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HP 12792B/C 8-Channel Asynchronous Multiplexer Subsystem

Configuration Guide

Printing History

The Printing History below identifies the edition of this manual and any updates that are included. Periodically, update packages are distributed that contain replacement pages to be merged into the manual, including an updated copy of this printing history page. Also, the update may contain write-in instructions.

Each reprinting of this manual will incorporate all past updates; however, no new information will be added. Thus, the reprinted copy will be identical in content to prior printings of the same edition with its user-inserted update information. New editions of this manual will contain new information, as well as all updates.

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Overview

The purpose of this Configuration Guide is to give the System Manager specific instructions for generating the HP 12792B/C Multiplexer (MUX) into an RTE-IVB or RTE-6/VM system. Also included are instructions on initializing the devices attached to the multiplexer and on troubleshooting if problems arise upon installation.

For more details on the operation of the HP 12792B/C Multiplexer, refer to the *HP 12792B/C 8-Channel Asynchronous Multiplexer Users Manual*, part number 5955-8867 and the *HP 12792B 8-Channel Asynchronous Multiplexer Subsystem Installation and Reference Manual*, part number 12792-90020.

For configuration and user information on the HP 12792C MUX using the Revision D firmware, refer to the *RTE-6/VM Serial Driver Reference Manual*, part number 92084-90050. The Revision D MUX firmware is an option to the HP 12792C.

2

System Planning

Software Modules

Software modules provided with the HP 12792B/C multiplexer are listed in Table 2-1 along with their approximate sizes.

Table 1-1. Software Modules for HP 12792B/C

Module	Approx. Size (decimal words)	Description
%DVM00	1681	Interface card driver with modem support
%DVT00	1631	Interface card driver without modem support
%PVM00	74	Pre-driver
%DDV05	836	HP 26xx terminal screen mode device driver with CTU support
%DDT05	288	HP 26xx terminal screen mode device driver without CTU support
%DDV12	161	HP 2631/2635/7310 printer device driver
%$DVTB	3	Device driver address table

%DVM00 and %PVM00 are always used in every system generation. %$DVTB is always used, but if the user writes an additional device driver, $DVTB must be modified. %DDV05 and %DDV12 are used according to the needs of the user and the devices attached to the multiplexer interface. For more information on the tasks of these modules, refer to Chapter 4 of the *HP 12792B/C User's Manual*, part number 5955-8867, covering Device Driver Writing.

Device Drivers

One of the features of the HP 12792B/C is its device driver capability. Users can write device drivers for RS-232-C or RS-423-A devices attached to the multiplexer to take care of special control required by the device. Device drivers are simply subroutines of the interface driver and use the interface driver to communicate with the CPU and devices. When writing device drivers, the user need only be concerned with adding the required character sequences to user data to control the devices.

HP supplies three device drivers with the HP 12792B/C product, DDV05 (HP 26xx terminal screen mode device driver with CTU support), DDT05 (HP 26xx without CTU support), and DDV12 (HP 2631/2635/7310 line printer device driver), and two interface drivers, DVM00 (with modem support) and DVT00 (without modem support). These drivers, along with the pre-driver (PVM00) and $DVTB, can be relocated in a two- or three-page driver partition. See page 3-7. Users adding their own device drivers may find that all of the software will not fit into a three-page driver partition. There are several alternatives besides using a four-page driver partition (which decreases maximum size of a user partition). Refer to Chapter 4 of the multiplexer users manual covering Device Driver Writing for the alternative locations of these modules.

The interface driver (DVM00 or DVT00) uses the device driver address table ($DVTB) to find the appropriate device driver when the device driver is selected with a control 33B request. The device drivers are selected by numbers that are determined by the device driver's position in the device driver address table. Each device driver to be used with the interface driver must have an entry in the device driver address table. Thus, users writing their own device drivers must modify $DVTB. $DVTB need not be modified if only the HP-supplied device drivers or a subset thereof are used.

If one of the HP-supplied device drivers is not relocated (for example, DDV05 is to be used for terminals but DDV12 is not) and it is to be selected by the HP-supplied device driver address table $DVTB, an undefined external will result at system generation time. This will be the name of the device driver not used (for example, DDV12).

$DVTB, revision 2226 and later, contains an entry for device driver DDV63. DDV63 is supplied with MRJE subsystem software. The device driver address table includes DDV63 for the convenience of MRJE users. If you do not use MRJE, and consequently do not relocate %DDV63, undefined external DDV63 will be reported at system generation time.

The undefined externals can be ignored, or they can be eliminated by recoding $DVTB specifically for the applicable device drivers. (Refer Chapter 4 of the user's manual for instructions on recoding $DVTB.)

Supported Devices

This section describes the extent of Hewlett-Packard's support for terminals and devices not specifically called out as supported by the HP 12792B/C Multiplexer Subsystem. Hewlett-Packard's responsibility extends only to ensuring that the HP 12792B/C performs according to the following specifications when correctly installed and commanded to perform according to the instructions in the HP 12792B/C documentation supplied to the user.

Interface Support Definition

Electrical: The HP 12792B/C provides connection for two twisted pair data lines per channel. One pair provides send data, the other provides receive data. Two of the wires may be connected together to form a signal common. The electrical specifications of the data lines are RS-423-A, which is backwards compatible with RS-232-C.

Line Speeds: The HP 12792B/C transmits and receives data simultaneously on any combination of channels at the following baud rates, provided that the aggregate throughput of 76800 baud (total for all 8 channels) is not exceeded.

Supported Baud Rates

50	150	2400
75	300	4800
110	1200	9600
134.5	1800	19200

In addition, the rate at which the interface driver/card can process read and write requests (including device driver read and write requests) may not exceed 128 requests per second. This request rate may be reduced by other system activity.

User data reproduction: The character size may be specified at 5, 6, 7, or 8 bits per character not including an optional parity bit. On transmit, the user data will be processed byte by byte, passing the 5, 6, 7, or 8 least significant bits in each byte to the character depending on character size. A parity bit is added by the interface if parity is enabled. On receive, the user data from each character is passed to the user's buffer into the 5, 6, 7, or 8 least significant bits of each byte, with the unused bits defined as follows:

Receive 8 bits/char:

        bits 0 - 7:   data
        parity bit: always stripped

Receive 7 bits/char:

        bits 0 - 6:   data
        bit 7:   always zero (parity bit is always stripped)

Receive 6 bits/char:

        bits 0 - 5:   data
        bit 6:   parity bit or, if no parity defined, is always 1
        bit 7:   always 0

Receive 5 bits/char:

        bits 0 - 4:   data
        bit 5:   parity bit or, if no parity defined, is always 1
        bit 6:   always 1
        bit 7:   always 0

Character Insertion/Deletion: To support the broadest range of devices the HP 12792B/C may be configured to completely pass all user data in both directions. Character handshakes required by devices may be inserted or deleted from the user data with a user-written device driver. Devices using hardware handshaking between the multiplexer card and the device are not supported. Xon/Xoff protocol and transmit handshaking controlled by the device are supported.

Additionally, the interface driver/card has the capability to perform the following character-oriented functions when configured by control requests:

TRANSMIT: Send ENQ (ASCII 5) and wait 5 seconds for an ACK (ASCII 6) response after every 80 characters.

Add a CR LF after each record or, if the last character is an underscore, delete the underscore and do not add CR LF.

RECEIVE: End transfer on, and strip one or more of the following: CR, RS, EOT, and DC2. Or, end transfer on count and strip nothing. Or, end transfer on EOT, the receive data is cancelled.

On BS, strip the BS and delete the last character entered.

On DEL, strip the DEL and delete all characters previously entered in the record, restarting the record.

Echo all characters received and, on CR or DEL, echo CR LF.

Interface Driver with/without User-Written Device Driver

The HP 12792B/C Multiplexer Subsystem will support any RS-232-C or RS-423-A asynchronous bit-serial character-mode device whose interface characteristics are compatible with the Electrical, Line Speed, and User Data Reproduction sections of the preceding Interface Support Definition. The user may be required to write a device driver for the device in order to obtain this support.

Interface Driver with DDV05

The HP-supplied device driver DDV05 supports character and block mode operation with the following HP terminals:

2382A	2624A/B	2628A	2647A
2621A/P/B	2625A	2635B	2648A
2622A	2626A	2640B	2649B/C/G
2623A	2627A	2645A	45610B

DDV05 provides support for EQT subchannels; DDT00 does not. This includes cartridge tape units, printers, and so forth. A separate LU is required for a serial line printer, in which case it may be connected directly to the MUX via either DDV12 or a user-written device driver.

Interface Driver with DDV12

The HP-supplied DDV12 device driver supports write-only with optional lineprinter-like column one carriage control on the following HP devices:

2631A/B
2635A/B
7310

For more information on HP-supplied device drivers, refer to Appendix B of the *HP 12792B/C 8-Channel Multiplexer User's Manual*.

Other HP Subsystems

Support of non-HP terminals and devices by the HP 12792B/C Multiplexer Subsystem does not imply support of the devices by other HP systems or subsystems communicating with these devices through the HP 12792B/C. Consult the specific subsystem documentation for devices supported by that subsystem.

Modems

The MUX passively supports asynchronous, full duplex modems. Passive support means the MUX does not recognize or supply any modem control or status lines. The RS-232-C connectors on the HP 12828A Multiplexer Panel have modem "clear to send" connected back to "request to send" and "carrier detect" wired back to "data terminal ready". ("Data set ready" is pulled to +12v through a 1K-ohm resistor for those terminals that require it.) Use of the HP 12828A or connectors similar to these allow the passive support of modems. The user should be aware that "line loss" or other "modem not ready" problems cannot be detected by the MUX or user software through the MUX.

When using modems be aware that if the modem line (with auto answer) is disconnected, no provision is available to detect the condition. If the user was logged on under an RTE-IVB or RTE-6/VM session and the line is disconnected before the user logs off, anyone dialing in to that port will be re-connected to the session in progress at the time of the previous disconnect.

If the user wishes to have full modem capability, the HP 37214A Systems Modem subsystem should be used in place of the HP 12828A Multiplexer Panel. The systems modem subsystem consists of the HP 37214A Card Cage having eight slots to hold a modem controller card and any combination of up to seven of these optional cards:

- HP 37213A Modem Card, one for each telephone line,
- HP 37215A External Modem Card, for user-supplied modems, or
- HP 37216A Terminal Interface Card, for local terminals or printers.

The HP 37213A Modem Card is compatible with Bell 212 and 103 modems. A modem control card is supplied with the HP 37214A card cage and must always be used when communicating via telephones lines. Slot 7 (counting from zero) of the card cage is reserved for the modem control card. Connect the control card to port 7 of the multiplexer card. Refer to the *Systems Modem Installation and Reference Manual*, part number 37214-90000, for more information.

3

System Generation

The following paragraphs outline the recommended procedure for generating the HP 12792B/C Multiplexer into an RTE Operating System. Examples of input at each of the relevant phases is shown. An example listing of the relevant generation phases is shown in Appendix A.

General Considerations

The generation of the HP 12792B/C multiplexer driver software into RTE is very similar to that of other terminal drivers. Each multiplexer card may be assigned up to eight EQTs (one EQT per port). Each EQT to be used with this driver is assigned to an interface card at generation time by the select code designated when EQTs are specified. Any EQT associated with a particular interface card can be used for any port on that card, but EQTs cannot be moved from one card to another after generation.

The size of an extent assigned to an EQT is determined by adding the size required by the interface driver (27 words) to the largest of the extents required by any device drivers attached to that EQT. The HP-supplied device drivers both require four-word extents, so when using only HP-supplied software the extent size would be $27 + 4 = 31$ words.

A Device Reference Table (DRT) entry must be generated for each logical unit (LU) to be used. A different LU number must be assigned to each individual terminal or device, including subchannels if DDV05 is used.

On system boot, the WELCOM file should contain control requests needed to initialize the ports. It is at this time that the association between LU (and its EQT) and physical port (device) is made. The WELCOM file contents are covered in Chapter 4 (Initialization).

In the following examples the step numbers referred to in each phase refer to the steps in Section 2 of the *RTE-IVB* or *RTE-6/VM Online Generator Reference Manual*, part numbers 92068-90007 and 92084-90010, respectively.

Initialization Phase

Since the HP 12792B/C multiplexer driver is not privileged (as opposed to the HP 12920B multiplexer product), nothing related to the MUX must be done in this phase.

Program Input Phase

Step 16d (refer to the applicable Online Generator Reference Manual) specifies the modules to be relocated by their relocatable file names with optional security code and disk cartridge specification. Relocate %DVM00 or %DVT00, %PVM00, %$DVTB, and all HP- and User-supplied device drivers to be included. Refer to Figure 3-1 which shows the HP-supplied software to be relocated.

(16d) Enter the RELOCATE commands (with optional MAP, LINKS IN, and DISPLAY commands).

(REL [(name)] ,filename [: sc [: cartridge label]])
(RT6GN responds with a — after each user input)

REL,%DVM00
—
REL,%DVT00 } *choose one*
—
REL,%PVM00
—
REL,%DDV05
—
REL,%DVT05 } *choose one*
—
REL,%DDV12 } *optional*
—
REL,%$DVTB
—
REL,%nnnnn } *if user-supplied device driver is being generated in*
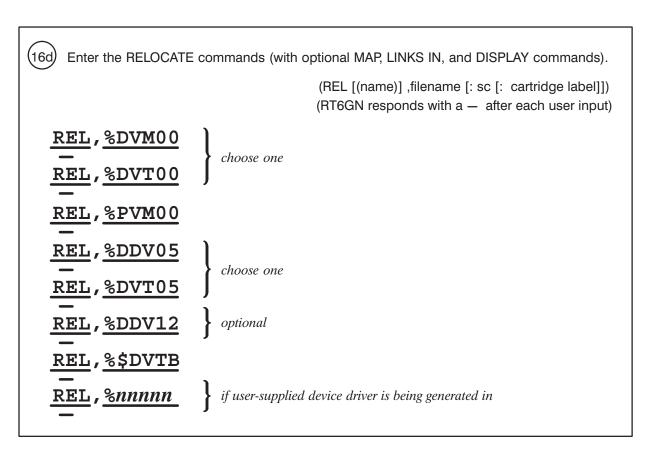—

Figure 3-1. Relocating HP-Supplied Software

Note The steps listed below refer to the worksheets contained in Appendix D of the *Online Generator Reference Manual* for your operating system.

Parameter Input Phase

In step 17 you are required to change the program type of module PVM00 to 13. This forces PVM00 to reside in Table Area II. Refer to Figure 3-2.

```
                                    (modify type, priority, and execution interval, or
                                    the ENT (entry) record of any of the programs
                                    specified during the Program Input Phase)

(17)  PARAMETERS                    (output by generator at start of Parameter Input Phase)
      —                             (generator prompt)
      PVM00,13,___,___              (name, type [,priority [,execution interval]])
      —                             name, SAVE = xxxx
      ____,___,___,___              (terminate your final entry with /E)
      —
```

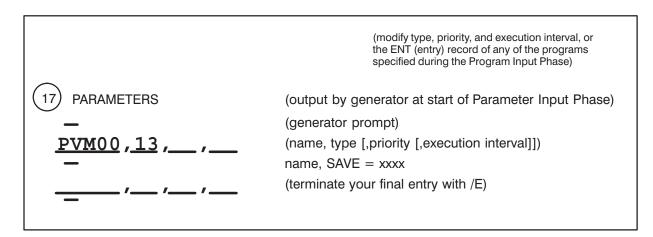**Figure 3-2. Changing PVM00 Parameter**

Table Generation Phase

Equipment Table Entries

In step 20, you specify the EQT entries for the multiplexer. All EQTs associated with devices on one interface card use that card's select code number. Each EQT may specify buffering (B) and should have an EQT extent as described at the beginning of this chapter (27 + largest extent required by device drivers). When using only HP-supplied device drivers, the extent will be 31. A timeout value may optionally be specified. Do not specify DMA usage (D option) at generation time. Refer to Figure 3-3. Note that EQTs shown here are contiguous, but they need not be. Also, "SC" refers to the select code of the multiplexer card.

20 **EQUIPMENT TABLE ENTRY**

EQT xx?

SC , DVM00 , B , X=31 , T=32767 , ___ , ___ , ___

(select code,driver [,B] [,D] [,S] [,M] [,T=ttttt] [,X=xxx])

EQT xx+1?

SC , DVM00 , B , X=31 , T=32767 , ___ , ___ , ___

(do not specify SDA for system disk driver)

EQT xx+2?

SC , DVM00 , B , X=31 , T=32767 , ___ , ___ , ___

(terminate your final entry with /E)

EQT xx+3?

SC , DVM00 , B , X=31 , T=32767 , ___ , ___ , ___

8 EQTs are required unless you are using the HP 37214A Systems Modem which needs only 7.

EQT xx+4?

SC , DVM00 , B , X=31 , T=32767 , ___ , ___ , ___

EQT xx+5?

SC , DVM00 , B , X=31 , T=32767 , ___ , ___ , ___

EQT xx+6?

SC , DVM00 , B , X=31 , T=32767 , ___ , ___ , ___

EQT xx+7?

SC , DVM00 , B , X=31 , T=32767 , ___ , ___ , ___

Figure 3-3. Equipment Table Entries

Device Reference Table Entries

Step 21 specifies the Device Reference Table (DRT) entries for the MUX. There should be one entry for each port utilized by a terminal or device.

Each entry in the DRT is the EQT number of the equipment table entry for a port. The DRT entries are order by LU number. The terminal on that port will be referred to by the LU number of the current DRT entry.

Support is provided for EQT subchannels in %DDV05, but not in %DVT05. %DVT05 ignores subchannel specifications, although for compatibility with future products should be set to zero. This includes cartridge tape units, printers, and so on. You may write your own device drivers that use EQT subchannels. Refer to Chapter 4 of the *HP 12792B/C 8-Channel Multiplexer User's Manual* covering Device Driver Writing.

Refer to Figure 3-4 for the format of DRT entries, where "xx" refers to the EQT number and "yy" refers to the LU number. Note that these entries are sequential, but need not be.
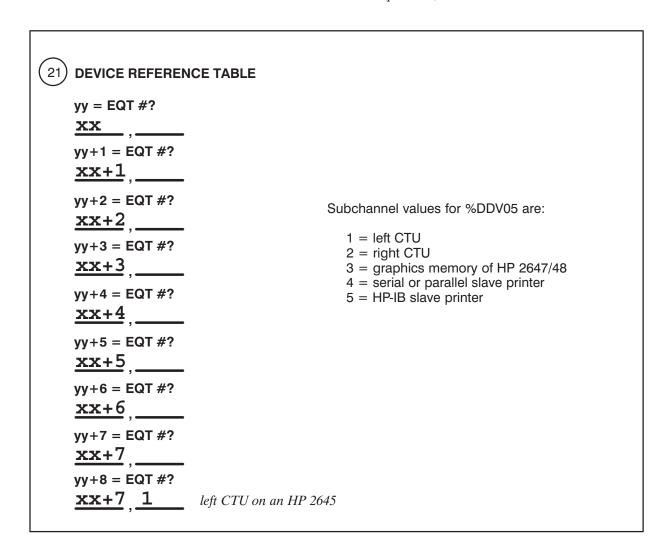
```
21  DEVICE REFERENCE TABLE

    yy = EQT #?
    xx      , _____
    yy+1 = EQT #?
    xx+1 , _____
    yy+2 = EQT #?
    xx+2 , _____                Subchannel values for %DDV05 are:
    yy+3 = EQT #?
    xx+3 , _____                   1 = left CTU
    yy+4 = EQT #?                    2 = right CTU
    xx+4 , _____                   3 = graphics memory of HP 2647/48
    yy+5 = EQT #?                    4 = serial or parallel slave printer
    xx+5 , _____                   5 = HP-IB slave printer
    yy+6 = EQT #?
    xx+6 , _____
    yy+7 = EQT #?
    xx+7 , _____
    yy+8 = EQT #?
    xx+7 , 1        left CTU on an HP 2645
```

Figure 3-4. DRT Entries for the MUX

Interrupt Table Entries

Step 22 specifies the interrupt table entries for the HP 12792B/C Multiplexer. One entry is required for each interface card generated into the system. On systems using up to eight terminals, you will want to specify:

   sc,`PRG`,`PRMPT`

to enable scheduling of PRMPT on unsolicited interrupts. Unsolicited interrupts are caused by striking a key on a terminal that does not have a read request pending on it. If a user-written program is to be scheduled upon receipt of an unsolicited interrupt, include that program's name in place of PRMPT. Note that the program specified is used for all channels on that card unless overridden online via a user request. If unsolicited interrupts are to be ignored, use:

   sc,`EQT`,*eqt#*

where *sc* is the select code of the card and *eqt#* is the number of any one of the EQTs specified for that card. This will still allow communication with each port's EQT. The only effect it has is to ignore unsolicited interrupts, which can be overridden via an online request.

Note that the select code chosen for the MUX cannot be in an I/O Extender unless it has the optional DCPC card installed.

Refer to the *Online Generator Reference Manual* for your operating system for more details. Figure 3-5 shows the entry used when devices are connected to the MUX.
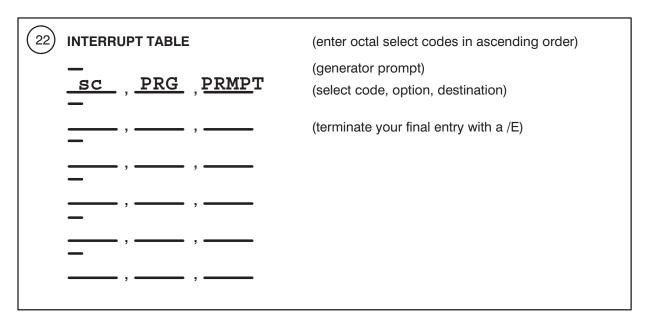

Figure 3-5. Interrupt Table Entries

System Boundaries Phase

Step 23 reports the two-page default size of the driver partitions and prompts for any change. If you are using DVM00, DDV05, and DDV12, the size should be increased to 3 pages.

```
DRIVR PART 00002
CHANGE DRIVR PART?
3                         (new size)
```

If your system must stay at 2-page driver partitions, the generation must use DVT00 (in place of DVM00) and DDT05 (in place of DDV05) and omit DDV12. The omission of DDV12 will cause it to be reported as undefined. This error is normal in this case and can be ignored. The 2-page versions of the drivers (DVT00 and DDT05) do not have CTU and modem support.

2-Page
```
RE,%DVT00   ← prog MODEM not supported
RE,%PVM00
RE,%DDT05   ← CTUs not supported
RE,%$DVTB       (no line printer driver)
  :
```
Ignore the UNDEF on %DDV12
```
  :
EQUIPMENT TABLE entry

  sc,DVM00,B,X=31
```

3-Page
```
RE,%DVM00   ← MODEM supported
RE,%PVM00
RE,%DDV05   ← CTUs supported
RE,%DDV12
RE,%$DVTB
  :
  :
EQUIPMENT TABLE entry

  sc,DVM00,B,X=31
```

Partition Definition Phase - System Available Memory

Step 34 allows the system manager to increase the size of System Available Memory (SAM) by moving the starting page of the first user partition to a higher location in memory.

The system manager should keep in mind that because terminals on the MUX may be buffered, SAM is required for programs to communicate with terminals. If there is not enough SAM, programs communicating with terminals may be suspended waiting for System Available Memory.

4

Initialization

Initialization of the HP 12792B/C Multiplexer Subsystem is typically performed at boot in the WELCOM file by a sequence of control requests. Three requests are performed on each port:

control 30B: Set port ID

control 33B: Configure driver responses, if needed

control 20B: Enable schedule, if needed (schedule a program on unsolicited interrupts)

These control functions must be given in the above order and are defined in detail in the *HP 12792B/C 8-Channel Multiplexer User's Manual*.

The HP 12792B/C multiplexer interface card contains two baud rate generators. When employing the HP 12828A Multiplexer Panel with the standard cable, baud rate generator 0 (BRG0) is wired to port 0, and baud rate generator 1 (BRG1) is wired to ports 1−7. Typically, the printer port is port 0 (running at, for example, 2400 baud) while the other seven ports are terminals running at 9600 baud. Note that these two baud rate generators can be split in other ways (2 or 3 or 4 ports on one baud rate generator and the rest on the other). Refer to the *HP 12792B 8-Channel Multiplexer Subsystem Installation and Reference Manual* for more information.

It is important to remember that devices must be configured to agree with the values specified in the control 30B request in the WELCOM file. For example, for an HP 7310 line printer, the switches on the back should be set for the baud rate and parity option at which it is to be used. All other switches should be in their normal positions.

Using the Default Device Driver

All ports must be associated with a device driver. For devices that do not require request processing beyond what the interface driver performs, a default device driver is included as part of the interface driver. Upon being sent a request by the interface driver, the default device driver simply passes the request back to the interface driver without performing processing on the request.

The default device driver is selected by specifying device driver number one when issuing a control 33B request.

Enabling a DDV12 Device

The following could be used to initialize a line printer attached to port 0:

    `:CN,lu,30B,142310B`   Port 0, 2400 baud, ENQ/ACK enabled, no parity, 1 stop bit, BRG 0, 8 bits per character.

    `:CN,lu,33B,2`   Attach device driver number 2, DDV12 (in the HP-supplied $DVTB, DDV12 is device driver number 2).

    `:CN,lu,21B`   Disable schedule; see below.

The last request (control 21B, disable schedule) is included so that the device driver is entered before a user request is given. This gives the driver a chance to set the port's driver type to 12B in case a user inquires driver type before any other request is given. Any reasonable control request may be given (21B was chosen since it also ensures that extraneous noise will not cause program scheduling).

Note that a control 20B is not used for a line printer since there will be no read requests or unsolicited interrupts from the printer.

As with all devices, when using an HP 7310 line printer, an HP 2631 printer, or an HP 2635 terminal, be sure the switches are set for whatever baud rate and parity option is to be used. These must agree with the values specified using the control 30B request in the WELCOM file.

Enabling a DDV05 Device

The control requests that could be used to initialize a terminal port are shown below. Typically these are running off of baud rate generator one (BRG1).

    `:CN,lu,30B,152334B`   Port 4, 9600 baud, ENQ/ACK enabled, no parity, 1 stop bit, BRG 1, 8 bits per character.

    `:CN,lu,33B,3`   Attach device driver 3, DDV05 (in the HP-supplied $DVTB, DDV05 is device driver 3).

    `:CN,lu,20B`   Enable scheduling; schedule program on unsolicited interrupt.

Be sure that the terminal strapping configuration switches agree with the commands given in the control request. Refer to the appropriate terminal/device instruction manual.

Example

The following is a sample part of a WELCOM file that initializes each port to 9600 baud, no parity, one stop bit, ENQ/ACK handshake enabled, attaches device driver 3 (the HP 26xx screen mode terminal device driver), and puts the port in type-ahead mode with cancel on break. Port 7 on the second card is configured for an HP 7310 line printer (device driver 2). Note that the default (hardwired) baud rate configuration is used (port 0 uses baud rate generator 0, ports 1−7 use baud rate generator 1). With the HP 12828A Multiplexer Panel, port 0 uses BRG0 and ports 1−7 use BRG1 unless you modify the hood connector.

```
:*
:* Set port IDs on card 1
:*
:CN,19,30B,142330B
:CN,20,30B,152331B
:CN,21,30B,152332B
:CN,22,30B,152333B
:CN,23,30B,152334B
:CN,24,30B,152335B
:CN,25,30B,152336B
:CN,26,30B,152337B
:*
:* Set port IDs on card 2
:*
:CN,27,30B,142330B
:CN,28,30B,152331B
:CN,29,30B,152332B
:CN,30,30B,152333B
:CN,31,30B,152334B
:CN,32,30B,152335B
:CN,33,30B,152336B
:CN,34,30B,152337B
:*
:* Configure driver responses on all ports
:*
:CN,19,33B,23003B
:CN,20,33B,23003B
        .
        .
      etc
        .
        .
:CN,33,33B,23003B
:CN,34,33B,2
:*
:* Enable scheduling on all ports except printers
:*
:CN,19,20B
:CN,20,20B
```

```
              .
              .
          etc
              .
              .
    :CN,33,20B
    :CN,34,21B
```

Note that for LUs greater than 63, use the CT command, instead of the CN command.

5

Troubleshooting

When your system has been generated, booted, and the multiplexer terminals are initialized according to the instructions in the preceding sections of this manual, your multiplexer terminals should respond to a key stroke in a manner similar to that of a DVR05 or DVR00 terminal. If a multiplexer terminal fails to respond properly, the following checklist may help to correct the problem.

- Verify that the baud rate of the terminal matches the baud rate expected by the software.

- Verify that the Baud Rate Generator specified for each port during initialization agrees with the BRG strapped for that port on the edge connector.

- If one port is not working, verify that the baud rate for the BRG on the port has not been changed. This could have happened by changing the baud rate of another port using the same BRG.

- Check that the terminal strap switches are set according to the terminal instruction manual.

- Verify that the cables are connected properly according to the *HP 12792B 8-Channel Multiplexer Subsystem Installation and Reference Manual* and the terminal and/or modem instruction manual.

- Verify that the MUX board is in the appropriate select code.

- Verify that PVM00 was set to type 13 in the parameter input phase of the system generation.

- Check power-up echo. The card "comes up" in a state in which it echoes everything that comes in and sends CR LF on CR. Rubout echoes CR LF. The default (power up) baud rate for both BRG0 and BRG1 is 9600. Set the terminal attached to BRG0 (port 0) to 9600 baud and check to see if it echoes. Also, set the terminals attached to BRG1 to 9600. This verifies that the card, terminal, and cable are operating. If this does not work, try the other seven terminals to determine if it is the cable or terminal.

- Run the online or offline diagnostics. Refer to the *HP 12792B 8-Channel Multiplexer Subsystem Installation and Reference Manual* for a detailed explanation.

A

Partial Sample System Generation

Below is listed some relevant sections of a system generation listing that includes the HP 12792B/C Multiplexer. Some irrelevant portions have been omitted due to space considerations.

```
RTE-6/VM GENERATOR MODEL 92084A    1:56 PM,  19  NOV., 1982

ECHO?
YES                     * ECHO ON

OUTPUT FILE NAMR?
MXENSY::50::3500    * 800819

    .
    .
    .

PRIV. INT. SELECT CODE?
0                       * NO PRIV. INT.

MEM. RES. ACCESS TABLE AREA II?
YES                     * MR ACCESS TA II

RT MEMORY LOCK?
YES                     * RT MEMORY LOCK

BG MEMORY LOCK?
YES                     * BG MEMORY LOCK

SWAP DELAY?
50                      * SWAP DELAY

MEM SIZE?
96                      * MEM SIZE

BOOT FILE NAMR?
0                       * NO BOOT FILE
```

```
PROG INPUT PHASE:
-
MAP GLOBALS,MODULES,LINKS
-
LINKS IN CURRENT

        .
        .
        .
*
-
REL,%DVM00                      * MUX DRIVER WITH MODEM SUPPORT
-
REL,%PVM00                      * MUX PRE-DRIVER
-
REL,%DDV05                      * 26XX DEVICE DRIVER WITH CTU SUPPORT
-
REL,%DDV12                      * DEVICE DRIVER FOR 7310 LINE PRINTER
-
REL,%$DVTB                      * DEVICE DRIVER ADDRESS TABLE
-
*
-
*
-
        .
        .
        .

PARAMETERS
-
D.RTR,3,1
-
WHZAT,3,51
-
PRMPT,1,10
-
R$PN$,1,10
-
MEM,1,9000
-
        .
        .
        .

AUTOR,1,1
-
PVM00,13                        * FORCE MUX PRE-DRIVER TO TABLE AREA II
-
/E

CHANGE ENTS?
-
```

A-2   Partial Sample System Generation

```
     .MVW,RP,105777
     -
     .MBT,RP,105765
     -
     .LBT,RP,105763
     -

         .
         .
         .

     IFIX,RP,105100
     -
     FLOAT,RP,105120
     -
     /E


     TABLE AREA I   <<PAGE 00001>>:


     EQUIPMENT TABLE ENTRY

     EQT 01?


         .
         .
         .

     EQT 06?
     13,DVM00,B,X=31                    * EQT 6  - MUX PORT

     EQT 07?
     13,DVM00,B,X=31                    * EQT 7  - MUX PORT

     EQT 08?
     13,DVM00,B,X=31                    * EQT 8  - MUX PORT

     EQT 09?
     13,DVM00,B,X=31                    * EQT 9  - MUX PORT

     EQT 10?
     13,DVM00,B,X=31                    * EQT 10 - MUX PORT

     EQT 11?
     13,DVM00,B,X=31                    * EQT 11 - MUX PORT

     EQT 12?
     13,DVM00,B,X=31                    * EQT 12 - MUX PORT

     EQT 13?
     13,DVM00,B,X=31                    * EQT 13 - MUX PORT
```

```
EQT 14?
/E


DEVICE REFERENCE TABLE

 001 = EQT _#?
2,0                                    * LU 1   - CONSOLE


     .
     .
     .

 012 = EQT _#?
6                                      * LU 12  - MUX PORT

 013 = EQT _#?
7                                      * LU 13  - MUX PORT

 014 = EQT _#?
8                                      * LU 14  - MUX PORT

 015 = EQT _#?
9                                      * LU 15  - MUX PORT

 016 = EQT _#?
10                                     * LU 16  - MUX PORT

 017 = EQT _#?
11                                     * LU 17  - MUX PORT

 018 = EQT _#?
12                                     * LU 18  - MUX PORT

 019 = EQT _#?
13                                     * LU 19  - MUX PORT

 020 = EQT _#?
/E
```

A-4   Partial Sample System Generation

```
INTERRUPT TABLE

_
4,ENT,$POWR                        * POWERFAIL
_


      .
      .
      .

13,PRG,PRMPT                       * MUX
_


      .
      .
      .

17,PRG,PRMPT                       * DVR05
_
/E


TABLE AREA I MODULES

$$TB1(0099)03011 03152   92084-1X481 REV.2121 810613
    *$ERAB   03021
    *$PVCN   03023
    *EXEC    03013
    *XLUEX   03016
    *$LIBR   03025
    *$LIBX   03032
    *$PVST   03024


     .
     .
     .

DRIVR PART 00002
 CHANGE DRIVR PART?
2                      * CHANGE DP SIZE    Specify 2 for DVT00 and DDT05
*                                          or 3 for DVM00 and DDV05

DP  01  <<PAGE 00005>>:


     .
     .
     .
```

```
SUBSYSTEM GLOBAL AREA <<PAGE 00007>>:


   .
   .
   .



TABLE AREA II <<PAGE 00010>>:

_# OF I/O CLASSES?
40                     * _# OF I/O CLASSES


_# OF LU MAPPINGS?
5                      * _# OF LU MAPPINGS


_# OF RESOURCE NUMBERS?
30                     * _# OF RESOURCE NUMBERS


BUFFER LIMITS (LOW, HIGH)?
100,400                * BUFFER LIMITS


0024 LONG ID SEGMENTS USED
_# OF BLANK LONG ID SEGMENTS?
50                     * _# OF BLANK ID SEGMENTS


0012 SHORT ID SEGMENTS USED
_# OF BLANK SHORT ID SEGMENTS?
41                     * _# OF BLANK SHORT ID SEGMENTS


0000 ID EXTENSIONS USED
_# OF BLANK ID EXTENSIONS?
5                      * _# OF BLANK ID EXTENSIONS


MAXIMUM _# OF PARTITIONS?
20                     * MAX NUMBER OF PARTITIONS



TABLE AREA II MODULES

$$TB2(0099)33547 33653  92084-1X482 REV.2121 810519
    *$MATA  33547
    *$MCHN  33550
    *$MBGP  33551
    *$MRTP  33552
    *$DLTH  33553
    *$DVPT  33554
    *$TIME  33555
    *$BATM  33560
    *$DLP   33562
    *$PLP   33563
    *$SSCT  33602
    *$STRK  33601
```

A-6   Partial Sample System Generation

```
      *$ENDS   33564
      *$MPFT   33567
      *$BGFR   33570
      *$RTFR   33571
      *$IDEX   33572
      *$MRMP   33573
      *$MPS2   33575
      *$EMRP   33607
      *$MPSA   33574
      *$SDA    33576
      *$SDT2   33577
      *$CMST   33600
      *$COML   33603
      *$CFR    33604
      *$MNP    33605
      *$DVMP   33606
      *$RLB    33610
      *$RLN    33611
      *$SBTB   33612
      *$OTAT   33565
      *$OPRI   33566
      *$SPCR   33620
      *$ELTB   33621
      *$PNTI   33631
      *$MAXI   33632
      *$SALI   33633
      *$SRTI   33634
      *$CES    33652
      *$LMES   33637
      *$SMEM   33635
BP LINKAGE 01420

PVM00(0099)33654 33765   12792-16001 REV.2032 800605 V.03
     *PM00    33654
BP LINKAGE 01420

$SUB2(0099)33766 33766   92084-1X052 REV.2226 820302
```

```
SYSTEM   <<PAGE 00013>>:

$CR61(0099)33767 33766   92084-12024 REV.2226 820504
BP LINKAGE 00100

DISP6(0099)33770 41521   92084-1X471 REV.2121 811218
    *$RENT   34617
    *$BRED   41222
    *$ZZZZ   41322


      .
      .
      .


    *$NPGQ   70004
    *$GDPG   72565
    *$SAVE   65335
BP LINKAGE 01322


PARTITION DRIVERS

DP  02   <<PAGE 00030>>:

DVA05(0099)12102 15164      92084-16607   REV. CODE 2121   811020
    *IA05    12102
    *CA05    12200
BP LINKAGE 01367

DP  03   <<PAGE 00032>>:

DVM00(0099)12056 14566   12792-16002 REV.2301 821007 V.38
    *IM00    12117
    *CM00    12255
BP LINKAGE 01357
   $DVTB    14636 14640   12792-16005 REV.2226 820413 V.06
    *$DVTB   14636
BP LINKAGE 01356
   DDV05    14641 15174   12792-16003 REV.2301 820630 V.04
    *DDV05   14654
BP LINKAGE 01356
   DDV12    15175 15430   12792-16004 REV.2140 810821 V.09
    *DDV12   15206
BP LINKAGE 01356


DP  04   <<PAGE 00034>>:

      .
      .
      .
```

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