

# 4 Kernel Commands

## Introduction

This chapter explains the following three PjL commands:

- Universal Exit Language (UEL) command — exits the current printer language and returns control to PjL.
- ENTER command — selects a printer language for processing the current job.
- COMMENT command — enables developers to add comments to their PjL commands.

Together, these commands provide a minimum set of tools necessary to implement job control. These commands allow applications to set job boundaries, add comments, and programmatically select printer languages.

Besides programmatic printer language switching, you can configure some LaserJet printers to switch printer languages automatically between print jobs. Following the descriptions of the UEL, ENTER, and COMMENT commands, this chapter describes the different methods used to switch printer languages.

# Universal Exit Language (UEL) Command

The Universal Exit Language (UEL) Command causes the printer to exit the active printer language. The printer then returns control to PjL.

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**Note**

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Use the UEL command at the beginning and end of every PjL job. You do not need a UEL command before every PjL command. The examples demonstrate using this command.

**Syntax:**

```
<ESC>%-12345X
```

**Parameters:**

The UEL command does not use any parameters.

**Comments:**

The UEL command is a data stream sequence recognized by all printer languages in PjL printers. The UEL command instructs the active printer language to finish processing the current job and relinquishes control to PjL. If PjL is active, any unprocessed PjL commands are discarded and the printer is ready to accept the next PjL command.

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**Note**

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If the printer is processing a PostScript job and TBCP is enabled, the UEL command causes the printer to exit PostScript and enable PjL.

Remember that:

- All jobs must start and end with the UEL command. Printers that support I/O switching use the UEL command as one way to determine job boundaries, indicating when to perform I/O switching (see the “Timeouts” section in Appendix A).
- At the beginning of a PjL job, the PjL command prefix (@PjL) must immediately follow the UEL command. If the printer receives any characters, spaces, or control codes before @PjL, it enables the default printer language and processes the job in that printer language (if `PERSONALITY =AUTO`, the data stream is sampled for context-sensitive switching—see

the “Methods of Printer Language Switching” later in this chapter). Instead of relying on implicit switching, use the ENTER command to specify the printer language, even if the printer has only one printer language.

The following example demonstrates the use of the UEL command.

### Example: Using the UEL Command

This example enters PCL and prints a PCL job. Notice how the job begins and ends with the UEL command, and how the first UEL command is followed immediately by the @PJL prefix.

```
<ESC>%-12345X@PJL COMMENT PCL Job <CR><LF>
@PJL ENTER LANGUAGE = PCL <CR><LF>
<ESC>E . . . . PCL Job . . . . <ESC>E
↵<ESC>%-12345X
```

If the print job was a PostScript job instead, the following would be sent:

```
<ESC>%-12345X@PJL COMMENT PostScript <CR><LF>
@PJL ENTER LANGUAGE = POSTSCRIPT <CR><LF>
%!PS-ADOBE ... PostScript print job ... ^D
↵<ESC>%-12345X
```

Similarly, for an ESC/P print job, send the following:

```
<ESC>%-12345X@PJL COMMENT ESC/P <CR><LF>
@PJL ENTER LANGUAGE = ESCP <CR><LF>
... ESC/P print job ...
↵<ESC>%-12345X
```

# ENTER Command

The ENTER command enables the specified personality (such as PCL or PostScript). Use this command to select the printer language for printing subsequent data.

## Syntax:

```
@PJL ENTER LANGUAGE = personality [<CR>]<LF>
```

## Parameters:

Parameter	Range
<i>personality</i>	PCL, POSTSCRIPT, ESCP, Others *
* Other personalities might be supported.	

- ***personality*** — The personality variable must be set to PCL, POSTSCRIPT, ESCP, or one of the other supported personalities. Personalities besides PCL and PostScript can be added to some printers by plugging in additional hardware, such as cartridges or ROM SIMMs. If your application handles status readback, you can request a list of all valid personalities present in the printer (see the “INFO CONFIG” section in Chapter 7).

## Comments:

The ENTER command must be positioned immediately before any personality-specific data. The selected personality begins parsing immediately after the <LF> that terminates the ENTER command.

If the printer does not receive the ENTER command requesting a specific printer language, the printer enables the default printer language as set from the control panel (or if the printer supports context switching, such as the HP Color LaserJet 4500 series, 8500 series, 8100 series, LaserJet 2100 series, 4000 series, 5000 series, 8000 series, 8100 series, 5Si, 5SiMX, 5Si Mopier, 5, 5M, 5P, 6P, and 6MP printers, it samples the data stream if *personality* is set to AUTO—see the “Methods of Printer Language Switching” later in this chapter).

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**Note**

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To select the ESC/P personality, always be sure to use the @PJL ENTER LANGUAGE = ESCP command to explicitly select it.

For any job containing personality-specific data, send the ENTER command if the intended printer language is known, instead of relying on the printer's ability to switch to the default printer language. This is true even if there is only one available personality.

When a printer language is specified, that language currently must be installed in the printer. If the printer receives a request for an invalid printer language, the printer consumes the data stream until it finds the next UEL command, and then discards the data. The printer also posts an "invalid personality" clearable warning message (W2 INVALID PERS) and, if enabled, returns a status message.

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**Note**

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In spooling applications, performance is not adversely affected if both the application file and the spooler send the ENTER command.

### Example: Using the ENTER Command

```
<ESC>%-12345X@PJL <CR><LF>
@PJL COMMENT Beginning PostScript Job <CR><LF>
@PJL ENTER LANGUAGE = POSTSCRIPT <CR><LF>
%!PS-ADOBE ... PostScript print job ... ^D
^<ESC>%-12345X@PJL <CR><LF>
@PJL COMMENT End of PostScript Job <CR><LF>
@PJL <CR><LF>
@PJL <CR><LF>
@PJL COMMENT Prepare for PCL Job <CR><LF>
@PJL ENTER LANGUAGE = PCL <CR><LF>
<ESC>E . . . . PCL Job . . . . <ESC>E
^<ESC>%-12345X
```

# COMMENT Command

The COMMENT command enables you to add a line of information as a comment. Use this command whenever you want to add an explanation to P JL commands.

## Syntax:

```
@P JL COMMENT remarks [<CR>]<LF>
```

## Parameters:

Parameter	Range
remarks	Roman-8 character codes 33 through 255 and <WS>, starting with a printable character.

## Comments:

The COMMENT command is useful for documenting lines of P JL commands. Comments may be placed anywhere in the P JL code between the initial UEL command and the ENTER command. (Comments placed after the ENTER command are considered personality-specific data and are printed as determined by the active printer language.)

Like other P JL commands, the COMMENT command is terminated by a line feed character. You cannot extend comments onto the next line. Comments longer than one line require a separate COMMENT command for each line.

See the following page for an example demonstrating the use of the COMMENT command.

## Example: Using the COMMENT Command

This example demonstrates using the COMMENT command to add clarity to your P JL command listings.

```
<ESC>%-12345X@P JL <CR><LF>  
@P JL COMMENT ***** <CR><LF>  
@P JL COMMENT ** D. Thiel- 10/22/92 ** <CR><LF>  
@P JL COMMENT ***** <CR><LF>  
@P JL <CR><LF>
```

```

@PJJL <CR><LF>
@PJJL JOB NAME = "Using Comments" <CR><LF>
@PJJL <CR><LF>
@PJJL <CR><LF>
@PJJL COMMENT ****      TURNING OFF      **** <CR><LF>
@PJJL COMMENT ****      RESOLUTION        **** <CR><LF>
@PJJL COMMENT ****      ENHANCEMENT       **** <CR><LF>
@PJJL SET RET = OFF <CR><LF>
@PJJL <CR><LF>
@PJJL COMMENT ***** ENTERING PCL ***** <CR><LF>
@PJJL ENTER LANGUAGE = PCL <CR><LF>
<ESC>E . . . . PCL Job . . . . <ESC>E
^><ESC>%-12345X@PJJL <CR><LF>
@PJJL EOJ <CR><LF>
<ESC>%-12345X

```

## Methods of Printer Language Switching

There are three methods of switching printer languages, two of which are supported by all PJJL printers. All three methods are described below:

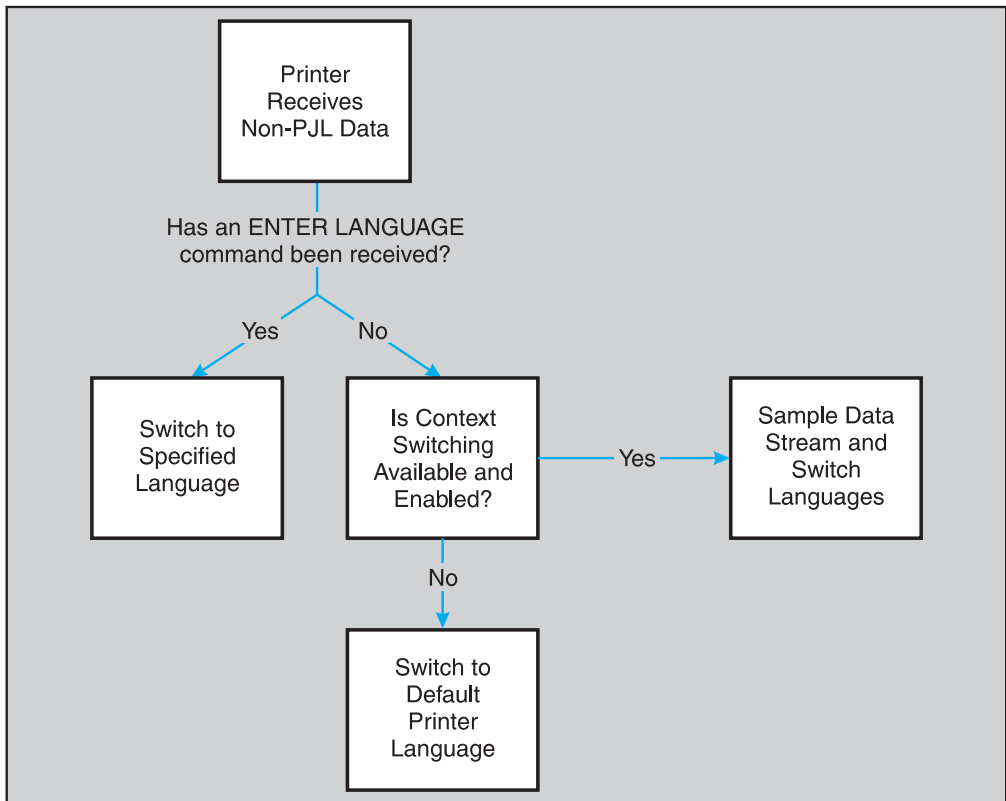
- **Explicit Switching.** With explicit switching, the ENTER LANGUAGE command is used to “explicitly” select the desired printer language. This is the preferred switching method because it ensures that the specified printer language is always selected (see Figure 4-1).
- **Implicit Switching.** If the printer has a default printer language configured, and the print job does not explicitly select a printer language using the ENTER LANGUAGE command, the printer automatically switches to the default printer language. (See the User's Manual for each printer for instructions about specifying a default printer language.) This switching method does not always ensure that the proper printer language is used, since the printer simply uses the default language.
- **Context Switching** (HP Color LaserJet 4500 series, 8500 series, 8100 series, LaserJet 2100 series, 4000 series, 5000 series, 8000 series, 8100 series, HP Color LaserJet, LaserJet 4, 4M, 4 Plus, 4M Plus, 4Si, 4SiMx, 4000 series, 5Si, 5SiMx, 5Si Mopier, 4ML, 4P, 4MP, 4V, 4MV, 5P, 6P, 6MP, DesignJet plotters and printers only). If the printer is set to automatically select a printer language (see the printer user's manual), and the print job does not explicitly select a printer language using the ENTER LANGUAGE command, the printer samples the incoming data and looks for indications of a

particular printer language. Once it recognizes the printer language, the printer backs up to the beginning of the sampled print data and switches to the printer language determined to be most appropriate. Then it begins to parse the data in the newly selected printer language.

**Note**

HP LaserJet 4V and 4MV printers cannot properly context-switch into the ESC/P personality by sensing the data stream. Developers who use ESC/P must use explicit or implicit switching.

Although printers supporting context switching can select printer languages accurately, we recommend that every job containing printable data include an ENTER LANGUAGE command to explicitly select the correct printer language. This method improves performance and eliminates unintentional printer language switching, which can potentially cause data loss. Performance is not adversely affected if both the application and the spooler send the ENTER LANGUAGE command.



**Figure 4-1 Switching Printer Languages**