

**RT-11**

**June 1981**

**AD-C740C-15**

**THE  
SOFTWARE  
DISPATCH**

**digital**

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## SPR USER LETTER

Submitted by Sheila Hatchell, 8/11 Administration

The Dispatch SPR User Letter has been revised to reflect the new SPR form which is now available. These forms can be obtained from your local DIGITAL Office or SPR Center, or by requesting them from SPR Administration.

### How to Make the Best Use of the SPR Form

#### What We Can Do for You:

1. Blank SPR forms are returned with each SPR acknowledgement and are available upon request in the desired quantities through the SPR Administration (P.O. Box F) and your local office/SPR Center.
2. Copies of the SPR acknowledgement and answer are sent to the appropriate DIGITAL Office/SPR Center for their information.
3. STATUS FOR SUBMITTED SPRs IS PROVIDED UPON REQUEST.
4. SPRs marked PROBLEM/ERROR will have a response for DIGITAL SUPPORTED products. These SPRs should refer to suspected deficiencies in the software.
5. SPRs marked SUGGESTION are forwarded to the pertinent software group for information purposes, and are responded to at their discretion.

#### What You Can Do for Us:

1. Fill out the form completely either by typing or printing clearly. **PLEASE INCLUDE YOUR SOFTWARE SERVICE CUSTOMER NUMBER IN THE ADDRESS BOX.**
2. Limit only one problem per SPR form. Several problems on an SPR can lengthen the turnaround time.
3. **WHENEVER POSSIBLE, SUBMIT AN SPR WITH ATTACHMENTS, SUCH AS MACHINE READABLE DATA, DETAILED INSTRUCTIONS ON HOW TO REPRODUCE THE PROBLEM, PROGRAM AND/OR DATA FILES, LISTINGS, AND CONSOLE LOG.**
4. It would be helpful to all concerned if problems with patches are reported as soon as possible.
5. For security SPRs, it is imperative that the DO NOT PUBLISH box be marked.
6. It would be helpful if tapes submitted with SPRs are labeled (track and density), and have a directory attached.
7. Complete the questionnaire that is supplied with each SPR answer. Your feedback is essential in monitoring the quality of our responses.
8. SPRs should not be used for problems concerning software policy, software distribution, or hardware. The local office should be contacted in these cases.

RT-11 V4.0  
Monitor Patches  
RT-11BL V04.00B  
RT-11SJ V04.00B  
RT-11FB V04.00E  
RT-11SJ (S) V04.00E  
RT-11FB (S) V04.00J  
RT-11XM (S) V04.00M

Seq 1.1.16 M

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### CORRECTIONS FOR DISTRIBUTED AND SYSTEM GENERATED MONITORS (JM)

The following problems are corrected in the patches below. Please note that these patches increase the size of RMON.

#### Distributed monitors:

The current default terminal width for the FB monitor is 72. After applying the patch, the default will be 80.

In SCOPE mode, the SJ monitor does not treat the backspace character as a special character. This causes the cursor to be out of position when deleting TAB characters.

When the terminal is simulating tab stops every eight positions (NOTAB), and a rubout character is typed after two or more TABs, the tab stop that follows is incorrect. All distributed monitors are affected.

In FB, the .GTLIN request may ignore the setting of bit 14 of the JSW. After applying the patch to the FB monitor the console status word will contain the current JSW setting of bit 14. It is still recommended, as documented in the RT-11 Software Support Manual (pg.5-23), that a .MTRCTO or .RCTRLO be issued immediately after the contents of the JSW has been altered.

#### System generated monitors:

The current default terminal width for the FB and XM non multi-terminal monitors is 72. After installing the patches, assembling and linking your monitors the default will be 80.

In SCOPE mode, the non multi-terminal BL and SJ monitor does not treat the backspace character as a special character. This causes the cursor to be out of position when deleting TAB characters.

When the terminal is simulating tab stops every eight positions (NOTAB), and a rubout character is typed after two or more TABs the tab stop that follows is incorrect. All system generated monitors are affected.

In FB and XM, the .GTLIN request may ignore the setting of bit 14 of the JSW. After applying the patch to the FB monitor the console status word will contain the current JSW setting of bit 14. It is still recommended, as documented in the RT-11 Software Support Manual (pg.5-23), that a .MTRCTO or .RCTRLO be issued immediately after the contents of the JSW has been altered.

An incorrect branch instruction ignored the execution of the continuation file when the continuation condition is set in SYCND.MAC.

RT-11 V4.0  
Monitor Patches  
RT-11BL V04.00B  
RT-11SJ V04.00B  
RT-11FB V04.00E  
RT-11SJ (S) V04.00E  
RT-11FB (S) V04.00J  
RT-11XM (S) V04.00M

Seq 1.1.16 M

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207  
^Y (up-arrow/Y)  
146565  
^C (up-arrow/C)

2. To apply the patch to RT11BL.SYS type:

@RT11BL.003

The resulting version of the monitor will be RT-11BL V04.00C.

3. The following is a required patch to the RT-11SJ V04.00B (distributed) single job monitor. It must be installed in all copies of RT11SJ.SYS (previously modified in Seq. 1.1.14).

NOTE: Since patching the distribution medium is not recommended, the patch must be installed whenever you copy the monitor file from the distribution medium.

This patch is installed by using SIPP, the Save Image Patching Program. First, ensure that a copy of the monitor file to be patched is on a mounted volume. Using an editor, create the file RT11SJ.003 as follows. Replace 'DK:' in the patch below with the name of the device that contains the monitor file.

RUN SIPP  
DK:RT11SJ.SYS/C  
0  
4736  
36310  
^Z (up-arrow/Z)  
4760  
41460  
^Z (up-arrow/Z)  
^Z (up-arrow/Z)  
36130  
3360  
4767  
2526  
240  
^Z (up-arrow/Z)  
^Z (up-arrow/Z)  
44242  
0  
22427  
177  
1415  
26427  
177776

RT-11 V4.0  
Monitor Patches  
RT-11BL V04.00B  
RT-11SJ V04.00B  
RT-11FB V04.00E  
RT-11SJ (S) V04.00E  
RT-11FB (S) V04.00J  
RT-11XM (S) V04.00M

Seq 1.1.16 M

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1634  
6520  
^Z (up-arrow/Z)  
4132  
4767  
12362  
240  
^Z (up-arrow/Z)  
7606  
4767  
6732  
1416  
240  
^Z (up-arrow/Z)  
^Z (up-arrow/Z)  
55044  
26  
42761  
10000  
450  
13700  
44  
42700  
137777  
50061  
450  
207  
126427  
177777  
177  
1404  
105214  
32767  
2  
163056  
207  
^Y (up-arrow/Y)  
24567  
^C (up-arrow/C)

6. To apply the patch to RT11FB.SYS type:

@RT11FB.006

The resulting version of the monitor will be RT-11FB V04.00F.

RT-11 V4.0  
Monitor Patches  
RT-11BL V04.00B  
RT-11SJ V04.00B  
RT-11FB V04.00E  
RT-11SJ (S) V04.00E  
RT-11FB (S) V04.00J  
RT-11XM (S) V04.00M

Seq 1.1.16 M

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10. The following is a required patch to the RT-11 source file RMONSJ.MAC. You must apply it to the updated copy previously modified in Seq. 1.1.13 M.

To install the patch, first create a patch file for input to the SLP utility. Using an editor, create a file called RMONSJ.005 on your system volume. Enter the text below into the file. The hyphen must be the first character in the file. The special symbol "<tab>" indicates the TAB character. All other blank spaces in the text should be entered in the file as single SPACE characters.

```
-/ELRMSJ<tab>== 12/.,./;005/  
ELRMSJ<tab>== 13  
-1298,1298,/;005/  
<tab>CMP<tab>(R4)+,#RUBOUT  
<tab>BEQ<tab>4$  
<tab>CMP<tab>-2(R4),#40  
-1308,1308,/;005/  
7$:<tab>CMP<tab>-2(R4),#BS  
<tab>BNE<tab>14$  
<tab>INC<tab>@R4  
<tab>BR<tab>10$  
14$:<tab>CMP<tab>-(R4),#TAB  
/  
/
```

11. The following is a required patch to the RT-11 source file RMONFB.MAC. You must apply it to the updated copy previously modified in Seq. 1.1.15 M.

To install the patch, first create a patch file for input to the SLP utility. Using an editor, create a file called RMONFB.009 on your system volume. Enter the text below into the file. The hyphen must be the first character in the file. The special symbol "<tab>" indicates the TAB character. All other blank spaces in the text should be entered in the file as single SPACE characters.

```
-/ELRMFB<tab>== 12/.,./;009/  
ELRMFB<tab>== 13  
-821,821,/;009/  
TTWIDT:..BYTE<tab>80.  
-1587,.,./;009/  
<tab>MOV<tab>@#JSW,R0  
<tab>BIC<tab>#^CTTLC$,R0  
<tab>BIS<tab>R0,I.TERM(R1)  
-2655,2656,/;009/  
<tab>CMPB<tab>-1(R4),#RUBOUT  
-2657,.,./;009/  
<tab>INCB<tab>@R4  
<tab>BIT<tab>#CRLF$,TTCNFG  
<tab>BEQ<tab>13$  
/  
/
```

COPY/PREDELETE AND COPY/NOREPLACE WORK INCORRECTLY WITH /WAIT (DBF)

COPY/PREDELETE and COPY/NOREPLACE did not work correctly when used with the /WAIT option. PIP accessed the output device before asking the user to mount it. The result was that the directory of the disk which was mounted when the command was invoked was used to determine whether the file already existed on the output volume.

1. The following is a required patch to the PIP.SAV V04.00C utility program (previously modified in Seq 7.1.4). It must be installed in all copies of the utility.

NOTE: Since patching the distribution medium is not recommended, the patch must be installed every time you copy the program from the distribution medium.

2. This patch is installed using SIPP, the Save Image Patching Program. First, ensure that a copy of the file PIP.SAV is on a mounted volume. Create the file, PIP.004 as follows. Replace 'DK:' in the patch below with the name of the device that contains the program file.

```
RUN SIPP
DK:PIP.SAV/A/C
0
3632
104
^Z                               (up-arrow/Z)
17532
4767
2000
240
^Z                               (up-arrow/Z)
21536
12700
1454
4767
174756
32767
100
164630
207
^Y                               (up-arrow/Y)
47324
^C                               (CTRL/C to exit)
```

3. To apply the patch to PIP.SAV type:

@PIP.004

The resulting version of the utility will be PIP V04.00D.

### PROBLEMS WITH INITIALIZE COMMAND (DBF)

- . When initializing floppy diskettes, DUP writes out the system ID in ASCII rather than EBCDIC.
- . DUP incorrectly writes out the dummy bootstrap when initializing disks which support bad block replacement.
- 1. The following is a required patch to the DUP.SAV V04.00F utility program (previously modified in Seq 7.2.6). It must be installed in all copies of the utility.

NOTE: Since patching the distribution medium is not recommended, the patch must be installed every time you copy the program from the distribution medium.

- 2. This patch is installed using SIPP, the Save Image Patching Program. First, ensure that a copy of the file DUP.SAV is on a mounted volume. Create the file, DUP.006 as follows. Replace 'DK:' in the patch below with the name of the device that contains the program file.

```
RUN SIPP
DK:DUP.SAV/A/C
0
3546
107
^Z (up-arrow/Z)
44074
161731
170761
40301
^Z (up-arrow/Z)
50554
12760
^Y (up-arrow/Y)
21062
^C (CTRL/C to exit)
```

- 3. To apply the patch to DUP.SAV type:

```
@DUP.006
```

The resulting version of the utility will be DUP V04.00G.

- 4. Save the new version of the utility on a backup volume.

RT-11 V4.0  
System Utilities  
LIBR.SAV V04.00B

Seq 7.10.3 M  
1 of 1

**LIBR CORRUPTS FORM LIBRARY DIRECTORY (JVK)**

If a form library contains 61 forms, the directory will be corrupted. This is caused by an error in the algorithm that computes the directory size.

1. The following is a required patch to the LIBR.SAV utility program. It must be installed in all copies of the utility.

NOTE: Since patching the distribution medium is not recommended, the patch must be installed every time you copy the program from the distribution medium.

2. This patch is installed using SIPP, the Save Image Patching Program. First, ensure that a copy of the file LIBR.SAV is on a mounted volume. Create the file, LIBR.003 as follows. Replace 'DK:' in the patch below with the name of the device that contains the program file.

```

R SIPP
DK:LIBR.SAV/A/C
0
3132
103
^Z (up-arrow/Z)
14576
4503
^Z (up-arrow/Z)
21644
4767
720
^Z (up-arrow/Z)
22570
16700
175112
62700
2
207
^Y (up-arrow/Y)
120070
^C (up-arrow/C)

```

3. To apply the patch to LIBR.SAV type:

@LIBR.003

The resulting version of the utility will be LIBR V04.00C.

4. Save the new version of the utility on a backup volume.

**ERRONEOUS DOUBLE PRECISION CALCULATION IN BINCOM (JVK)**

When producing a SIPP patch file, BINCOM miscalculates the high order word of the double precision representation of the offset within the file. For numbers larger than octal 177777, BINCOM uses bit 15 of the low word to calculate a digit in the representation (offset 200000 is erroneously represented as 1000000). This bit should be shifted into the high word. This patch results in the offsets produced for a SIPP file being one digit smaller than in previous versions of BINCOM.

1. The following is a required patch to the BINCOM.SAV utility program. It must be installed in all copies of the utility.

NOTE: Since patching the distribution medium is not recommended, the patch must be installed every time you copy the program from the distribution medium.

2. This patch is installed using SIPP, the Save Image Patching Program. First, ensure that a copy of the file BINCOM.SAV is on a mounted volume. Create the file, BINCOM.002 as follows. Replace 'DK:' in the patch below with the name of the device that contains the program file.

```
R SIPP
DK:BINCOM.SAV/A/C
0
2730
102
^Z                               (up-arrow/Z)
10052
4767
702
^Z                               (up-arrow/Z)
10170
10146
4767
177240
12600
4767
600
^Z                               (up-arrow/Z)
10760
300
366
2
6166
```

RT-11 V4.0  
System Macro Library  
SYSMAC.MAC  
SYSMAC.SML

Seq 9.1.3 M

1 of 1

**.CMKT PROGRAMMED REQUEST (JM)**

The .CMKT programmed request does not zero the time argument address in the EMT argument block if a time argument is left blank.

1. The following is a required patch to the RT-11 monitor source file SYSMAC.MAC (previously modified in Seq 9.1.2). You must apply it to the source file supplied with the Version 4 distribution kit and then rebuild the System Macro Library.

2. To install the patch, you must first create a patch file for input to the SLP utility. Using an editor, create a file called SYSMAC.003 on your system volume. Enter the text below into the file. The hyphen must be the first character in the file. The special symbol '<tab>' indicates the TAB character. All other blank space in the text should be entered in the file as single SPACE characters.

```
-203,203,;/;003/  
.MACRO .CMKT<tab>AREA, ID, TIME=#0, CODE  
/
```

3. Apply the patch to the source file as follows:

```
.R SLP  
*SYSMAC.MAC=SYSMAC.MAC, SYSMAC.003  
*^C (CTRL/C to exit)
```

4. Using the LIBR utility re-build the System Macro Library, SYSMAC.SML, as follows:

```
.R LIBR  
*SYSMAC.SML=SYSMAC.MAC/M  
*^C (CTRL/C to exit)
```

5. Preserve the patched source file. If there are any corrections to the file in the future, you will need to apply them to the patched source file.

**SOFTWARE SUPPORT MANUAL CORRECTION (JP)**

This article contains a correction to Chapter 7 of the RT-11 Software Support Manual. This correction applies to the range for the sequence numbers used in the timer block by the .TIMIO request.

The documentation currently states that the valid range for timer block sequence numbers is from 177400 to 177477; the valid range is actually from 177700 to 177777. This correction affects Chapter 7 in three locations:

- o In Table 7-5, the description of Offset 10 of the timer block should read, "Sequence number of timer request. The valid range for sequence numbers is from 177700 through 177777."
- o On page 7-30, the first complete sentence on that page should read, "Start with 177700 and work up to the highest valid sequence number, 177777."
- o On page 7-33, in the line printer handler example, the last line of code on that page should read as follows:

.WORD 177700

The documentation will be corrected in a future release.

RT-11 Software Dispatch, June 1981

RT-11 V4.0  
Automated Patching Facility Package  
Package Notes

Seq 19.1.1 N

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#### **AUTOPATCH SERVICE FOR RT-11 (JM)**

Autopatch service is now available for RT-11. This service provides users with the ability to automatically apply machine readable patches to their RT-11, FORTRAN IV/RT-11 and BASIC-11/RT-11 software kits.

An autopatch kit is included in all new purchases of RT-11 V4 software. Customers wishing to purchase the RT-11 autopatch option must have purchased a Self-Maintenance Service (SMS) contract or be under another software service from DIGITAL.

For more information concerning autopatch, please contact your local salesperson.

RT-11 Software Dispatch, June 1981

CTS-300 V06  
for RT-11 V4.0  
LS.MAC  
(PATCH 15)

Seq 51.23.02 M

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**CORRECTION TO CTS-300 PATCH 11 (SEQ 51.23.1M) TO LS.MAC (LG)**

The purpose of Patch 11 (Seq 51.23.01 M) to CTS-300 V6 was to align the code in LS.MAC so that its format would be identical to that of the RT-11 version of LS.MAC. Patch 15 contains a correction to Patch 11. It is not necessary to re-install Patch 11 or succeeding patches, but Patch 15 must be applied to the CTS-300 version of LS.MAC which has the following patches installed in the order shown:

- Seq 6.13.1M - LS SET NOHANG MAY CRASH SYSTEM (SEP 1980 SOFTWARE DISPATCH) See also CTS-300 article Seq. 51.21.2.
- Seq 51.23.1M - (PATCH 11) - SPECIAL CTS-300 PATCH FOR LS.MAC (FEB 1981 SOFTWARE DISPATCH)
- Seq 6.13.2M - PROBLEMS WITH LS HANDLER (JAN 1981 SOFTWARE DISPATCH) See also CTS-300 article Seq. 51.21.3.

First, you must create the patch file that is used as input to the SLP (Source Language Patch) program. Using the editor, create the file below named P015.PAT exactly as shown. The symbol "<tab>" indicates you should press the tab key. Each line in P015.PAT must be terminated by a carriage return, including the last line "/".

```
-165,165  
-166,/,;001/  
<tab>MOV<tab>LSCQE,R4  
/
```

Next, as a precaution, rename LS.MAC to LS.OLD.

Apply the patch to the source file with SLP as follows:

```
.R SLP  
*LS.MAC=LS.OLD,P015.PAT  
*^C
```

You should now run SYSGEN to install the patch.

GAMMA-11 V3.0  
BGAMMA/FGAMMA

Seq 54.1 M

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PROBLEMS WITH GAMMA-11 V3.0 (LM)

Gamma-11 V3.0 has a number of problems. This article gives patches for the problems listed.

The patches must be applied to a copy of the distribution kit. **DO NOT PATCH THE DISTRIBUTION DISK**, if you do, you will not be able to recover from a mistake. Be sure to apply the patches **BEFORE** carrying out the Gamma-11 system generation.

The text in bold type is to be typed in by the user.

<CR> denotes the carriage return key.  
<LF> denotes the line feed key.

If, after entering the Checksum value, the system prints the message.

?PATCH-W-Checksum error

the patch has not been typed in correctly. Copy the relevant file from the distribution disk and repeat the patches.

1. PROBLEMS WITH FGAMMA

1a. Starting a gate synchronised acquisition in the foreground sometimes results in a Trap to 4.

.RUN PATCH<CR>

FILE NAME--  
\*FGAMMA.REL/C/O<CR>  
\*6:17142/ 10001 10403<LF>  
6:17144/ 10402 5020<LF>  
6:17146/ 4767 5303<LF>  
6:17150/ 162426 1375<CR>  
\*E

Checksum? 21464<CR?>

1b. Foreground GSA on a machine with no EIS results in a Trap to 10.

.RUN PATCH<CR>

FILE NAME --  
\*FGAMMA.REL/O/C<CR>  
\*6:16166/ 10203 413<CR>  
\*E

Checksum? 61207<CR>

GAMMA-11 V3.0  
BGAMMA/FGAMMA

Seq 54.1 M

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- 1e. There are some problems if the system disk is an RK07 or RK06 with a large number of free blocks.

This patch must not be applied to non RK06/7 systems.

.RUN PATCH<CR>

```
FILE NAME --
*FGAMMA.REL/O/C<CR>
*4:17720/ 164354 164356<LF>
4:17722/ 166700 66700<LF>
4:17724/ 164464 <LF>
4:17726/ 166700 26700<LF>
4:17730/ 164346 164344<CR>
*5:21724/ 2472 103472<CR>
*E
```

Checksum? 73120<CR>

- 1f. The preset count is not reset by CNTRL R during a static acquisition.

.RUN PATCH<CR>

```
FILE NAME --
*FGAMMA.REL/O/C<CR>
*10:36404/ 145322 145320<LF>
10:36406/ 5677 5477<LF>
10:36410/ 145314 145316<LF>
10:36412/ 5477 5677<CR>
*E
```

Checksum? 474<CR>

- 1g. If, during Patient Monitor or a gate synchronised acquisition, the ECG signal is connected or disconnected the system hangs.

.RUN PATCH<CR>

```
FILE NAME--
*FGAMMA.REL/O/C<CR>
*15206;R
*6:0,1066/ 5266 261<LF>
6:0,1070/ 4 240<CR>
*20400;1R
*6:1,1750/ 422 437<CR>
*E
```

Checksum? 41701<CR>

GAMMA-11 V3.0  
BGAMMA/FGAMMA

Seq 54.1 M

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- 2c. The preset count is not reset by CNTRL R during a static acquisition.

**.RUN PATCH<CR>**

FILE NAME --  
\*DATACQ.SAV/O/C<CR>  
\*2:13636/ 176772 176770<LF>  
2:13640/ 5677 5477<LF>  
2:13642/ 176764 176766<LF>  
2:13644/ 5477 5677<CR>  
\*E

Checksum? 27044<CR>

- 2d. If, during Patient Monitor or a gate synchronised acquisition, the ECG signal is connected or disconnected the system hangs.

**.RUN PATCH<CR>**

FILE NAME--  
\*DATACQ/O/C<CR>  
\*13730;R  
\*3:0,1712/ 420 434<CR>  
\*E

Checksum? 76321<CR>

### 3. PROBLEMS WITH MDA SYSTEMS.

- 3a. It is not possible to achieve the maximum frame rates quoted in the Operator's Guide for dynamic acquisition.

**.RUN PATCH<CR>**

FILE NAME --  
\*MDAACQ.SAV/C/O<CR>  
\*4:22274/ 10 12<CR>  
\*4:22370/ 10 12<CR>  
\*4:22442/ 22642 22646<CR>  
\*E

Checksum? 33347<CR>

GAMMA-11 V3.0  
BGAMMA/FGAMMA

Seq 54.1 M

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5. OPTIONAL PATCH FOR FRAMING LIST MODE DATA.

When framing a gated list mode study the data analysis program looks for two regular cycle intervals before it starts framing. This may result in a lot of rejected cycles if the heart beat is irregular.

The following patch may be applied to stop the search for a second acceptable cycle interval before framing begins. The patch is optional.

**.RUN PATCH<CR>**

FILE NAME--

**\*DATANL/O/C<CR>**

**\*55010;R<CR>**

**\*3:0,120/ 2 1<CR>**

**\*3:0,414/ 2 1<CR>**

**\*E**

Checksum? **66461<CR>**

6. OPTIONAL PATCH FOR POINT PLOT OF DYNAMIC CURVES.

The patch below may be applied if the user would prefer a point plot rather than a solid line plot of dynamic curves in the region of interest program.

The second patch changes a point plot to a solid line plot.

**.RUN PATCH<CR>**

FILE NAME --

**\*DATANL/C<CR>**

**\*12216/ 1 0<CR>**

**\*E**

Checksum? **30451<CR>**

To change back to a solid line plot apply the following patch:

**.RUN PATCH<CR>**

FILE NAME --

**\*DATANL/C<CR>**

**\*12216/ 0 1<CR>**

**\*E**

Checksum? **30453<CR>**

RT-11 V4.0  
CUMULATIVE INDEX  
JUNE 1981

This is a complete listing of all articles for RT-11 V4.0 and related products. In the case of subordinate software, missing sequence numbers may pertain to problems unique to interaction with previous versions of the same product or other major operating systems.

**IMPORTANT!**

Unassigned articles are indicated: UNASSIGNED.

Flags are currently being installed for all articles. The flags and definitions are as follows:

M = Mandatory Patch. These patches correct errors in the software product. All users are required to apply these patches to maintain consistent "user level" unless the accompanying article specifies otherwise.

F = Optional Feature Patch. These patches extend or configure functionality into the product. These functions will be treated as a supported part of the product for the duration of the current release and will be incorporated with any future release, unless otherwise stated.

R = Restriction. These articles discuss areas that will not be patched in the current release because they require major modification or because they are not consistent with the design of the product. Restrictions, except those described as permanent, are reviewed and modified when possible as part of the normal release cycle.

N = NOTE. These articles provide explanatory information that supplements the manual set and provide more detailed information about a program or package. They also provide procedural information to make it easier to use a program or package.

+ = Articles appeared in the RT-11 Software Dispatch Review, March 1980.

\*The "Autopatch Kit" column in the list which follows indicates the first RT-11 V4.0 Autopatch Kit in which the associated patch was included. Unless otherwise indicated, the patches also appear in subsequent Autopatch Kits as well. Note that Autopatch Kit "A" is the latest kit available from the SDC.

<u>Component</u>	<u>Autopatch Kit</u>	<u>Sequence</u>	<u>Mon/Yr</u>
RT-11 V4.0			
<b>MONITOR PATCHES</b>			
ISSUING .SETOP #-2 AND .EXIT UNDER XM MONITOR MAY CORRUPT SYSTEM DISK	A	1.1.1 M	Jul 80
IMPLEMENTING INTERNAL HANDLER QUEUEING IN FB AND XM MONITORS	A	1.1.2 M	Jul 80
ADDING HIGH SPEED RING BUFFER SUPPORT	A	1.1.3 M	Jul 80
CORRUPTION OF CSI TEXT UNDER XM MONITOR	A	1.1.4 M	Jul 80
MISSING COLON IN BOOT XX CAUSES SYSTEM HALT	A	1.1.5 M	Jul 80
TYPING ^U WHILE IN A ^X SEQUENCE UNDER A SYSTEM JOB	A	1.1.6 M	Sep 80
ABNORMAL TERMINATION OF FG JOB WHICH IS USING CSI	A	1.1.7 M	Nov 80
MISCELLANEOUS MRRT-11 BUGS	A	1.1.8 M	Nov 80
MRRT-11 MINIMAL FILE SUPPORT PROBLEM	A	1.1.9 M	Nov 80
INCORRECT LIMIT CHECKS ON PRIVILEGED BACKGROUND JOBS USING VIRTUAL OVERLAYS	A	1.1.10 M	Nov 80
MULTI-TERMINAL MONITORS DON'T ALWAYS PROCESS CTRL/F PROPERLY	A	1.1.11 M	Nov 80
MONITOR CHANGES AND CORRECTIONS	A	1.1.12 M	Dec 80
MONITOR CORRECTIONS		1.1.13 M	Jan 81
MONITOR UPDATES		1.1.14 M	Feb 81
ABORT I/O IN PROGRESS HANDLER BIT		1.1.15 M	Apr 81
CORRECTIONS FOR DISTRIBUTED AND SYSTEM GENERATED MONITORS		1.1.16 M	Jun 81
<b>DEVICE HANDLER SOURCES</b>			
<b>DEVICE HANDLER NOTES</b>			
RLO2s AT REV. LEVEL "F" FAIL DURING RT-11 SYSGEN		6.1.1 N	Oct 80
<b>DD.MAC</b>			
DD PRIMARY BOOTSTRAP PROBLEM	A	6.4.1 M	Jul 80

<u>Component</u>	<u>Autopatch Kit</u>	<u>Sequence</u>	<u>Mon/Yr</u>
<b>BINCOM.SAV</b>			
BINCOM GENERATES ERRONEOUS ERROR MESSAGE		7.13.1 M	Apr 81
ERRONEOUS DOUBLE PRECISION CALCULATION IN BINCOM		7.13.2 M	Jun 81
<b>SLP.SAV</b>			
TERMINATION OF PATCHING SESSION WITH SLP FATAL ERRORS	A	7.15.1 M	Nov 80
SLP GENERATES FATAL ERROR TRAP		7.15.2 M	Jan 81
SLP ERROR		7.15.3 M	Mar 81
<b>SIPP.SAV</b>			
CORRUPTION OF MULTI-BLOCK LOG FILES	A	7.16.1 M	Jul 80
<b>PAT.SAV</b>			
USE OF THE PAT UTILITY WITH RT-11 V3B PATCHES		7.17.1 N+	Mar 80
<b>HELP.SAV</b>			
PROBLEMS WITH HELP UTILITY	A	7.19.1 M	Nov 80
<b>EDIT.SAV</b>			
EDIT MISHANDLES OUTPUT FILE FULL ERROR		7.20.1 M	Jan 81
<u>SYSTEM SUBROUTINE LIBRARY (SYSLIB)</u>			
<u>SYSLIB.OBJ</u>			
PATCH TO ICSI	A	8.1.1 M	Oct 80
IASIGN REDEFINITIONS	A	8.1.2 M	Oct 80
ILUN RESTRICTION		8.1.3 R	Feb 81
<u>SYSTEM MACRO LIBRARY</u>			
.SPFUN PROGRAMMED REQUEST	A	9.1.1 M	Dec 80
ABORT I/O PROGRESS SUPPORT FOR SYSMAC		9.1.2 M	Apr 81
.CMKT PROGRAMMED REQUEST		9.1.3 M	Jun 81
<u>SYSTEM GENERATION PACKAGE</u>			
SYSGEN CREATES ONE MORE DEVICE SLOT THAN REQUESTED	A	10.3.1 M	Dec 80
ASSEMBLY ERROR AFTER SYSGEN		10.3.2 M	Mar 81
<u>DOCUMENTATION</u>			
<u>RT-11 SYSTEM RELEASE NOTES</u>			
RT-11 V4.0 DOCUMENTATION CORRECTIONS AND ADDITIONS		11.2.1 N	Jul 80
DOCUMENTATION CORRECTIONS		11.2.2 N	Aug 80
CHANGES TO DUP /I OPTION		11.2.3 N	Apr 81
<u>RT-11 INSTALLATION AND SYSTEM GENERATION GUIDE</u>			
RT-11 V4.0 DOCUMENTATION CORRECTIONS AND ADDITIONS		11.3.1 N	Jul 80
CORRECTION TO AN OPTIONAL PATCH TO LINK		11.3.2 N	Aug 80
DOCUMENTATION ERROR: REFERENCE TO RL02 OMITTED FROM SYSGEN DIALOGUE		11.3.3 N	Oct 80
INCORRECT LINK MAPS FOR DISTRIBUTED MONITORS		11.3.4 N	Dec 80
INCORRECT PATCH FOR CHANGING QUEUE WORK FILE SIZE		11.3.5 N	Dec 80
CHANGING DEFAULT NUMBER OF DIRECTORY SEGMENTS		11.3.6 N	Apr 81
<u>INTRODUCTION TO RT-11</u>			
RT-11 V4.0 DOCUMENTATION CORRECTIONS AND ADDITIONS		11.4.1 N	Jul 80
<u>RT-11 SYSTEM USER'S GUIDE</u>			
RT-11 DOCUMENTATION CORRECTIONS AND ADDITIONS		11.5.1 N	Jul 80
CORRECTIONS TO SLP CHAPTER: RT-11 SYSTEM USER'S GUIDE		11.5.2 N	Oct 80
DIFFERENCES BETWEEN DEVICE COPYING COMMANDS		11.5.3 N	Dec 80
<u>RT-11 SYSTEM MESSAGE MANUAL</u>			
RT-11 V4.0 DOCUMENTATION CORRECTIONS AND ADDITIONS		11.6.1 N	Jul 80
CORRECTIONS TO SLP MESSAGES IN "RT-11 SYSTEM MESSAGE MANUAL"		11.6.2 N	Nov 80
NEW SLP ERROR MESSAGE		11.6.3 N	Feb 81
<u>RT-11 POCKET GUIDE</u>			
RT-11 V4.0 DOCUMENTATION CORRECTIONS AND ADDITIONS		11.7.1 N	Jul 80
<u>RT-11 PROGRAMMER'S REFERENCE MANUAL</u>			
DOCUMENTATION CORRECTIONS		11.8.1 N	Sep 80
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<u>Component</u>	<u>Autopatch Kit</u>	<u>Sequence</u>	<u>Mon/Yr</u>
"OLD" OF COMPILED PROGRAM - PATCH Q FOR SINGLE USER BASIC-11		35.1.19 M	Jan 81
PRINT USING - PATCH R FOR SINGLE USER BASIC-11		35.1.20 M	Jan 81
OMITTING TRIG FUNCTIONS FROM BASIC-11		35.1.21 N	Jan 81
STRING CONCATENATION - PATCH S FOR SINGLE USER BASIC-11		35.1.22 M	Mar 81
PROBLEM WITH BASIC-11 PATCH Q		35.1.23 N	May 81
<b>UTILITIES</b>			
CONVERSION PROGRAM		35.2.1 M+	Mar 80
BASIC-11/RT-11 V2 CONVERSION PROGRAM PATCH 1		35.2.2 M+	Mar 80
<b>DOCUMENTATION</b>			
OVERLAYING WHILE IN A SUBROUTINE		35.3.1 R+	Mar 80
OPERATION OF CTRLC, RCTRLC AND SYS(6) FUNCTIONS AND THE CTRL/C COMMAND		35.3.2 N+	Mar 80
OPERATION OF OLD, RUN, CHAIN, AND OVERLAY WHEN THE SPECIFIED FILE IS NOT FOUND		35.3.3 N+	Mar 80
CREATING AND ACCESSING VIRTUAL ARRAY FILES		35.3.4 N+	Mar 80
STORAGE OF THE NULL CHARACTER IN STRING VARIABLES AND VIRTUAL STRING ARRAYS		35.3.5 N+	Mar 80
USE OF COMPILE COMMAND		35.3.6 N+	Mar 80
STRING MANIPULATION IN ASSEMBLY LANGUAGE ROUTINES		35.3.7 N+	Mar 80
MAXIMUM ARRAY SUBSCRIPT SIZE		35.3.8 N+	Mar 80
NEW MANUAL AVAILABLE FOR BASIC-11/RT-11		35.3.9 N	May 81
<b>MU BASIC-11/RT-11 V2.0</b>			
<b>INTERPRETER</b>			
CHAINING WITH COMMON - PATCH A		36.1.1 M+	Mar 80
VIRTUAL FILE I/O - PATCH B		36.1.2 M+	Mar 80
SYS(1,n) FUNCTION - PATCH C		36.1.3 M+	Mar 80
RESEQ - PATCH D		36.1.4 M+	Mar 80
VALUES IN PATCHES A, B, C		36.1.5 N+	Mar 80
LISTNH / OLD - PATCH E		36.1.6 M+	Mar 80
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DOUBLE PRECISION INTEGER VARIABLES - PATCH G		36.1.8 M+	Mar 80
INPUT #/PRINT # - PATCH H		36.1.9 M+	Mar 80
OLD OF A ZERO BLOCK FILE - PATCH I		36.1.10 M+	Mar 80
ADDITION TO PATCH B - PATCH J		36.1.11 M+	Mar 80
DEVICE MNEMONIC PROBLEM - PATCH K		36.1.12 M+	Mar 80
CLOSE - PATCH L		36.1.13 M+	Mar 80
REM STATEMENTS ON MULTI-STATEMENT LINES - PATCH M		36.1.14 M+	Mar 80
DEASSIGNING A TERMINAL - PATCH N		36.1.15 M+	Mar 80
INTEGERS IN DOUBLE PRECISION MU BASIC-11		36.1.16 N+	Mar 80
USE OF SYS(1,n) FUNCTION WHEN 'n' IS OMITTED - PATCH O		36.1.17 M+	Mar 80
DISABLING CR/LF USING TTYSET - PATCH P		36.1.18 M+	Mar 80
HANDLER FETCH ERROR MAY LEAD TO MONITOR FAULT - PATCH Q		36.1.19 M+	Mar 80
REMOTE LINES - PATCH R FOR MULTI-USER BASIC-11		36.1.20 M	Nov 80
INT FUNCTION - PATCH S FOR MULTI-USER BASIC-11		36.1.21 M	Nov 80
PRINT USING - REVISED PATCH T FOR MULTI USER BASIC-11		36.1.22 M	Apr 81
"OLD" OF COMPILED PROGRAM - PATCH U FOR MULTI USER BASIC-11		36.1.23 M	Jan 81
OMITTING TRIG FUNCTIONS FROM MU BASIC-11		36.1.24 N	Jan 81
SYS(1) FUNCTION - PATCH V FOR MULTI USER BASIC-11		36.1.25 M	Jan 81
STRING CONCATENATION - PATCH W FOR MULTI USER BASIC-11		36.1.26 M	Mar 81
CARD READER EOF - PATCH X FOR MULTI USER BASIC-11		36.1.27 M	May 81
CLOSE GIVES ILLEGAL FILES SPEC - PATCH Y FOR MULTI USER BASIC-11		36.1.28 M	May 81
TTYSET GIVES TRAP TO 10 - MU BASIC PATCH Z		36.1.29 M	May 81
<b>UTILITIES</b>			
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<b>DOCUMENTATION</b>			
OPERATION OF CTRLC, RCTRLC AND SYS(6) FUNCTIONS AND THE CTRL/C COMMAND		36.3.1 N+	Mar 80
MEMORY REQUIREMENTS OF OPTIONAL FUNCTIONS, ETC.		36.3.2 N+	Mar 80
OPERATION OF OLD, RUN, CHAIN AND OVERLAY WHEN THE SPECIFIED FILE IS NOT FOUND		36.3.3 N+	Mar 80
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<u>Component</u>	<u>Autopatch Kit</u>	<u>Sequence</u>	<u>Mon/Yr</u>
<b>DECnet-RT V1.1</b>			
<b>NETGEN</b>			
FULL DUPLEX, EXTENDED MEMORY DUP DRIVER WON'T BUILD		50.3.1 M	Aug 80
<b>DDCMP</b>			
DDCMP BRANCH OUT OF RANGE AND Q ELEMENT RETURN PROBLEMS		50.5.1 M	Aug 80
<b>NSP</b>			
NSP CORRUPTS PHYSICAL LINE ERROR CODE		50.6.1 M	Aug 80
<b>NFT</b>			
NFT INCORRECTLY ALLOCATES RT-11 QUEUE ELEMENTS		50.9.1 M	Jun 80
<b>FAL</b>			
FAL INCORRECTLY ALLOCATES RT-11 QUEUE ELEMENTS		50.10.1 M	Jun 80
FAL MAY HANG ON ASCII TRANSFERS OF UNFILLED BLOCKS		50.10.2 M	Aug 80
FAL WILL NOT ALLOW ACCESS COMPLETE AFTER CONTROL CONNECT		50.10.3 M	Aug 80
<b>NFARS</b>			
DAP ROUTINES DO NOT REPORT PHYSICAL LINE ERRORS		50.11.1 M	Nov 80
DAP ATTEMPTS TO MULTIPLY RETURN BUFFERS ON ERROR		50.11.2 M	Aug 80
DAP SEND ONE CHARACTER ON ZERO LENGTH TRANSMITS		50.11.3 M	Nov 80
DAPAST CLEARS THE USER CHANNEL NUMBER TOO SOON		50.11.4 M	Aug 80
<b>FORTRAN USER INTERFACES</b>			
NOTES ON THE USE OF THE DECnet-RT FORTRAN INTERFACES		50.16.1 M	Jun 80
<b>MACRO USER INTERFACES</b>			
NOTES ON DECnet-RT MACRO PROGRAMMING		50.16.2 N	Jun 80
<b>CTS-300 V6.0</b>			
<b>DECFORM V06-00</b>			
PROBLEM WITH DECFORM AND THE VT100		51.4.1 M	Nov 80
<b>DKED</b>			
TWO PROBLEMS WITH DKED		51.7 M	Aug 80
DKED SELECT/CUT AND KEYPAD ERRORS		51.7.2 M	Sep 80
<b>LPTSPL</b>			
TSD SPOOLER GETS CONFUSED		51.9.1 M	Nov 80
<b>SORTM</b>			
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<b>SUD</b>			
CORRECTIONS TO DIBOL RUN TIME SYSTEMS		51.16.1 M	Jan 81
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<b>TDIBOL</b>			
PROBLEM WITH XCALL PAK		51.17 M	Aug 80
PROBLEM UNPACKING DATA		51.17.2 M	Sep 80
<b>TSD</b>			
CORRECTIONS TO DIBOL RUN TIME SYSTEMS		51.18.1 M	Jan 81
PROBLEMS WITH XCALL RENAM AND ERROR 6		51.18.02 M	Feb 81
<b>XMTSD</b>			
CONFLICT BETWEEN XMTSD AND RT-11 OVER CHANNEL 16		51.20 M	Aug 80
CORRECTIONS TO DIBOL RUN TIME SYSTEMS		51.20.02 M	Jan 81
PROBLEMS WITH XCALL RENAM AND ERROR 6		51.20.03 M	Feb 81
PATCH FOR XMTSD WITH CIS		51.20.04 M	Apr 81

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# Software Product Description

**PRODUCT NAME: RT-11, Version 4.0**  
Single-User Operating System

SPD 12.1.16

## DESCRIPTION:

RT-11 is a disk-based, single-user, real-time operating system designed for interactive program development and/or on-line applications on some PDP-11 and PDT-11 based systems. RT-11 supports both single job (SJ) and foreground/background (FB) modes of processing. In addition to a variety of system and program development utilities, RT-11 offers optional support of a number of high-level language processors, including FORTRAN IV, BASIC, and APL.

The emphasis in RT-11 is on efficient use of system resources, minimizing system requirements in the CPU and on the mass storage device, while maximizing system throughput. RT-11's ease of use is partially due to the system simplicity inherent in its design.

The RT-11 Operating System offers several configurations:

*FB Monitor* — Allows two programs to operate: a foreground program and a background program. The real-time function is accomplished in the foreground, which generally has priority on system resources. Functions that do not have critical response time requirements, such as program development, are accomplished in the background that operates whenever the foreground program cannot run. Within their priorities, both foreground and background are fully functional RT-11 programs with access to system capabilities. Although they operate independently, foreground and background can communicate through disk files and/or the message transmission facility.

*Extended Memory (XM) Monitor* — Is a version of the FB monitor for supporting systems with greater than 64K bytes of memory. A system generation must be performed for XM support. This feature is accessible through those optional high-level language processors that can automatically produce programs that address areas of memory other than the lowest 64K bytes. The MACRO-11 programmer can also take advantage of this feature for storing data and instructions above the lowest 64K bytes of memory. A linker option allows FORTRAN IV and MACRO-11 programmers to load overlays in extended memory for fast access.

*SJ Monitor* — Is for users not requiring FB operation or the additional FB features. SJ requires less memory and has lower overhead. Should the user's requirements change, a properly written program that runs under the SJ monitor can be executed under the FB or XM monitor as a background program without modifications.

### *RT-11 System Features*

*Ease of Use* — RT-11 is designed for the single, interactive user. The English-language keyboard commands are easy to use and understand. The EXECUTE command, for example, allows transition from source to executing code with one command. Indirect command files allow command sequences to be stored and invoked repeatedly by the user.

*Contiguous File Structure* — The RT-11 contiguous file structure for random-access devices incurs minimum file access overhead.

*Configuration Independence* — The RT-11 system provides device-independent I/O programming. For example, at run time, the user can send output directly to a printer or write it to a disk file for later printing.

*Flexible Real Time I/O* — RT-11 satisfies a wide variety of input/output requirements by providing three modes of I/O operation:

- Synchronous I/O, where user program processing is suspended until the completion of the I/O event.
- Asynchronous I/O, where an I/O event is started, and user program processing continues until a user-defined point is reached. Processing is then suspended until the I/O event is completed.
- Event driven I/O, where an I/O event is started, and user program processing continues until the I/O event completes. Processing is then interrupted to service the completed I/O event.

*Low System Overhead* — The RT-11 SJ monitor requires not more than 6K bytes of permanent memory to provide system control and I/O for the system device and the operator's terminal. FB operation adds not more than 5K bytes to this requirement. Options selected through system generation can increase memory requirements.

Overlays do not require any special instructions or function calls. The user designates an overlay structure at linker command time, and the linker automatically produces a runnable memory image with the desired overlays. Ease of use of the overlay structure is of primary importance, but the power of the overlay system has not been compromised. The system allows multiple overlays in up to seven memory regions, subject only to the memory size. Under the XM monitor, the linker allows overlays to be loaded into extended memory at run-time and executed directly from that memory.

**PIP** — The RT-11 peripheral interchange program (PIP) is a program that allows transfer of files (ASCII or binary) between any RT-11 supported devices. PIP also allows the user to rename, protect, and delete files.

**RESOURCE** — The RT-11 resource program (RESORC) examines the currently running RT-11 system and displays useful information about the status of the monitor and the system configuration.

**LIBRARIAN** — The RT-11 librarian (LIBR) creates and maintains libraries of commonly used object module subroutines and assembly language macro definitions. The linker uses object libraries (as specified by the user) to resolve undefined external symbols.

**DUP** — The RT-11 device utility program (DUP) performs general utility functions in support of mass storage devices. Among DUP functions are initializing devices, scanning for bad blocks, and consolidating free space on a disk.

**DIRECTORY** — The RT-11 directory program (DIR) is used to list the file directory for file-structured devices. DIR allows directory listing sorted by file name, file type, date, size, or position.

**UTILITIES** — Several other program development utilities are provided. DUMP allows the contents of a file to be printed in various formats. SRCCOM is an ASCII file comparison program that helps locate the changes made in source files. BINCOM is a binary file comparison program that helps locate the changes made in binary files. FILEX allows transfer of RT-11 files to and from some other operating system environments. FORMAT allows the user to format RK05, RK06, and RK07 disks, and RX02 diskettes. FORMAT also provides disk verification by writing patterns and reading them on each block of the volume.

**SYSTEM JOBS** — The FB monitor can optionally support up to six extra jobs, called system jobs. These system jobs are programs supplied by DIGITAL and run in parallel with the user-written foreground and background jobs. System job support is available only through system generation. DIGITAL does not support user-written system jobs.

Two RT-11 utilities (Error Logger and Queue Package) can run as system jobs (in addition to the background

and foreground jobs) if system job support is enabled through the system generation process. The system job feature is available to the FB and XM monitors only. Both utilities also run as simple foreground jobs.

The Error Logger keeps statistics on successful and unsuccessful transfers for random access devices. System generation must be performed for error logging support.

The Queue Package sends files to any valid RT-11 device; it is particularly useful for queuing files for subsequent printing. If run as a simple foreground job, the Queue Package does not require system generation.

**DEBUGGING AND PATCHING** — RT-11 provides several utilities to aid users in finding, diagnosing, and correcting programming errors.

- **ODT** — The on-line debugging technique utility aids in interactive program debugging.
- **VDT** — The virtual debugging technique utility aids in the interactive debugging of extended memory programs and multiterminal applications.
- **PATCH** — The PATCH program performs minor modifications to memory image files that are output by the pre-RT-11, Version 4.0 linkers. PATCH cannot be used to modify files linked with the RT-11, Version 4.0 linker.
- **SIPP** — The save image patch program can be used to patch files that were linked with the RT-11, Version 4.0 linker (and also some files linked with the Versions 03 and 03B linkers).
- **PAT** — The object module patch program performs minor modifications to files in object format.
- **SLP** — The source file patch program provides an easy way to make changes to source files.

The automated patching facility (autopatch) provides a means of applying patches by using machine-readable command files, thus avoiding the effort and potential errors associated with keying patches manually. The RT-11 software distribution kit includes one autopatch kit, containing previously published patches.

Subsequent autopatch kits are available on a periodic basis as an optional, separate service.

#### **MINIMUM HARDWARE REQUIRED:**

A minimum RT-11 system must include the following:

- **Processor:** PDP-11 or LSI-11 or PDT-11 processor (see Table I for specific CPUs supported).
- **Memory:** At least 24K bytes of memory for SJ or at least 32K bytes of memory for FB or greater than 64K bytes for XM. At least 32K bytes of memory are required to perform a system generation.

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- The output baud rate can be set to any speed. RT-11 sends output as fast as possible, depending on the capacity of the CPU and the nature of its load.
- LA30, LA34, LA36, LA38, LA120, LT33, LT35, VT05, VT50, VT52, VT55, VT100, and VT105 terminals.
- One hard-copy device connected to a DL(V) interface for use as a serial line printer.

**Terminal Interfaces\***

- Up to eight lines
  - DL11-A, B, C, D, E, W
  - DLV11-E, F
  - DLV11-J (counts as four lines)
  - MXV11-AA, AC
- Up to sixteen lines (up to eight lines on LSI-11, PDP-11/03)
  - DZ11-A, B, C, D, E, F
  - DZV11
  - DFT11-AB cluster controller (PDT only)
- No more than 17 lines total, including console

**Communications Interfaces\***

- DL11 or DLV11-E single-line interfaces
- Up to two DZ11 asynchronous 8-line multiplexer (32K bytes required)
- DZ11-E asynchronous 16-line multiplexer (32K bytes required)
- Up to four DZV11 asynchronous 4-line multiplexer (32K bytes required)
- PDT-11 modem port

**PREREQUISITE SOFTWARE:**

None

**OPTIONAL SOFTWARE:**

APL-11  
 BASIC-11/RT-11  
 DECnet-RT  
 FMS-11/RT-11  
 FORTRAN IV/RT-11  
 MRRT-11  
 MU BASIC-11/RT-11  
 RT-11 2780/3780 Protocol Emulator

**TRAINING CREDITS:**

ONE (1) - Training Credits apply only to options that include support services. Consult the latest Educational Services Catalog at your local DIGITAL office for the available courses, course requirements, and guidelines.

\*NOTE: RT-11 provides remote terminal support only for dial-up lines; RT-11 does not support leased lines.

**SUPPORT CATEGORY:**

DIGITAL SUPPORTED

RT-11 is a DIGITAL Supported Software Product.

**SOFTWARE INSTALLATION:****DIGITAL INSTALLED**

DIGITAL installation is required for Software Product Support. There is no charge for installation if performed at the time of system installation. DIGITAL installed software products, except for operating systems, are subject to an add-on installation fee when purchased subsequent to system installation.

System generation is not included with DIGITAL installation.

**SOFTWARE PRODUCT SUPPORT:**

RT-11 includes standard warranty services as defined in the Software Support Categories Addendum of this SPD.

**ORDERING INFORMATION:**

All binary licensed software, including any subsequent updates, is furnished under the licensing provisions of DIGITAL's Standard Terms and Conditions of Sale, which provide in part that the software and any part thereof may be used on only the single CPU on which the software is first installed, and may be copied, in whole or in part (with the proper inclusion of the DIGITAL copyright notice and any DIGITAL proprietary notices on the software) only for use on such CPU.

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Options with no support services are only available after the purchase of one supported license.

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Sources and/or listings options are only available after the purchase of at least one supported license and after a source license agreement is in effect.

The following key (D, E, G, H, Q, R, X, Y, Z) represents the distribution media for the product and must be specified at the end of the order number, e.g., QJ013-AD = binaries on 9-track 800 BPI Magtape (NRZI).

D = 9-track 800 BPI Magtape (NRZI)

E = RK05 Disk Cartridge

G = TU58 DECtape II Cartridge

H = RL02 Disk Cartridge

Q = RL01 Disk Cartridge

R = Microfiche

X = RX02 Double Density Diskette

Y = RX01 Floppy Diskette

Z = No hardware dependency

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# Software Product Description

**PRODUCT NAME: DEType-300, Version 1.0**  
**Word Processing Application**

**SPD 13.15.0**

## **DESCRIPTION:**

DEType-300 is a word processing software package that extends CTS-300 data processing systems with concurrent word processing capabilities. DEType-300 can create and maintain documents on the full range of disk storage devices supported by the CTS-300 Operating System.

### *Features*

- Ability to perform concurrent word processing and data processing
- Center screen editing allowing view of previous and following text
- Menu driven structure
- Special editing keypad
- Editing features:
  - Cut and paste blocks of text
  - Insert bodies of text and/or boilerplates from library files
  - Insert abbreviations, phrases and words from abbreviation files
  - Swap transposed characters and words
  - Delete and rubout by character and word, rubout by sentence and line
  - Search and replace capability
  - Wide document editing and printing
  - Four function math capabilities
  - Jump to page
  - Embedded control characters can be viewed and edited upon command
- Full control of tabs, margins, justification, and pagination:
  - Automatic centering of text on line
  - Discretionary pagination control
  - Decimal and right-adjusted tabs
- Ability to support multiple draft and letter quality printers
- Selectable pitch on the letter quality printer
- Underlined and overstruck (bold) printout

- Superscript and subscript on the letter quality printer
- List processing of data prepared by DEType-300 and other data processing programs
- Date and time stamp
- Document statistics
- User-defineable keys for predetermined and repetitive operations

### **MINIMUM HARDWARE REQUIRED:**

Any valid CTS-300 configuration with 128KB of memory supporting one VT100-WA Word Processing Terminal, one printer (draft or LQP) and disk storage capacity of 1MB. Configurations with only 64KB will only support one user and will not perform concurrent printing and editing.

### **OPTIONAL HARDWARE:**

- LQPSE-FA Letter Quality Printer (Serial)
- Any valid line printer
- Additional VT100-WA's
- Any disk storage device supported by the prerequisite software, from the storage capacities of the RX02 and up

### **PREREQUISITE SOFTWARE:**

CTS-300 Operating System, Version 6.0

### **OPTIONAL SOFTWARE:**

None

### **TRAINING CREDITS:**

None

### **SUPPORT CATEGORY:**

DIGITAL SUPPORTED

DEType-300 is a DIGITAL Supported Software Product.

### **SOFTWARE INSTALLATION:**

CUSTOMER INSTALLED

DEType-300 is a software product engineered to be installed by the customer and includes other Software Product Support services listed below.

# digital

# Software Product Description

**PRODUCT NAME: GAMMA-11 F/B, Version 3.1**

**SPD 15.60.7**

## **DESCRIPTION:**

GAMMA-11 F/B is a hardware/software system designed for nuclear medicine. GAMMA-11 F/B can acquire, store, display, and manipulate images from the gamma camera in order to supply quantitative, meaningful clinical information.

In the foreground/background configuration, gamma camera data acquisition can take place independently of another process. This configuration includes two terminals. One terminal is designated the foreground acquisition terminal for the gamma camera and controls the setup and initiation of data collection. The other terminal, designated the background terminal, can be used simultaneously with the foreground terminal for data analysis by GAMMA-11 F/B programs, for program development in BASIC or FORTRAN, or for running any other programs that do not need immediate access to the disks for successful completion.

Only one terminal is included in the single-job configuration. This configuration has all the capabilities of the foreground/background system, except that data acquisition and processing can not be carried out simultaneously.

### *Data Acquisition*

GAMMA-11 F/B programs allow data acquired to be stored in seven different size matrices for static studies and five different size matrices for dynamic studies. A user can thus choose the proper size and resolution for the job at hand. List mode acquisition (i.e., unstructured data) is available. Static studies can be collected and terminated by a preset time, preset count, or matrix element overflow. Static studies can be linked to provide easy collection of and access to sequential static views. Dynamic studies are collected at a specified frame rate. List mode studies can be acquired with an effective frame rate of 100 frames per second.

An external synchronizing time marker can be included when acquiring either dynamic or list mode studies. When acquired with the time marker, these modes are called Gate Synchronized Acquisition (GSA) and Physiological List Mode (PLM), respectively and are used primarily for cardiac studies.

GSA data is stored in 32 x 32, 64 x 64, or 128 x 128 matrices. The maximum number of images per study is determined by the amount of memory. During GSA acquisition (background) images are displayed 'live' on the video display.

The heart cycle time (or time between external synchronized events) is continuously monitored and displayed. During GSA acquisition (foreground) there is no live display of images; however, heart cycle time is monitored and displayed.

For GSA data acquisition, the operator can either choose fixed time intervals for each image or allow the program to divide the heart cycle time (averaged over 30 seconds) by the number of images chosen. A heart cycle time window can be selected, so that if a given cycle time falls outside of this window, then the following cycle is rejected.

Acquisition in 128 x 128 word and 256 x 256 byte require the NCV11 interface. 256 x 256 byte acquisition requires a minimum of 64KW of memory and is foreground only. For display of 256 x 256 images, two additional M7068 bit maps are required (four total).

Physiological List Mode studies are acquired with one millisecond time intervals.

Data is reframed by creating a number of images based on the interval between successive external time markers.

With dual isotope collection, two separate images (one for each isotope) can be collected simultaneously. This capability does not apply to GSA or PLM.

**NOTE:** This gamma camera must also have the dual isotope option.

Once collection parameters and procedures are established, they can be set up as protocols or predefined studies. Up to 20 predefined studies can be used to speed setup, to minimize error, and to standardize collection procedures.

### *Patient Study Index*

Once collected, patient studies are identified by a system-generated index file. Each study is identified by patient name, number, organ, study type, and

-3-

**Terminals**

- Any console terminal supported by the RT-11 software. (Two terminals are required for foreground/background operation. The foreground terminal must operate at 1200 baud or greater.) Foreground terminal requires a DL11 and must be VT52 or VT100.

**Display**

- VSV01 Video Display

**Interface (one of the following):**

- NC11 gamma camera interface with KW11-P (AR11 needed for foreground/background operation and/or GSA or PLM), or
- NCV11 gamma camera interface (includes KWV11; AR11 not needed)

**OPTIONAL HARDWARE:**

- Any RT-11 supported mass storage device for off-line data storage except TA11 cassette and TU58
- A system total of 256K bytes main memory

**PREREQUISITE SOFTWARE:**

None

**OPTIONAL SOFTWARE:**

FORTRAN IV/RT-11, Version 2.5

**TRAINING CREDITS:**

TWO (2) — Training credits apply only to options that include support services. Consult the latest Educational Services Catalog at your local office for the available courses, course requirements, and guidelines.

**SUPPORT CATEGORY:**

DIGITAL SUPPORTED

GAMMA-11 F/B is a DIGITAL Supported Software Product.

**SOFTWARE INSTALLATION:**

DIGITAL INSTALLED

DIGITAL installation is required for Software Product Support. There is no charge for installation if performed at the time of system installation. DIGITAL installed software products, except for operating systems, are subject to an add-on installation fee when purchased subsequent to system installation.

**SOFTWARE PRODUCT SUPPORT:**

GAMMA-11 F/B includes standard warranty services as defined in the Software Support Categories Addendum of this SPD.

**ORDERING INFORMATION:**

All binary licensed software, including any subsequent updates, is furnished under the licensing provisions of DIGITAL's Standard Terms and Conditions of Sale, which provide in part that the software and any part

thereof may be used on only the single CPU on which the software is first installed, and may be copied, in whole or in part (with the proper inclusion of the DIGITAL copyright notice and any DIGITAL proprietary notices on the software) only for use on such CPU.

All source licensed software is furnished only under the terms and conditions of a separate Software Program Sources License Agreement between Purchaser and DIGITAL.

Sources and/or listings options are only available after the purchase of at least one supported license and after a source license agreement is in effect.

The following key (K, N) represents the form of power source for the product and must be specified at the end of the number, i.e., GMA11-CK = system using 115 volt/60 Hertz power.

K = 115 volt/60 Hertz

N = 230 volt/50 Hertz

The following key (D, E, H, Q, X, Z) represents the distribution media for the product and must be specified at the end of the order number, e.g., QJ723-AD = binaries on 9-track 800 BPI Magtape (NRZI).

D = 9-track 800 BPI Magtape (NRZI)

E = RK05 Disk Cartridge

H = RL02 Disk Cartridge

Q = RL01 Disk Cartridge

X = RX02 Floppy Diskette

Z = No hardware dependency

GMA11 -C— GAMMA-11 single job system includes hardware, single-use license for GAMMA-11, RT-11, BASIC-11/RT-11, binaries on RL01 disk, documentation, support services (power: K, N)

*Sources/Listings Options*

QJ721 -E— All GAMMA-11 sources (media: D, E, H, Q, X)

*Upgrade Options*

Customers who are currently licensed users of GAMMA-11, Version 7.0 may obtain this new product by purchasing a license to an upgrade kit for use on the same CPU as their previous license.

QJ723 -A— Single-use license for GAMMA-11 F/B, RT-11, BASIC-11/RT-11, binaries, documentation, support services (media: D, E)

*Update Options*

Users of GAMMA-11 F/B whose specified Support Category warranty has expired may order under license the following software update at the prevailing rate for such update. The update is distributed in binary form on the appropriate medium and includes no installation or other services unless specifically stated.

**READER COMMENT PAGE**

This form is for Dispatch comments only. We will evaluate input from this form in planning future Dispatch enhancements.

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## WHY YOU SHOULD JOIN DECUS

- SYMPOSIA
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- SPECIAL USER GROUPS

DECUS (the Digital Equipment Computer Users Society), a worldwide association of customers and employees, provides a forum for the exchange of useful information, new program packages, and other innovations among those who use and supply the products of Digital Equipment Corporation.

Founded in 1961, DECUS is one of the largest and most active associations of its type in the world. Its objectives are to advance the effective utilization of computers, computer peripheral equipment, and software manufactured and marketed by Digital Equipment Corporation, by promoting the interchange of information concerning their uses; advance the art of computation through mutual education and exchange of ideas of information; establish standards and provide channels to facilitate the exchange of computer programs among DECUS members; provide feedback to the computer industry on equipment and software needs; and to reduce the duplication of development efforts.

DECUS membership is free--upon application--to owners of DIGITAL computers and to their computer-interested employees. Membership carries important benefits and opportunities; among them are access to the program library; membership in local, regional, and national organizations; invitations to symposia dedicated to optimal use of DIGITAL equipment; opportunity to present papers and workshops on your own new ideas; and, finally, access to special interest groups dedicated to particular uses, languages, operating systems, and hardware configurations.

The program library maintained by DECUS contains over 1700 active software packages written and submitted by members and DIGITAL employees, and available to members for the media fee and reproduction cost only. Programs in the library range from enhanced editors and cross compilers to statistics packages and games. Of particular interest to college and university customers, for example, might be a package of programs for registration, class scheduling, dormitory management, and annual giving records. A laboratory user could take advantage of various statistical packages, or programs that perform Fourier transforms or least squares fitting. There are programs for circuit analysis, resonance simulation, blood-count evaluation, and stress testing, and scores of others which medical, scientific, or engineering customers could employ. Business people can find accounting packages, data analysis and

payroll programs among the library's offerings. In addition, of course, there is a wide range of text editing, display graphics, and enhanced utility programs available.

Local, regional, and national DECUS organizations give members the opportunity to meet other DIGITAL customers and employees in an informal setting. From the monthly local meeting to the semiannual national symposium, the members can discuss their ideas, can learn what others are doing, and can give DIGITAL feedback necessary in improvement and future development of important products. Often, the national meetings in the various countries also provide the stage for major new product announcements by the company, and a showplace for interesting developments in both hardware and software technology. At any meeting a member might describe ideas and programs he has implemented, or fine tuning that has been achieved for a particular application. Members give papers, participate in panel discussions, lead workshops, or conduct demonstrations for the benefit of other members.

DECUS also publishes newsletters focusing on special interest, technical books that contain the compilation of symposia presentations; and a society newsletter.

Many members derive a particular benefit from joining DECUS Special Interest Groups. Special Interest Groups often meet as subsets of regional and national meetings, or they may meet on their own, to discuss their special interest. Here, all RSTS/E users, or everyone interested in COBOL, for example, can have a chance to get together and discuss topics of mutual importance. At present there are more than 20 Special Interest Groups (SIGs) in the U.S. alone. Many of the SIGs print newsletters and disseminate valuable technical information to members. The SIGs really are the front-line of mutual help and problem solving.

DIGITAL provides DECUS with administrative personnel and office space around the world, but the organization is run by its members, who act as speakers for conferences, planners for meetings, editorial and production talent for newsletters and minutes, and the inventors of the ideas and new programs necessary to keep the library up to date. Belonging to DECUS is a valuable adjunct to owning DIGITAL equipment on both the program exchange and the information exchange fronts.

continued

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### SPR Center

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Maynard, MA 01754

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