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Software From Adobe

CID-Keyed Font Installation for PostScript File Systems

Adobe Developer Support

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CID-Keyed Font Installation in PostScript File Systems

1 Introduction

This document describes how to install CID-keyed font resources, related resources, as well as files that are related to row-organized fonts, in a PostScript file system. The file system might be on a hard disk attached to a PostScript printer, or on a host system.

Fonts of CIDFontType 0 are designed to be installed into a file system, such as that on an external storage device (hard disk) of a printer or host computer, or to be downloaded to VM. CID-keyed fonts are generally installed by an installation program. This document is intended for developers of such programs.

2 PostScript Interpreter Requirements

There are two requirements for an interpreter to be able to run CID-keyed fonts of CIDFontType 0. The first requirement is that the PostScript interpreter must support Type 0, or *composite* fonts. A PostScript interpreter can support Type 0 fonts if it is a Level 1 interpreter with the Composite Font extensions, or if it is a Level 2 interpreter.

Note　*While all Level 2 interpreters have the necessary language capability to interpret CID-keyed fonts, the character caching capability of version 2010 PostScript interpreters may be inadequate for large Asian fonts. It is also advised that software doing downloading or installation should check to make sure the printer has at least 1 megabyte of RAM.*

The second requirement is that the PostScript interpreter have access to a set of CID-keyed fonts and a set of files referred to as the *CID Support Library* (CSL). Some of these other files are executed during (Sys/Start) or (Sys/Bootlist) execution. Currently, there are about 40 files in the CSL, and the contents of the files are explained in the *contents.txt* file supplied with the CSL.

The CID Support Library contents are of two types:

- CSL core modules

- Language specific support. This part includes items such as CMap files for each language, for example for the Adobe-Japan1-2, or Adobe-GB1-0 (Simplified Chinese) character collections.

The CID Support Library software is available to developers for bundling with font installation programs, subject to certain licensing conditions. For more information, contact the Adobe Developers Association.

3   Font Installation

CID-keyed fonts are instances of the PostScript language resource category *CIDFont*. This use of named resources allows the interpreter to retrieve the resource instance, on demand, from an external file system. Like all Post-Script language resources, they should conform to the conventions of the device in which they are installed.

In general, installation of CID-keyed fonts into a PostScript language file system consists of copying the CIDFont file to a directory with the following path:

    Resource/CIDFont/<PostScript Font Name>

and installing the CSL in the manner described in the following sections.

4   Categories of Installation Files

The files which comprise an installable CID-keyed font and CID Support Library which a font installation program might install, are known as *candidate files*. That is, they are candidates to be installed.

Files which already exist in the PostScript interpreter's file system, and which have the same name as candidate files, are called *target files*.

Target files may be partitioned into two categories:

A.   Files to be modified, or added if not present.
B.   Files to be replaced.

The first category consists of the target files:

    (Sys/Start)
    (Sys/Bootlist)

These are referred to as *Category A files* throughout this appendix. These target files may require modification. If none of the target files are present, then a new candidate file may be installed.

The second category consists of all remaining target files. These files are replaced or added as needed; they are never partially changed. These files are referred to as *Category B files* throughout this appendix.

The complete list of files in Category B may vary according to the particular release of the CID Support Library. Please see the Release Notes for a given release for the specific enumeration of these files.

5   Installation Environment

5.1   File Names

PostScript string syntax is used in this document to refer to both candidate and target file names. See the *PostScript Language Reference Manual, Second Edition* to determine how PostScript strings are interpreted as file names.

5.2   File Searching and Devices

When the installation algorithm described in this appendix refers to searching for a file, it refers to locating a file when there may be many attached devices. On PostScript interpreters, devices are prioritized for file searching. External devices, such as printer hard disks are searched first; then cartridge devices are searched second; finally, ROM devices are searched last. The specific search order is determined by numbering each device (explained below), where lower numbers indicate higher search priority. The first device checked that has the searched file ends the search. The number of a device is determined as follows:

For Level 2 interpreters, the operator **currentdevparams** returns a dictionary having a key /SearchOrder indicating the number for this device.

For Level 1 interpreters, the number is typically that of the SCSI identification number. This is the same number that is reported during the **devforall** operator as in (%disk<n>%), where the <n> is the SCSI ID.

5.3   CID Support Library Installation and Low-order Device

Installation of the CID Support Library can be performed to a specified device or to the *low-order device*, which is the device with the highest search order priority. This choice is to be made before employing the installation algorithm described in the sections below. In the instructions that follow, the specified device for installation is referred to as the *selected device*. In *all* cases, the selected device *must* be a writable device.

If the selected device is not the low-order device, then the installation algorithm must know whether or not all identically named files on lower-order writable devices relative to that of the target file shall be deleted. This condition is called the *Deletion Toggle* and is true if deletion shall occur; otherwise, it is false. This is necessary if the CID Support Library installation is expected to run in the hardware configuration as of installation time. Were this not to happen, the installed files on the selected device would never be referenced because the identically named files on lower-order devices would be found instead.

Naturally, files on read-only devices cannot be deleted; but, these files are typically cartridge or ROM devices and are, therefore, found later than those of the selected device. If there are read-only devices that have a higher search priority than the selected device, these shall be changed to have a lower search priority before employing the installation algorithm. If doing that is not possible, then proper execution of the CID Support Library in the hardware configuration, as of installation time, might not be possible. This circumstance is not expected to occur, but has been addressed here for completeness.

Sometimes the purpose of an installation is to put a complete CID Support Library onto a specific device. This condition is called the *Search Target Device Only Toggle*. If it is set to true, then the installation program shall search for target files only on the current device. If false, it shall search for target files on all devices, in search priority order.

5.4 Version Checking

Version checking is the process of determining whether or not a candidate file will be installed. It consists of checking within the target file on the selected device for DSC comments indicating the version number associated with that file. If the target file is not on the selected device, but is on some other device, then the file on the low-order device is used for version checking.

```
%%BeginResource: <category> (<assignedName>)
...
%%Version: <versionNumber> [<revisionNumber>]
...
%%EndResource
```

Each file of the CID Support Library shall contain lines as shown above. For files that define PostScript language resources, the <category> portion above is the resource category; all other files use "file" as the <category>.

For files of Category A, the <assignedName> is (CID Support Library) for (Sys/Start) and (CID Support Library Bootlist) for (Sys/Bootlist). For files of Category B, the <assignedName> is the resource instance or name of the file. Note that each occurrence of <assignedName> is expressed as a PostScript string object.

The %%Version comment identifies the version number for the block. This comment line can appear anywhere within a block of code delimited by

%%BeginResource and %%EndResource

The value of <versionNumber> is a real number, and the optional <revisionNumber> is an integer. A typical example might be:

%%Version 1.1 2

Where 1.1 is the version number, and 2 is the revision number. If the revision number is omitted, it is assumed to be zero. The revision number should be taken into consideration if the version number of two files are identical. For example:

%%Version: 1.402 2

or

%%Version 1.402

are older than:

%%Version 1.402 3

The following examples show how a block of DSC comments describes a resource with a version number.

```
%%BeginResource: file (CID Support Library)
...
%%Version: 1.01 2
...
%%EndResource

%%BeginResource: file (FS/Level2CID)

...
%%Version: 1.01 2
...
%%EndResource

%%BeginResource: CMap (83pv-RKSJ-H)
...
%%Version: 1.01 2
```

```
        ...
        %%EndResource
```

5.5 Installation Software and File List

The list of files in Category B may vary for different releases of the CID Support Library. Installation software shall not depend on a specific list of files. The list of Category A files is not expected to change.

6 Prior to Installation

Before performing the installation of the CID Support Library, the installation algorithm must determine the following information:

Deletion Toggle
Search Target Device Only Toggle
Selected Device

It is also important for the installation software to determine if there is sufficient space on the selected device for the installation of the CID Support Library.

7 Installation of Category A Files

Determining the Target File

For Category A, the algorithm described below is to be performed. Note that this algorithm selects one file to operate on, and that this operation is not applied to every file in the category.

Determine the target file to be modified (select the first that applies):

1. If there is a (Sys/Bootlist) file, then modify it using the resource identified by **%%BeginResource: file (CID Support Library Bootlist)**; else,
2. If there is a (Sys/Start) file, then modify it using the resource identified by **%%BeginResource: file (CID Support Library)**.
3. If neither of the above files are found, then copy the entire candidate file named (Sys/Start) to the selected device. Take no further action for this category.

Note   If both files exist, only the one file selected as shown above is to be acted upon; the other file will not be used or acted upon in any way.

7.1 Checking Version Information

Check the version information and determine if the file requires modification. If it does, continue; otherwise, no further action is necessary for Category A files.

7.2 Modifying the File

If the file contains the DSC comments:

```
%%BeginResource: file (CID Support Library)
...
%%EndResource
```

or, in case of (Sys/Bootlist):

```
%%BeginResource: file (CID Support Library Bootlist)
...
%%EndResource
```

then, replace that portion of code with the code that is bracketed in the same way in the candidate file. The replacement code must include the DSC comments shown above.

If the file does not contain the DSC comments above, then the replacement text is to be inserted according to the following heuristic:

A. The DSC comments that follow may bracket the portion of the file that may be modified by installation software:

```
%ADOBeginCustomStartup
...
%ADOEndCustomStartup
```

If only one of the comments is present in a file, then:

1. if the omitted comment is %ADOBeginCustomStartup, then the file may be modified from the beginning of the file to immediately before the %ADOEndCustomStartup comment; and,
2. if the omitted comment is %ADOEndCustomStartup, then the file may be modified from immediately following the %ADOBeginCustomStartup comment to the end of file.

B. If the DSC comment %ADOEndCustomStartup is in the file, then the insertion is to appear immediately before this comment. If there is no such comment, then the insertion is to occur as follows:

1. if the file is (Sys/Bootlist), then the insertion is to occur immediately before the last line of the file.

2.   if the file is (Sys/Start), then the insertion is to occur immediately before the PostScript string token "(Usr/Start)", if present. However, this is true only if that token is within the customizable portion of the file. If there is no such string token, or if that token is not within the customizable portion of the file, then the insertion is to take place at the end of the customizable portion of the file. That is, the insertion is to occur immediately before the comment %ADOEndCustomStartup, if present; otherwise, the insertion is to occur after the last line of the file.

Note   *Presently, no product in the field has the DSC comments:* %ADOBeginCustomStartup *and* %ADOEndCustomStartup. *The algorithm as described by A and B above is a heuristic to be used when these comments are not found. To ensure that the algorithm is deterministic, the files in Category A can be preconditioned so that these comments are inserted. If an insertion location other than that shown above is desired, the comments:*

```
%%BeginResource: file (CID Support Library)
%%Version: 0.0
%%EndResource
```

or the comments:

```
%%BeginResource: file (CID Support Library Bootlist)
%%Version: 0.0
%%EndResource
```

can be inserted in an existing (Sys/Start) file. Doing this will ensure that replacement will occur in the location where these comments are found.

Example 1 *Summary of Sys/Start modifications*

```
<<Sys/Start header comments here >>

%%BeginResource: file AdobeCompositeFontSupport
/languagelevel where { pop languagelevel 2 ge } { false } ifelse
{{ (FS/Level2) } { (FS/Level1) } ifelse run } stopped clear
%%EndResource
%%BeginResource: file AdobeCIDKeyedFontSupport
{ /CIDInit /ProcSet findresource } stopped clear
{ /83pv-RKSJ-H /CMap findresource } stopped clear
%%EndResource

<<Remainder of unmodified Sys/Start file (if any) follows here >>
```

8   Installation of Category B Files

For Category B, the following algorithm is to be followed for each file in this category:

1. Determine the file to be modified. (See *File Searching and Devices* above.)
2. Check the version information and determine if the file requires replacement. If it does, continue; otherwise, no action for this file. Continue checking other files for possible replacement.
3. If the file requires replacement, then it is to be removed and replaced with the replacement file.