002037	hedsec-401	RM02
COPY	002252	000240	tracks*sectors	Both
ROOT	005556	002440	hedsec	RM03
ROOT	005560	002440	hedsec	RM02

File to Patch: SYSGEN.SIL and RSTS.SIL

Module to Patch: RSTS in SYSGEN.SIL
DSK in RSTS.SIL if "separate phase", otherwise RSTS

For non-overlap seek driver:

DRDSK	000036	000240	tracks*sectors	Both
DRDSK	000710	002400	tracks*400	Both

For overlap seek driver:

DRSEEK	000004	000240	tracks*sectors	Both
DRSEEK	001042	002400	tracks*400	Both

Patches for SAVRES.SAV:

GGB	001172	000240	tracks*sectors	Both

Patches for HOOK.SAV:

002564	000000	000240	tracks*sectors	Both

4.3.3 RSTS/E V7.0-07 "G" Patches for RP06

Patch Description:

This patch modifies RSTS/E V7.0-07 (SYSGEN LEVEL 'G') to permit the use of non-standard disk drive sizes with the Emulex SCXX/B2 and SCXX/B4 controllers (RP06 emulations).

Patch Explanation:

The configuration of a drive is determined by three things; The number of usable surfaces (called tracks or heads), the number of usable cylinders (similar to the grooves in a record), and the number of sectors (similar to the pieces of a pie). The DEC standard RP06 has 19 heads, 815 cylinders and 22 sectors. This configuration is coded into the operating system in many locations. The purpose of this patch is to change those locations so that the operating system 'believes' that an RP06 has a configuration that differs from the DEC standard. This is done by changing the number of heads, cylinders, or sectors. Of course, by changing the configuration of a drive, many other values defined by the configuration (such as the total number of blocks) are also changed and these also have to be patched. These locations, and the values that must be at those locations, are also given in the patch procedure.

The patch itself consists of a file to patch, a module in the file (if the file is a SIL), a base address, an offset from the base, a value that defines what is currently at the offset defined by the base and offset, and a variable or expression designating what value

is to be placed at that address. The value for the expression can be found in the table in Appendix B of this document.

Patch Procedure:

File to Patch: INIT.SYS

BASE	OFFSET	IS	CHANGE TO
SATBUF	014356	000005	msblock
SATBUF	014436	015100	lsblock
SATBUF	014516	000010	devclus
DBDSK	000032	000642	tracks*sectors
DBDSK	000034	000026	sectors
DBDSK	000750	177426	177400!sectors
DBDSK	000752	011400	tracks*400
DSIDAT	000050	011456	010000!cylinders-1
DSIDAT	000052	011025	hedsec-401
COPY	010662	000642	tracks*sectors
COPY	010674	000026	sectors
ROOT	005552	011426	hedsec

File to Patch: SYSGEN.SIL and RSTS.SIL:

Module to Patch: RSTS in SYSGEN.SIL
DSK in RSTS.SIL if "separate phase", otherwise RSTS

For non-overlap seek driver:

DBDSK	000032	000642	tracks*sectors
DBDSK	000034	000026	sectors
DBDSK	000750	177426	177400!sectors
DBDSK	000752	011400	tracks*400

For overlap seek driver:

DBSEEK	000000	000642	tracks*sectors
DBSEEK	000002	000026	sectors
DBSEEK	001102	177426	177400!sectors
DBSEEK	001104	011400	tracks*400

File to Patch: HOOK.SAV

000000	002556	000642	tracks*sectors
000000	002560	000026	sectors

4.3.4 RSTS/E V7.0-07 "G" Patches for RK06/07

Patch Description:

This patch modifies RSTS V7.0-07 (SYSGEN level 'G') to permit the use of non-standard disk drive sizes with the Emulex SCXX/C controllers (RK06/07 emulations).

Patch Explanation:

The configuration of a drive is determined by three things; The number of usable surfaces (called tracks or heads), the number of usable cylinders (similar to the grooves in a record), and the number of sectors (similar to the pieces of a pie). The DEC standard RK06 has 3 heads, 411 cylinders, and 22 sectors. The DEC standard RK07 has 3 heads, 815 cylinders, and 22 sectors. The EMULEX SCXX/C controllers operate on many different sizes of disk drives with varying physical configurations. It is therefore necessary for the controller to do a "remapping" of a logical drive(s) onto the physical drive. The Emulex controllers do this in such a way that the number of heads is always three and the number of sectors is always 22 to agree with the DEC standard. Therefore, the only difference between drives on Emulex controllers and DEC drives is the number of cylinders per drive. The configuration of the standard RK06 and RK07 is coded into the operating system in many locations. The purpose of this patch is to change those locations so that the operating system "believes" that an RK06 or RK07 has a configuration that differs from the DEC standard. This is done by changing only the number of cylinders. Of course, by changing the configuration of a drive, many other values defined by the configuration (such as the total number of blocks) are also changed and these also have to be patched. Those locations, and the values that must be at those locations, are also given in the patch procedure.

Only one location in the INIT.SYS system program will be patched. This location contains the block count for an RK06, which is approximately one-half of the block count for an RK07. The DEC standard RK06 is 27126 decimal blocks, and the standard RK07 is 53790 decimal blocks; thus, the normal value at this location is 64740 octal (27126 decimal) for the RK06, or 151010 octal (53790 decimal) for the RK07. You will be replacing this value with the octal disk block count. The octal disk block count is computed by taking the number of logical cylinders mapped by the controller, multiplying by 66, and converting to octal. The number of logical cylinders can be found in the Drive Configuration Appendix at the back of the controller manual.

Patch Procedure:

1. Boot your system, and from the INIT 'Option:' prompt, execute the following commands:

   For RK06:

```
Option: PATCH
File to patch? INIT.SYS
Base address? SATBUF
Offset address? 13610
 Base   Offset  Old     New?
057000  013610  064740  ? blocks
057000  013612  010362  ? ^Z          <Control-Z>
Offset address? ^Z                    <Control-Z>
Base address? DSI
Offset address? 6522
 Base   Offset  Old     New?
116002  006522  000632  ? cylinders-1
116002  006524  005767  ? ^Z          <Control-Z>
Offset address? ^Z                    <Control-Z>
Base address? ^Z                      <Control-Z>
File to patch? ^Z                     <Control-Z>

Option: BOOT SY:
```

   For RK07:

```
Option: PATCH
File to patch? INIT.SYS
Base address? SATBUF
Offset address? 13622
 Base   Offset  Old     New?
057000  013622  151010  ? blocks
057000  013624  005304  ? ^Z          <Control-Z>
Offset address? ^Z                    <Control-Z>
Base address? DSI
Offset address? 6536
 Base   Offset  Old     New?
116002  006536  001456  ? cylinders-1
116002  006540  020200  ? ^Z          <Control-Z>
Offset address? ^Z                    <Control-Z>
Base address? ^Z                      <Control-Z>
File to patch? ^Z                     <Control-Z>

Option: BOOT SY:
```

   The 'BOOT SY:' command is used to reboot the system, to bring the patched version into memory; the PATCH command only changes the disk file INIT.SYS.

2. Your patch is now complete.

4.4 RSTS/E V7.0-08 "H" Patches

4.4.1 RSTS/E V7.0-08 "H" Patches for RP02/03

Patch Description:

This patch modifies RSTS V7.0-08 (SYSGEN level 'H') to permit the use of non-standard disk drive sizes with the Emulex SCXX/A controllers (RP02/03 emulations).

Patch Explanation:

The configuration of a drive is determined by three things; The number of usable surfaces (called tracks or heads), the number of usable cylinders (similar to the grooves in a record), and the number of sectors (similar to the pieces of a pie). The DEC standard RP02 has 20 heads, 200 cylinders, and 10 sectors. The DEC standard RP03 has 20 heads, 400 cylinders, and 10 sectors. The EMULEX SCXX/A controllers operate on many different sizes of disk drives with varying physical configurations. It is therefore necessary for the controller to do a 'remapping' of a logical drive(s) onto the physical drive. The EMULEX controllers do this in such a way that the number of heads is always 20 and the number of sectors is always 10 to agree with the DEC standard. Therefore, the only difference between drives on EMULEX controllers and DEC drives is the number of cylinders per drive. The configuration on the standard DEC RP02 and RP03 is coded into the operating system in may locations. The purpose of this patch is to change those locations so that the operating system 'believes' that an RP02 or RP03 has a configuration that differs from the DEC standard. This is done by changing only the number of cylinders. Of course, by changing the configuration of a drive, many other values defined by the configuration (such as the total number of blocks) are also changed and these also have to be patched. These locations, and the values that must be at those locations, are also given in the patch procedure.

Only one location in the INIT.SYS system program will be patched. This location contains the block count for an RP02, which is one-half of the block count for an RP03. The DEC standard RP02 is 40000 decimal blocks, and the standard RP03 is 80000 decimal blocks; thus, the normal value at this location is 116100 octal, or 40000 decimal. You will be replacing this value with the octal disk block count if you have an RP02 emulation, or one-half of the block count if you have an RP03 emulation (in which case RSTS will double it to get the real block count). The octal disk block count if computed by taking the number of logical cylinders mapped by the controller, multiplying by 200, and converting to octal. The number of logical cylinders for the SC01/AX and SC11/AX controllers can be found in Appendix A at the back of this document. The number of logical cylinders for the SC02/AX and SC12/AX controllers can be found in the Drive Configuration Appendix at the back of the controller manual.

Patch Procedure:

1. Boot your system, and from the INIT 'Option:' prompt, execute the following commands:

```
Option: PATCH
File to patch? INIT.SYS
Base address? SATBUF
Offset address? 13716
 Base   Offset  Old     New?
060000  013716  116100  ? smallsize  (See table)
060000  013720  016100  ? ^Z         <Control-Z>
Offset address? ^Z                   <Control-Z>
Base address? ^Z                     <Control-Z>
File to patch? ^Z                    <Control-Z>

Option: BOOT SY:
```

   The 'BOOT SY:' command is used to reboot the system, to bring the patched version into memory; the PATCH command only changes the disk file INIT.SYS.

2. Your patch is now complete.

4.4.2 RSTS/E V7.0-08 "H" Patches for RM02/03/05

Patch Description:

This patch modifies RSTS/E V7.0-08 (SYSGEN level 'H') to permit the use of non-standard disk drive sizes with the EMULEX SCXX/B1 and SCXX/B3 controllers (RM02/03/05 emulations).

Patch Explanation:

The configuration of a drive is determined by three things; The number of usable surfaces (called tracks or heads), the number of usable cylinders (similar to the grooves in a record), and the number of sectors (similar to the pieces of a pie). The DEC standard RM02 and RM03 has 5 heads, 823 cylinders, and 32 sectors. The DEC standard RM05 has 19 heads, 823 cylinders, and 32 sectors. This configuration is coded into the operating system in many locations. The purpose of this patch is to change those locations so that the operating system 'believes' that an RM02, RM03, or RM05 has a configuration that differs from the DEC standard. This is done by changing the number of heads, cylinders, or sectors. Of course, by changing the configuration of a drive, many other values define by the configuration (such as the total number of blocks) are also changed and these also have to be patched. These locations, and the values that must be at those locations, are also given in the patch procedure.

The patch itself consists of a file to patch, a module in the file (if the file is a SIL), a base address, an offset from the base, a value that defines what is currently at the offset defined by the base and offset, and a variable or expression designating what value is to be placed at that address. The value for the expression can be found in the table in Appendix B of this document.

Patch Procedure:

File to Patch: INIT.SYS

BASE	OFFSET	IS	CHANGE TO	FOR
SATBUF	014216	001454	000240	RM03 if msblock=0
SATBUF	014366	000002	msblock	RM03
SATBUF	014370	000002	msblock	RM02
SATBUF	014374	000007	msblock	RM05
SATBUF	014446	001100	lsblock	RM03
SATBUF	014450	001100	lsblock	RM02
SATBUF	014454	121200	lsblock	RM05
SATBUF	014526	000004	devclus	RM03
SATBUF	014530	000004	devclus	RM02
SATBUF	014534	000010	devclus	RM05
DBDSK	000046	000240	tracks*sectors	RM03
DBDSK	000052	000240	tracks*sectors	RM02
DBDSK	000062	001140	tracks*sectors	RM05
DBDSK	001262	002400	tracks*400	RM02/03
DBDSK	001312	011400	tracks*400	RM05
DSIDAT	000106	151466	150000!cylinders-1	RM03
DSIDAT	000114	151466	150000!cylinders-1	RM02
DSIDAT	000130	151466	150000!cylinders-1	RM05
DSIDAT	000110	002037	hedsec-401	RM03
DSIDAT	000116	002037	hedsec-401	RM02
DSIDAT	000132	011037	hedsec-401	RM05
COPY	002416	000240	tracks*sectors	RM03
COPY	002424	000240	tracks*sectors	RM02
COPY	002440	001140	tracks*sectors	RM05
ROOT	005556	002440	hedsec	RM03
ROOT	005560	002440	hedsec	RM02
ROOT	005564	011440	hedsec	RM05

File to Patch: SYSGEN.SIL and RSTS.SIL

Module to Patch: RSTS in SYSGEN.SIL
DSK in RSTS.SIL if 'separate phase', otherwise RSTS

For non-overlap seek driver:

DRDSK	000046	000240	tracks*sectors	RM03
DRDSK	000052	000240	tracks*sectors	RM02
DRDSK	000062	001140	tracks*sectors	RM05
DRDSK	001262	002400	tracks*400	RM02/03
DRDSK	001312	011400	tracks*400	RM05

For overlap seek driver:

DRSEEK	000046	000240	tracks*sectors	RM03
DRSEEK	000052	000240	tracks*sectors	RM02
DRSEEK	000062	001140	tracks*sectors	RM05
DRSEEK	001376	002400	tracks*400	RM02/03
DRSEEK	001426	011400	tracks*400	RM05

File to Patch: SAVRES.SAV

107002	001172	000240	tracks*sectors	RM02/03

File to Patch: HOOK.SAV

002720	000000	000240	tracks*sectors	RM03
002720	000010	000240	tracks*sectors	RM02
002720	000030	001140	tracks*sectors	RM05

4.4.3 RSTS/E V7.0-08 "H" Patches for RP06

Patch Description:

This patch modifies RSTS/E V7.0-08 (SYSGEN LEVEL 'H') to permit the use of non-standard disk drive sizes with the Emulex SCXX/B2 and SCXX/B4 controllers (RP06 emulations).

Patch Explanation:

The configuration of a drive is determined by three things; The number of usable surfaces (called tracks or heads), the number of usable cylinders (similar to the grooves in a record), and the number of sectors (similar to the pieces of a pie). The DEC standard RP06 has 19 heads, 815 cylinders and 22 sectors. This configuration is coded into the operating system in many locations. The purpose of this patch is to change those locations so that the operating system 'believes' that an RP06 has a configuration that differs from the DEC standard. This is done by changing the number of heads, cylinders, or

sectors. Of course, by changing the configuration of a drive, many other values defined by the configuration (such as the total number of blocks) are also changed and these also have to be patched. These locations, and the values that must be at those locations, are also given in the patch procedure.

The patch itself consists of a file to patch, a module in the file (if the file is a SIL), a base address, an offset from the base, a value that defines what is currently at the offset defined by the base and offset, and a variable or expression designating what value is to be placed at that address. The value for the expression can be found in the table in Appendix B of this document.

Patch Procedure:

File to Patch: INIT.SYS

BASE	OFFSET	IS	CHANGE TO
SATBUF	014362	000005	msblock
SATBUF	014442	015100	lsblock
SATBUF	014522	000010	devclus
DBDSK	000042	000642	tracks*sectors
DBDSK	000044	000026	sectors
DBDSK	001244	177426	177400!sectors
DBDSK	001246	011400	tracks*400
DSIDAT	000072	011456	010000!cylinders-1
DSIDAT	000074	011025	hedsec-401
COPY	011052	000642	tracks*sectors
COPY	011064	000026	sectors
ROOT	005552	011426	hedsec

File to Patch: SYSGEN.SIL and RSTS.SIL

Module to Patch: RSTS in SYSGEN.SIL
DSK in RSTS.SIL if 'separate phase', otherwise RSTS

For non-overlap seek driver:

DBDSK	000042	000642	tracks*sectors
DBDSK	000044	000026	sectors
DBDSK	001244	177426	177400!sectors
DBDSK	001246	011400	tracks*400

For overlap seek driver:

DBSEEK	000042	000642	tracks*sectors
DBSEEK	000044	000026	sectors
DBSEEK	001360	177426	177400!sectors
DBSEEK	001362	011400	heads*400

File to Patch: HOOK.SAV

002710	000000	000642	tracks*sectors
002710	000002	000026	sectors

4.4.4 RSTS/E V7.0-08 "H" Patches for RK06/07

Patch Description:

This patch modifies RSTS V7.0-08 (SYSGEN level H) to permit the use of non-standard disk drive sizes with the Emulex SCXX/C controllers (RK06/07 emulations).

Patch Explanation:

The configuration of a drive is determined by three things; The number of usable surfaces (called tracks or heads), the number of usable cylinders (similar to the grooves in a record), and the number of sectors (similar to the pieces of a pie). The DEC standard RK06 has 3 heads, 411 cylinders, and 22 sectors. The DEC standard RK07 has 3 heads, 815 cylinders, and 22 sectors. The EMULEX SCXX/C controllers operate on many different sizes of disk drives with varying physical configurations. It is therefore necessary for the controller to do a "remapping" of a logical drive(s) onto the physical drive. The Emulex controllers do this in such a way that the number of heads is always three and the number of sectors is always 22 to agree with the DEC standard. Therefore, the only difference between drives on Emulex controllers and DEC drives is the number of cylinders per drive. The configuration of the standard RK06 and RK07 is coded into the operating system in many locations. The purpose of this patch is to change those locations so that the operating system "believes" that an RK06 or RK07 has a configuration that differs from the DEC standard. This is done by changing only the number of cylinders. Of course, by changing the configuration of a drive, many other values defined by the configuration (such as the total number of blocks) are also changed and these also have to be patched. Those locations, and the values that must be at those locations, are also given in the patch procedure.

Only one location in the INIT.SYS system program will be patched. This location contains the block count for an RK06, which is approximately one-half of the block count for an RK07. The DEC standard RK06 is 27126 decimal blocks, and the standard RK07 is 53790 decimal blocks; thus, the normal value at this location is 64740 octal (27126 decimal) for the RK06, or 151010 octal (53790 decimal) for the RK07. You will be replacing this value with the octal disk block count. The octal disk block count is computed by taking the number of logical cylinders mapped by the controller, multiplying by 66, and converting to octal. The number of logical cylinders can be found in the Drive Configuration Appendix at the back of the controller manual.

Patch Procedure:

1. Boot your system, and from the INIT 'Option:' prompt, execute the following commands:

   For RK06:

```
Option: PATCH
File to patch? INIT.SYS
Base address? SATBUF
Offset address? 13614
 Base   Offset  Old     New?
060000  013614  064740  ? blocks
060000  013616  010362  ? ^Z          <Control-Z>
Offset address? ^Z                    <Control-Z>
Base address? DSI
Offset address? 6654
 Base   Offset  Old     New?
114002  006654  000632  ? cylinders-1
114002  006656  005767  ? ^Z          <Control-Z>
Offset address? ^Z                    <Control-Z>
Base address? ^Z                      <Control-Z>
File to patch? ^Z                     <Control-Z>

Option: BOOT SY:
```

   For RK07:

```
Option: PATCH
File to patch? INIT.SYS
Base address? SATBUF
Offset address? 13626
 Base   Offset  Old     New?
060000  013626  151010  ? blocks
060000  013630  005304  ? ^Z          <Control-Z>
Offset address? ^Z                    <Control-Z>
Base address? DSI
Offset address? 6666
 Base   Offset  Old     New?
114002  006666  001456  ? cylinders-1
116002  006670  020200  ? ^Z          <Control-Z>
Offset address? ^Z                    <Control-Z>
Base address? ^Z                      <Control-Z>
File to patch? ^Z                     <Control-Z>

Option: BOOT SY:
```

   The 'BOOT SY:' command is used to reboot the system, to bring the patched version into memory; the PATCH command only changes the disk file INIT.SYS.

2. Your patch is now complete.

4.5 RSTS/E V7.1 Patches

4.5.1 RSTS/E V7.1 Patches for RP02/03

Patch Description:

This patch modifies RSTS V7.1 to permit the use of non-standard disk drive sizes with the Emulex SCXX/A controllers (RP02/03 emulations).

Patch Explanation:

The configuration of a drive is determined by three things; The number of usable surfaces (called tracks or heads), the number of usable cylinders (similar to the grooves in a record), and the number of sectors (similar to the pieces of a pie). The DEC standard RP02 has 20 heads, 200 cylinders, and 10 sectors. The DEC standard RP03 has 20 heads, 400 cylinders, and 10 sectors. The EMULEX SCXX/A controllers operate on many different sizes of disk drives with varying physical configurations. It is therefore necessary for the controller to do a 'remapping' of a logical drive(s) onto the physical drive. The EMULEX controllers do this in such a way that the number of heads is always 20 and the number of sectors is always 10 to agree with the DEC standard. Therefore, the only difference between drives on EMULEX controllers and DEC drives is the number of cylinders per drive. The configuration on the standard DEC RP02 and RP03 is coded into the operating system in may locations. The purpose of this patch is to change those locations so that the operating system 'believes' that an RP02 or RP03 has a configuration that differs from the DEC standard. This is done by changing only the number of cylinders. Of course, by changing the configuration of a drive, many other values defined by the configuration (such as the total number of blocks) are also changed and these also have to be patched. These locations, and the values that must be at those locations, are also given in the patch procedure.

Only one location in the INIT.SYS system program will be patched. This location contains the block count for an RP02, which is one-half of the block count for an RP03. The DEC standard RP02 is 40000 decimal blocks, and the standard RP03 is 80000 decimal blocks; thus, the normal value at this location is 116100 octal, or 40000 decimal. You will be replacing this value with the octal disk block count if you have an RP02 emulation, or one-half of the block count if you have an RP03 emulation (in which case RSTS will double it to get the real block count). The octal disk block count if computed by taking the number of logical cylinders mapped by the controller, multiplying by 200, and converting to octal. The number of logical cylinders for the SC01/AX and SC11/AX controllers can be found in Appendix A at the back of this document. The number of logical cylinders for the SC02/AX and SC12/AX controllers can be found in the Drive Configuration Appendix at the back of the controller manual.

Patch Procedure:

1. Boot your system, and from the INIT 'Option:' prompt, execute the following commands:

```
Option: PATCH
File to patch? INIT.SYS
Base address? SATBUF
Offset address? 14554
 Base   Offset  Old     New?
060000  014554  116100  ? smallsize  (See table)
060000  014556  016100  ? ^Z         <Control-Z>
Offset address? ^Z                   <Control-Z>
Base address? ^Z                     <Control-Z>
File to patch? ^Z                    <Control-Z>

Option: BOOT SY:
```

   The 'BOOT SY:' command is used to reboot the system, to bring the patched version into memory; the PATCH command only changes the disk file INIT.SYS.

2. Your patch is now complete.

4.5.2 RSTS/E V7.1 Patches for RM02/03/05

Patch Description:

This patch modifies RSTS/E V7.1 to permit the use of non-standard disk drive sizes with the EMULEX SCXX/B1 and SCXX/B3 controllers (RM02/03/05 emulations).

Patch Explanation:

The configuration of a drive is determined by three things; The number of usable surfaces (called tracks or heads), the number of usable cylinders (similar to the grooves in a record), and the number of sectors (similar to the pieces of a pie). The DEC standard RM02 and RM03 has 5 heads, 823 cylinders, and 32 sectors. The DEC standard RM05 has 19 heads, 823 cylinders, and 32 sectors. This configuration is coded into the operating system in many locations. The purpose of this patch is to change those locations so that the operating system 'believes' that an RM02, RM03, or RM05 has a configuration that differs from the DEC standard. This is done by changing the number of heads, cylinders, or sectors. Of course, by changing the configuration of a drive, many other values define by the configuration (such as the total number of blocks) are also changed and these also have to be patched. These locations, and the values that must be at those locations, are also given in the patch procedure.

The patch itself consists of a file to patch, a module in the file (if the file is a SIL), a base address, an offset from the base, a value that defines what is currently at the offset defined by the base and offset, and a variable or expression designating what value is to be placed at that address. The value for the expression can be found in the table in Appendix B of this document.

Patch Procedure:

File to Patch: INIT.SYS

BASE	OFFSET	IS	CHANGE TO	FOR
SATBUF	015054	001454	000240	RM03 if msblock=0
SATBUF	015224	000002	msblock	RM03
SATBUF	015226	000002	msblock	RM02
SATBUF	015232	000007	msblock	RM05
SATBUF	015304	001100	lsblock	RM03
SATBUF	015306	001100	lsblock	RM02
SATBUF	015312	121200	lsblock	RM05
SATBUF	015364	000004	devclus	RM03
SATBUF	015366	000004	devclus	RM02
SATBUF	015372	000010	devclus	RM05
DBDSK	000046	000240	tracks*sectors	RM03
DBDSK	000052	000240	tracks*sectors	RM02
DBDSK	000062	001140	tracks*sectors	RM05
DBDSK	001262	002400	tracks*400	RM02/03
DBDSK	001312	011400	tracks*400	RM05
DSIDAT	000106	151466	150000!cylinders-1	RM03
DSIDAT	000114	151466	150000!cylinders-1	RM02
DSIDAT	000130	151466	150000!cylinders-1	RM05
DSIDAT	000110	002037	hedsec-401	RM03
DSIDAT	000116	002037	hedsec-401	RM02
DSIDAT	000132	011037	hedsec-401	RM05
COPY	002416	000240	tracks*sectors	RM03
COPY	002424	000240	tracks*sectors	RM02
COPY	002440	001140	tracks*sectors	RM05
ROOT	006162	002440	hedsec	RM03
ROOT	006164	002440	hedsec	RM02
ROOT	006170	011440	hedsec	RM05

File to Patch: SYSGEN.SIL and RSTS.SIL:

Module to Patch: DSK

For non-overlap seek driver:

DRDSK	000046	000240	tracks*sectors	RM03
DRDSK	000052	000240	tracks*sectors	RM02
DRDSK	000062	001140	tracks*sectors	RM05
DRDSK	001262	002400	tracks*400	RM02/03
DRDSK	001312	011400	tracks*400	RM05

For overlap seek driver:

DRSEEK	000046	000240	tracks*sectors	RM03
DRSEEK	000052	000240	tracks*sectors	RM02
DRSEEK	000062	001140	tracks*sectors	RM05
DRSEEK	001376	002400.	tracks*400	RM02/03
DRSEEK	001426	011400	tracks*400	RM05

File to Patch: HOOK.SAV

2720	000000	000240	tracks*sectors	RM03
2720	000010	000240	tracks*sectors	RM02
2720	000030	001140	tracks*sectors	RM05

File to Patch: SAVRES.SAV

GGB	001324	000240	tracks*sectors	RM03
GGB	001334	000240	tracks*sectors	RM02
GGB	001354	001140	tracks*sectors	RM05

4.5.3 RSTS/E V7.1 Patches for RP06

Patch Description:

This patch modifies RSTS/E V7.1 to permit the use of non-standard disk drive sizes with the Emulex SCXX/B2 and SCXX/B4 controllers (RP06 emulations).

Patch Explanation:

The configuration of a drive is determined by three things; The number of usable surfaces (called tracks or heads), the number of usable cylinders (similar to the grooves in a record), and the number of sectors (similar to the pieces of a pie). The DEC standard RP06 has 19 heads, 815 cylinders and 22 sectors. This configuration is coded into the operating system in many locations. The purpose of this

patch is to change those locations so that the operating system 'believes' that an RP06 has a configuration that differs from the DEC standard. This is done by changing the number of heads, cylinders, or sectors. Of course, by changing the configuration of a drive, many other values defined by the configuration (such as the total number of blocks) are also changed and these also have to be patched. These locations, and the values that must be at those locations, are also given in the patch procedure.

The patch itself consists of a file to patch, a module in the file (if the file is a SIL), a base address, an offset from the base, a value that defines what is currently at the offset defined by the base and offset, and a variable or expression designating what value is to be placed at that address. The value for the expression can be found in the table in Appendix B of this document.

Patch Procedure:

File to Patch: INIT.SYS

BASE	OFFSET	IS	CHANGE TO
SATBUF	015220	000005	msblock
SATBUF	015300	015100	lsblock
SATBUF	015360	000010	devclus
DBDSK	000042	000642	tracks*sectors
DBDSK	000044	000026	sectors
DBDSK	001244	177426	177400!sectors
DBDSK	001246	011400	tracks*400
DSIDAT	000072	011456	010000!cylinders-1
DSIDAT	000074	011025	hedsec-401
COPY	011062	000642	tracks*sectors
COPY	011074	000026	sectors
ROOT	006156	011426	hedsec

File to Patch: SYSGEN.SIL and RSTS.SIL:

Module to Patch: DSK

For non-overlap seek driver:

DBDSK	000042	000642	tracks*sectors
DBDSK	000044	000026	sectors
DBDSK	001244	177426	177400!sectors
DBDSK	001246	011400	tracks*400

For overlap seek driver:

DBSEEK	000042	000642	tracks*sectors
DBSEEK	000044	000026	sectors
DBSEEK	001360	177426	177400!sectors
DBSEEK	001362	011400	heads*400

File to Patch: HOOK.SAV

002710	000000	000642	tracks*sectors
002710	000002	000026	sectors

File to Patch: SAVRES.SAV

GGB	001314	000642	tracks*sectors
GGB	001316	000026	sectors

4.5.4 RSTS/E V7.1 Patches for RK06/07

Patch Description:

This patch modifies RSTS V7.1 to permit the use of non-standard disk drive sizes with the Emulex SGXX/C controllers (RK06/07 emulations).

Patch Explanation:

The configuration of a drive is determined by three things; The number of usable surfaces (called tracks or heads), the number of usable cylinders (similar to the grooves in a record), and the number of sectors (similar to the pieces of a pie). The DEC standard RK06 has 3 heads, 411 cylinders, and 22 sectors. The DEC standard RK07 has 3 heads, 815 cylinders, and 22 sectors. The EMULEX SCXX/C controllers operate on many different sizes of disk drives with varying physical configurations. It is therefore necessary for the controller to do a 'remapping' of a logical drive(s) onto the physical drive. The EMULEX controllers do this in such a way that the number of heads is always 3 and the number of sectors is always 22 to agree with the DEC standard. Therefore, the only difference between drives on EMULEX controllers and DEC drives is the number of cylinders per drive. The configuration on the standard DEC RK06 and RK07 is coded into the operating system in many locations. The purpose of this patch is to change those locations so that the operating system 'believes' that an RK06 or RK07 has a configuration that differs from the DEC standard. This is done by changing only the number of cylinders. Of course, by changing the configuration of a drive, many other values defined by the configuration (such as the total number of blocks) are also changed and these also have to be patched. These locations, and the values that must be at those locations, are also given in the patch procedure.

Only one location in the INIT.SYS system program will be patched. This location contains the block count for an RK06, which is approximately one-half of the block count for an RK07. The DEC standard RK06 is 27126 decimal blocks, and the standard RK07 is 53790 decimal blocks; thus, the normal value at this location is 64740 octal (27126 decimal) for the RK06, or 151010 octal (53790 decimal)

for the RK07. You will be replacing this value with the octal disk block count. The octal disk block count is computed by taking the number of logical cylinders mapped by the controller, multiplying by 66, and converting to octal. The number of logical cylinders can be found in the Drive Configuration Appendix at the back of the controller manual.

Patch Procedure:

1. Boot your system, and from the INIT 'Option:' prompt, execute the following commands:

   For RK06:

```
Option: PATCH
File to patch? INIT.SYS
Base address? SATBUF
Offset address? 14452
 Base   Offset  Old     New?
060000  014452  064740  ? blocks
060000  014454  010362  ? ^Z          <Control-Z>
Offset address? ^Z                    <Control-Z>
Base address? DSI
Offset address? 6710
 Base   Offset  Old     New?
116002  006710  000632  ? cylinders-1
116002  006712  005767  ? ^Z          <Control-Z>
Offset address? ^Z                    <Control-Z>
Base address? ^Z                      <Control-Z>
File to patch? ^Z                     <Control-Z>

Option: BOOT SY:
```

   For RK07:

```
Option: PATCH
File to patch? INIT.SYS
Base address? SATBUF
Offset address? 14464
 Base   Offset  Old     New?
060000  014464  151010  ? blocks
060000  014466  005304  ? ^Z          <Control-Z>
Offset address? ^Z                    <Control-Z>
Base address? DSI
Offset address? 6722
 Base   Offset  Old     New?
116002  006722  001456  ? cylinders-1
116002  006724  020200  ? ^Z          <Control-Z>
Offset address? ^Z                    <Control-Z>
Base address? ^Z                      <Control-Z>
File to patch? ^Z                     <Control-Z>
```

Option: BOOT SY:

The 'BOOT SY:' command is used to reboot the system, to bring the patched version into memory; the PATCH command only changes the disk file INIT.SYS.

2. Your patch is now complete.

4.6 RSTS/E V7.2 Patches

4.6.1 RSTS/E V7.2 Patches for RP02/03

Patch Description:

This patch modifies RSTS V7.2 to permit the use of non-standard disk drive sizes with the Emulex SCXX/A controllers (RP02/03 emulations).

Patch Explanation:

The configuration of a drive is determined by three things; The number of usable surfaces (called tracks or heads), the number of usable cylinders (similar to the grooves in a record), and the number of sectors (similar to the pieces of a pie). The DEC standard RP02 has 20 heads, 200 cylinders, and 10 sectors. The DEC standard RP03 has 20 heads, 400 cylinders, and 10 sectors. The EMULEX SCXX/A controllers operate on many different sizes of disk drives with varying physical configurations. It is therefore necessary for the controller to do a 'remapping' of a logical drive(s) onto the physical drive. The EMULEX controllers do this in such a way that the number of heads is always 20 and the number of sectors is always 10 to agree with the DEC standard. Therefore, the only difference between drives on EMULEX controllers and DEC drives is the number of cylinders per drive. The configuration on the standard DEC RP02 and RP03 is coded into the operating system in may locations. The purpose of this patch is to change those locations so that the operating system 'believes' that an RP02 or RP03 has a configuration that differs from the DEC standard. This is done by changing only the number of cylinders. Of course, by changing the configuration of a drive, many other values defined by the configuration (such as the total number of blocks) are also changed and these also have to be patched. These locations, and the values that must be at those locations, are also given in the patch procedure.

Only one location in the INIT.SYS system program will be patched. This location contains the block count for an RP02, which is one-half of the block count for an RP03. The DEC standard RP02 is 40000 decimal blocks, and the standard RP03 is 80000 decimal blocks; thus, the normal value at this location is 116100 octal, or 40000 decimal. You will be replacing this value with the octal disk block count if you have an RP02 emulation, or one-half of the block count if you have an RP03 emulation (in which case RSTS will double it to get the real block count). The octal disk block count if computed by taking the

number of logical cylinders mapped by the controller, multiplying by 200, and converting to octal. The number of logical cylinders for the SC01/AX and SC11/AX controllers can be found in Appendix A at the back of this document. The number of logical cylinders for the SC02/AX and SC12/AX controllers can be found in the Drive Configuration Appendix at the back of the controller manual.

Patch Procedure:

1. Boot your system, and from the INIT 'Option:' prompt, execute the following commands:

```
Option: PATCH
File to patch? INIT.SYS
Base address? SATBUF
Offset address? 15146
 Base   Offset  Old     New?
060000  015146  116100  ? smallsize  (See table)
060000  015150  016100  ? ^Z         <Control-Z>
Offset address? ^Z                   <Control-Z>
Base address? ^Z                     <Control-Z>
File to patch? ^Z                    <Control-Z>

Option: BOOT SY:
```

   The 'BOOT SY:' command is used to reboot the system, to bring the patched version into memory; the PATCH command only changes the disk file INIT.SYS.

2. Your patch is now complete.

4.6.2 RSTS/E V7.2 Patches for RM02/03/05

Patch Description:

This patch modifies RSTS/E V7.2 to permit the use of non-standard disk drive sizes with the EMULEX SCXX/B1 and SCXX/B3 controllers (RM02/03/05 emulations).

Patch Explanation:

The configuration of a drive is determined by three things; The number of usable surfaces (called tracks or heads), the number of usable cylinders (similar to the grooves in a record), and the number of sectors (similar to the pieces of a pie). The DEC standard RM02 and RM03 has 5 heads, 823 cylinders, and 32 sectors. The DEC standard RM05 has 19 heads, 823 cylinders, and 32 sectors. This configuration is coded into the operating system in many locations. The purpose of this patch is to change those locations so that the operating system 'believes' that an RM02, RM03, or RM05 has a configuration that differs from the DEC standard. This is done by changing the number of

heads, cylinders, or sectors. Of course, by changing the configuration of a drive, many other values define by the configuration (such as the total number of blocks) are also changed and these also have to be patched. These locations, and the values that must be at those locations, are also given in the patch procedure.

The patch itself consists of a file to patch, a module in the file (if the file is a SIL), a base address, an offset from the base, a value that defines what is currently at the offset defined by the base and offset, and a variable or expression designating what value is to be placed at that address. The value for the expression can be found in the table in Appendix B of this document.

Patch Procedure:

File to Patch: INIT.SYS

BASE	OFFSET	IS	CHANGE TO	FOR
SATBUF	015446	001454	000240	RM03 if msblock=0
SATBUF	015616	000002	msblock	RM03
SATBUF	015620	000002	msblock	RM02
SATBUF	015624	000007	msblock	RM05
SATBUF	015676	001100	lsblock	RM03
SATBUF	015700	001100	lsblock	RM02
SATBUF	015704	121200	lsblock	RM05
SATBUF	015756	000004	devclus	RM03
SATBUF	015760	000004	devclus	RM02
SATBUF	015764	000010	devclus	RM05
DBDSK	000046	000240	tracks*sectors	RM03
DBDSK	000052	000240	tracks*sectors	RM02
DBDSK	000062	001140	tracks*sectors	RM05
DBDSK	001262	002400	tracks*400	RM02/03
DBDSK	001312	011400	tracks*400	RM05
DSIDAT	000112	151466	150000!cylinders-1	RM03
DSIDAT	000120	151466	150000!cylinders-1	RM02
DSIDAT	000134	151466	150000!cylinders-1	RM05
DSIDAT	000114	002037	hedsec-401	RM03
DSIDAT	000122	002037	hedsec-401	RM02
DSIDAT	000140	011037	hedsec-401	RM05
COPY	002426	000240	tracks*sectors	RM03
COPY	002434	000240	tracks*sectors	RM02
COPY	002450	001140	tracks*sectors	RM05

```
    ROOT    006204    002440    hedsec              RM03
    ROOT    006206    002440    hedsec              RM02
    ROOT    006212    011440    hedsec              RM05
```

File to Patch: SYSGEN.SIL and RSTS.SIL:

Module to Patch: DSK

For non-overlap seek driver:

```
    DRDSK   000046    000240    tracks*sectors      RM03
    DRDSK   000052    000240    tracks*sectors      RM02
    DRDSK   000062    001140    tracks*sectors      RM05

    DRDSK   001262    002400    tracks*400          RM02/03
    DRDSK   001312    011400    tracks*400          RM05
```

For overlap seek driver:

```
    DRSEEK  000046    000240    tracks*sectors      RM03
    DRSEEK  000052    000240    tracks*sectors      RM02
    DRSEEK  000062    001140    tracks*sectors      RM05

    DRSEEK  001376    002400    tracks*400          RM02/03
    DRSEEK  001426    011400    tracks*400          RM05
```

File to Patch: HOOK.SAV

```
    2714    000000    000240    tracks*sectors      RM03
    2714    000010    000240    tracks*sectors      RM02
    2714    000030    001140    tracks*sectors      RM05
```

File to Patch: SAVRES.SAV

```
    GGB     001324    000240    tracks*sectors      RM03
    GGB     001334    000240    tracks*sectors      RM02
    GGB     001354    001140    tracks*sectors      RM05
```

4.6.3 RSTS/E V7.2 Patches for RP06

Patch Description:

This patch modifies RSTS/E V7.2 to permit the use of non-standard disk drive sizes with the Emulex SCXX/B2 and SCXX/B4 controllers (RP06 emulations).

Patch Explanation:

The configuration of a drive is determined by three things; The number of usable surfaces (called tracks or heads), the number of usable cylinders (similar to the grooves in a record), and the number of sectors (similar to the pieces of a pie). The DEC standard RP06 has 19 heads, 815 cylinders and 22 sectors. This configuration is coded into the operating system in many locations. The purpose of this patch is to change those locations so that the operating system 'believes' that an RP06 has a configuration that differs from the DEC standard. This is done by changing the number of heads, cylinders, or sectors. Of course, by changing the configuration of a drive, many other values defined by the configuration (such as the total number of blocks) are also changed and these also have to be patched. These locations, and the values that must be at those locations, are also given in the patch procedure.

The patch itself consists of a file to patch, a module in the file (if the file is a SIL), a base address, an offset from the base, a value that defines what is currently at the offset defined by the base and offset, and a variable or expression designating what value is to be placed at that address. The value for the expression can be found in the table in Appendix B of this document.

Patch Procedure:

File to Patch: INIT.SYS

BASE	OFFSET	IS	CHANGE TO
SATBUF	015612	000005	msblock
SATBUF	015672	015100	lsblock
SATBUF	015752	000010	devclus
DBDSK	000042	000642	tracks*sectors
DBDSK	000044	000026	sectors
DBDSK	001244	177426	177400!sectors
DBDSK	001246	011400	tracks*400
DSIDAT	000076	011456	010000!cylinders-1
DSIDAT	000100	011025	hedsec-401
COPY	011472	000642	tracks*sectors
COPY	011504	000026	sectors
ROOT	006200	011426	hedsec

File to Patch: SYSGEN.SIL and RSTS.SIL:

Module to Patch: DSK

For non-overlap seek driver:

DBDSK	000042	000642	tracks*sectors
DBDSK	000044	000026	sectors
DBDSK	001244	177426	177400!sectors
DBDSK	001246	011400	tracks*400

For overlap seek driver:

DBSEEK	000042	000642	tracks*sectors
DBSEEK	000044	000026	sectors
DBSEEK	001360	177426	177400!sectors
DBSEEK	001362	011400	tracks*400

File to Patch: HOOK.SAV

002704	000000	000642	tracks*sectors
002704	000002	000026	sectors

File to Patch: SAVRES.SAV

GGB	001314	000642	tracks*sectors
GGB	001316	000026	sectors

4.6.4 RSTS/E V7.2 Patches for RK06/07

Patch Description:

This patch modifies RSTS V7.2 to permit the use of non-standard disk drive sizes with the Emulex SCXX/C controllers (RK06/07 emulations).

Patch Explanation:

The configuration of a drive is determined by three things; The number of usable surfaces (called tracks or heads), the number of usable cylinders (similar to the grooves in a record), and the number of sectors (similar to the pieces of a pie). The DEC standard RK06 has 3 heads, 411 cylinders, and 22 sectors. The DEC standard RK07 has 3 heads, 815 cylinders, and 22 sectors. The EMULEX SCXX/C controllers operate on many different sizes of disk drives with varying physical configurations. It is therefore necessary for the controller to do a 'remapping' of a logical drive(s) onto the physical drive. The EMULEX controllers do this in such a way that the number of heads is always 3 and the number of sectors is always 22 to agree with the DEC standard. Therefore, the only difference between drives on EMULEX controllers and DEC drives is the number of cylinders per drive. The configuration on the standard DEC RK06 and RK07 is coded into the operating system in many locations. The purpose of this patch is to change those locations so that the operating system 'believes' that an RK06 or RK07 has a configuration that differs from the DEC standard. This is done by changing only the number of cylinders. Of course, by changing the configuration of a drive, many other values defined by the configuration (such as the total number of blocks) are also changed and these also have to be patched. These locations, and the values that must be at those locations, are also given in the patch procedure.

Only one location in the INIT.SYS system program will be patched. This location contains the block count for an RK06, which is approximately one-half of the block count for an RK07. The DEC standard RK06 is 27126 decimal blocks, and the standard RK07 is 53790 decimal blocks; thus, the normal value at this location is 64740 octal (27126 decimal) for the RK06, or 151010 octal (53790 decimal) for the RK07. You will be replacing this value with the octal disk block count. The octal disk block count is computed by taking the number of logical cylinders mapped by the controller, multiplying by 66, and converting to octal. The number of logical cylinders can be found in the Drive Configuration Appendix at the back of the controller manual.

Patch Procedure:

1. Boot your system, and from the INIT 'Option:' prompt, execute the following commands:

   For RK06:

```
Option: PATCH
File to patch? INIT.SYS
Base address? SATBUF
Offset address? 15044
 Base   Offset  Old     New?
060000  015044  064740  ? blocks
060000  015046  010362  ? ^Z          <Control-Z>
Offset address? ^Z                     <Control-Z>
Base address? DSI
Offset address? 6720
 Base   Offset  Old     New?
116002  006720  000632  ? cylinders-1
116002  006722  005767  ? ^Z          <Control-Z>
Offset address? ^Z                     <Control-Z>
Base address? ^Z                       <Control-Z>
File to patch? ^Z                      <Control-Z>

Option: BOOT SY:
```

   For RK07:

```
Option: PATCH
File to patch? INIT.SYS
Base address? SATBUF
Offset address? 15056
 Base   Offset  Old     New?
060000  015056  151010  ? blocks
060000  015060  005304  ? ^Z          <Control-Z>
Offset address? ^Z                     <Control-Z>
Base address? DSI
Offset address? 6732
 Base   Offset  Old     New?
```

```
116002  006732  001456  ? cylinders-1
116002  006734  020200  ? ^Z            <Control-Z>
Offset address? ^Z                      <Control-Z>
Base address? ^Z                        <Control-Z>
File to patch? ^Z                       <Control-Z>

Option: BOOT SY:
```

The 'BOOT SY:' command is used to reboot the system, to bring the patched version into memory; the PATCH command only changes the disk file INIT.SYS.

2. Your patch is now complete.

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APPENDIX A

CONTROLLER	SCXX/A1	SCXX/A2	SCXX/A2	SCXX/A3
RP02 OR RP03	RP02	RP03	RP03	RP02
SECTORS	30.	30.	30.	32.
sectors	36	36	36	40
TRACKS (HEADS)	5.	5.	5.	2.
tracks	5	5	5	2
CYLINDERS	812.	812.	820.	319.
cylinders	1454	1454	1464	477

Values to use for RSX-11M patches:

BLOCKS	40600.	121800.	123000.	20416.
blocks	117230	355710	360170	47700
msblock	000000	000001	000001	000000
lsblock	117230	155710	160170	047700

Values to use for RT11, RSX-11M Plus, and RSTS/E Patches:

BLOCKS	40600.	121800.	123000.	20400.
blocks	117230	355710	360170	47660
msblock	000000	000001	000001	000000
lsblock	117230	155710	160170	047660
SMALLSIZE	40600.	* 60900.	* 61500.	20400.
smallsize	117230	* 166744	* 170074	47660

* Note that the value for smallsize has been reduced by one half the block size for the RP03 emulations. This is because the DEC operating systems use one half the blocksize value for RP03s, then doubles it.

Emulex Disk Capacity Patches
Drive Size Table for SCXX/A Emulations

CONTROLLER	SCXX/A3	SCXX/A4	SCXX/A5	SCXX/A6
RP02 OR RP03	RP02	RP02	RP03	RP02
SECTORS	32.	32.	32.	30.
sectors	40	40	40	36
TRACKS (HEADS)	4.	2./4./6.	3.	12.
tracks	4	2 /4 /6	3	14
CYLINDERS	318.	819.	813.	339.
cylinders	476	1463	1455	523

Values to use for RSX-11M patches:

BLOCKS	40704.	26200.	78048.	122040.
blocks	117400	631320	230340	356270
msblock	000000	000000	000001	000001
lsblock	117400	063130	030340	156270

Values to use for RT11, RSX-11M Plus, and RSTS/E Patches:

BLOCKS	40600.	26200.	78000.	40600.
blocks	117230	63130	230260	117230
msblock	000000	000000	000001	000000
lsblock	117230	063130	030260	117230
SMALLSIZE	40600.	26200.	* 39000.	40600.
smallsize	117230	63130	* 114130	117230

* Note that the value for smallsize has been reduced by one half the block size for the RP03 emulations. This is because the DEC operating systems use one half the blocksize value for RP03s, then doubles it.

Emulex Disk Capacity Patches
Drive Size Table for SCXX/A Emulations

CONTROLLER	SCXX/A7	SCXX/A7	SCXX/A7
RP02 OR RP03	RP02	RP03	RP03
SECTORS	30.	30.	30.
sectors	36	36	36
TRACKS (HEADS)	4.	8.	12.
tracks	4	10	14
CYLINDERS	339.	339.	339.
cylinders	523	523	523

Values to use for RSX-11M patches:

BLOCKS	40680.	81360.	122040.
blocks	117350	236720	356270
msblock	000000	000001	000001
lsblock	117350	036720	156270

Values to use for RT11, RSX-11M Plus, and RSTS/E Patches:

BLOCKS	40600.	81200.	121800.
blocks	117230	236460	355710
msblock	000000	000001	000001
lsblock	117230	036460	155710
SMALLSIZE	40600.	* 40600.	* 60900.
smallsize	117230	* 117230	* 166744

* Note that the value for smallsize has been reduced by one half the block size for the RP03 emulations. This is because the DEC operating systems use one half the blocksize value for RP03s, then doubles it.

Emulex Disk Capacity Patches
Drive Size Table for SCXX/A Emulations

CONTROLLER	SCXX/A8	SCXX/A8
RP02 OR RP03	RP02	RP03
SECTORS	32.	32.
sectors	40	40
TRACKS (HEADS)	6.	10.
tracks	6	12
CYLINDERS	350.	350.
cylinders	536	536

Values to use for RSX-11M patches:

BLOCKS	67200.	112000.
blocks	203200	332600
msblock	000001	000001
lsblock	3200	132600

Values to use for RT11, RSX-11M Plus, and RSTS/E Patches:

BLOCKS	63000.	105000.
blocks	173030	315050
msblock	000000	000001
lsblock	173030	115050
SMALLSIZE	63000.	* 52500.
smallsize	173030	* 146424

* Note that the value for smallsize has been reduced by one half the block size for the RP03 emulations. This is because the DEC operating systems use one half the blocksize value for RP03s, then doubles it.

Emulex Disk Capacity Patches
Drive table for SCXX/B controllers

APPENDIX B

DRIVE CAPICITY	40 MB	80 MB	160 MB	160 MB
SECTORS	32.	32.	32.	32.
sectors	40	40	40	40
TRACKS (HEADS)	5.	5.	10.	5.
tracks	5	5	12	5
CYLINDERS	411.	815.	823.	1646.
cylinders	633	1457	1467	3156
DEVICE CLUSTERSIZE	2.	2.	8.	8.
devclus	2	2	10	10
TRACKS*SECTORS	160.	160.	320.	160.
tracks*sectors	240	240	500	240
TRACKS*256.	1280.	1280.	2560.	1280.
tracks*400	2400	2400	5000	2400
hedsec	2440	2440	5040	2440
hedsec-401	2037	2037	4437	2037

Values to use for RSX-11M & RSX-11M Plus patches:

BLOCKS	65760.	130400.	263360.	263360.
blocks	200340	376540	1002300	1002300
msblock	000001	000001	000004	000004
lsblock	000340	176540	002300	002300

Values to use for RSTS/E Patches: **

BLOCKS	65728.	130368.	263328.	263328.
blocks	200300	376500	1002240	1002240
msblock	000001	000001	000004	000004
lsblock	000300	176500	002240	002240

** The total number of usuable blocks for RSTS/E is 32. less than the total number of usuable blocks for RSX-11M & RSX-11M Plus because of the 'manufacturers bad sector file' for RSTS/E.

hedsec = (TRACKS * 256.) + SECTORS
hedsec-401 = ((TRACKS - 1.) * 256.) + (SECTORS - 1.)

Emulex Disk Capacity Patches
Drive table for SCXX/B controllers

DRIVE CAPACITY	300 MB	300 MB	500 MB	600 MB
SECTORS	32.	32.	32.	32.
sectors	40	40	40	40
TRACKS (HEADS)	19.	19.	19.	40.
tracks	23	23	23	50
CYLINDERS	815.	823.	1348.	842.
cylinders	1457	1467	2504	1512
DEVICE CLUSTERSIZE	8.	8.	16.	16.
devclus	10	10	20	20
TRACKS*SECTORS	608.	608.	608.	1280.
tracks*sectors	1140	1140	1140	2400
TRACKS*256.	4864.	4864.	4864.	10240.
tracks*400	11400	11400	11400	24000
hedsec	11440	11440	11440	24040
hedsec-401	11037	11037	11037	23437

Values to use for RSX-11M & RSX-11M Plus patches:

BLOCKS	495520.	500384.	819584.	1077760.
blocks	1707640	1721240	3100600	4071000
msblock	000007	000007	000014	000020
lsblock	107640	121240	100600	071000

Values to use for RSTS/E patches: **

BLOCKS	495488.	500352.	819552.	1048288. *
blocks	1707600	1721200	3100540	3777340
msblock	000007	000007	000014	000017
lsblock	107600	121200	100540	177340

* Because of limitations with DEC operating systems, only 819 of the possible 842 cylinders for the 600 MB disk can be used.

** The total number of usuable blocks for RSTS/E is 32. less than the total number of usuable blocks for RSX-11M & RSX-11M Plus because of the 'manufacturers bad sector file' for RSTS/E.

Emulex Disk Capacity Patches
Table for fixed head option of CDC 9730 disk drives

APPENDIX C

DRIVE CAPACITY	0.96 MB	1.92 MB	0.96 MB	1.92 MB
SECTORS sectors	32. 40	32. 40	32. 40	32. 40
TRACKS (HEADS) tracks	5. 5	5. 5	10. 12	10. 12
CYLINDERS cylinders	9. 11	19. 23	4. 4	9. 11
DEVICE CLUSTERSIZE devclus	1. 1	1. 1	1. 1	1. 1
TRACKS*SECTORS tracks*sectors	160. 240	160. 240	320. 500	320. 500
TRACKS*256. tracks*400	1280. 2400	1280. 2400	2560. 5000	2560. 5000
hedsec hedsec-401	2440 2037	2440 2037	5040 4437	5040 4437

Values to use for RSX-11M & RSX-11M Plus patches:

BLOCKS blocks	1440. 2640	3040. 5740	1280. 2400	2880. 5500
msblock lsblock	000000 002640	000000 005740	000000 002400	000000 005500

Values to use for RSTS/E patches:

BLOCKS blocks	1408. 2600	3008. 5700	1248. 2340	2848. 5440
msblock lsblock	000000 002600	000000 005700	000000 002340	000000 005440

Emulex Disk Capacity Patches
Table for fixed head option of CDC 9730 disk drives