



Printer Driver Communications Standard

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Abstract

Printers print.

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FSG Open Printing – Printer Driver API

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FSG Open Printing – Printer Driver API

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1. Introduction

*Printer not ready.
Could be a fatal error.
Have a pen handy?*

-- Pat Davis

Currently, there are many printer drivers written for Linux.

2. Background

Monolithic approach.

IJS similarities / divergence.

Why can PDC replace this.

3. Terminology and Acronyms

3.1 Conformance Terminology

In this document, the uppercase terms “MUST”, “MUST NOT”, “REQUIRED”, “SHOULD”, “SHOULD NOT”, “RECOMMENDED”, “MAY”, and “OPTIONAL” are intended to be interpreted as described in [RFC2119]

In this document, each conformance statement uses one of the terms:

| <i>Term</i> | <i>Meaning</i> |
|---------------|---|
| MUST | Implementation support is REQUIRED for conformance to this specification. |
| SHOULD | Implementation support is RECOMMENDED for conformance to this specification. |
| MAY | Implementation support is OPTIONAL for conformance to this specification. |

In this document, each operation, object, or attribute is defined as:

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| <i>Term</i> | <i>Meaning</i> |
|--------------------|--|
| REQUIRED | Each implementation MUST support object operations or attributes. |
| RECOMMENDED | Each implementation SHOULD support object operations for interoperability |
| OPTIONAL | Each implementation MAY support object operations or attributes . |

3.2 Other Terminology

Table 4.0 Miscellaneous Terms

| <i>Term</i> | <i>Meaning</i> |
|-------------|----------------|
| | |
| | |
| | |

3.3 Acronyms

Table 5.0 Acronyms

| <i>Acronyms</i> | <i>Meaning</i> | <i>Source</i> |
|-----------------|--------------------------------------|---|
| FSG | Free Standards Group | http://www.freestandardsgroup.org/ |
| FSG/OP | Free Standards Group – Open Printing | http://www.openprinting.org/ |
| PDC | Printer Driver Communications | |
| JP | Job Properties | |
| CJP | Common Job Properties | |
| NCJP | Non-Common Job Properties | |

4. Requirements

job ticket & papi support

platforms: embedded devices. high end production printing

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printer: injet printers. high end laserjet printers.

support bi-directional communications

support device fonts

support high level drawing calls

5. Description

5.1 Common Job Properties

Job properties are properties that can change on a per-job basis. Someone can submit a color print job that uses legal paper while someone else can submit a monochrome print job on A4 paper to the same print queue. Every printer driver shares a set of common job properties such as Form, Media, and Orientation. Currently, each printer driver uses different names for those job properties. One driver can use ‘Form=Letter’ while another uses ‘form=LTR’. To avoid this problem, Common Job Properties is the standardization of job properties that should be understood by all printer drivers.

| Key | Value | Notes |
|------------------------|--------------------------------------|---|
| Color | Color | |
| | Monochrome | |
| | | |
| Copies | 1 | |
| | integer | |
| | None | |
| | | |
| Form | na_letter_8.5x11in | |
| | iso_a4_210x297mm | |
| | ... | |
| | None | |
| | | |
| FormUnprintableMargins | integerXintegerXintegerXintegerUNITS | The four unprintable areas on the page in the following order: top, right, bottom, left |
| | | |
| | | |

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| <i>Key</i> | <i>Value</i> | <i>Notes</i> |
|------------------|-----------------|--|
| InputTray | AutoSelect | |
| | AnySmallFormat | |
| | AnyLargeFormat | |
| | Bottom | Lower is an alias |
| | BypassTray | |
| | BypassTray-n | |
| | Continuous | Fanfold or perforated |
| | Disc | Tray that contains media such as CD or DVD |
| | Disc-n | |
| | Envelope | |
| | Envelope-n | |
| | Front | |
| | InsertTray | |
| | InsertTray-n | |
| | LargeCapacity | Main is an alias |
| | LargeCapacity-n | |
| | Left | |
| | Middle | |
| | Rear | |
| | Right | |
| | Roll | |
| | Roll-n | |
| | Side | |
| | Top | Upper is an alias |
| | Tray | Cassette, SheetFeeder is an alias |
| | Tray-n | Cassette-n, SheetFeeder is an alias |
| | None | |
| | | |
| MediaColor | RxGxB | |
| | | |
| MediaBackCoating | Glossy | |
| | HighGloss | |
| | SemiGloss | |
| | Satin | |
| | Matte | |
| | Inkjet | |

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| <i>Key</i> | <i>Value</i> | <i>Notes</i> |
|-------------------|----------------------|--------------|
| | None | |
| | | |
| MediaFrontCoating | Glossy | |
| | HighGloss | |
| | SemiGloss | |
| | Satin | |
| | Matte | |
| | Inkjet | |
| | None | |
| | | |
| MediaGrain | Fine | |
| | Medium | |
| | Coarse | |
| | None | |
| | | |
| MediaTooth | Fine | |
| | Medium | |
| | Coarse | |
| | None | |
| | | |
| MediaType | Plain | |
| | Stationery | |
| | TransparencyEnvelope | |
| | EnvelopePlain | |
| | EnvelopeWindow | |
| | Continuous | |
| | ContinuousLong | |
| | ContinuousShort | |
| | TabStock | |
| | PreCutTabs | |
| | FullCutTabs | |
| | MultiPartForms | |
| | Labels | |
| | MultiLayer | |
| | Screen | |
| | ScreenPaged | |

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| <i>Key</i> | <i>Value</i> | <i>Notes</i> |
|-------------------------------|-----------------|--------------|
| | Photographic | |
| | CardStock | |
| | Other | |
| | None | |
| | | |
| NumberUp | 1x1 | |
| | integerXinteger | |
| | None | |
| | | |
| NumberUpPresentationDirection | TorightTobottom | |
| | TobottomToright | |
| | ToleftTobottom | |
| | TobottomToleft | |
| | TorightTotop | |
| | TotopToright | |
| | ToleftTotop | |
| | TotopToleft | |
| | None | |
| | | |
| OutputBin | Top | |
| | Booklet | |
| | Bottom | |
| | Center | |
| | FaceDown | |
| | FaceUp | |
| | FitMedia | |
| | LargeCapacity | |
| | Left | |
| | MailBox-n | |
| | Middle | |
| | MyMailbox | |
| | Rear | |
| | Right | |
| | Side | |
| | Stacker-n | |
| | Top | |

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| <i>Key</i> | <i>Value</i> | <i>Notes</i> |
|-------------------|---------------------|--------------|
| | Tray-n | |
| | None | |
| | | |
| PrintQuality | Normal | |
| | Economy | |
| | Draft | |
| | High | |
| | Fine | |
| | Photo | |
| | None | |
| | | |
| Resolution | integerXinteger | |
| | | |
| Rotation | Portrait | |
| | Landscape | |
| | ReversePortrait | |
| | ReverseLandscape | |
| | None | |
| | | |
| ScalingType | None | |
| | FitToPage | |
| | RotateAndOrFit | |
| | Clip | |
| | | |
| ScalingPercentage | None | |
| | double | |
| | | |
| SheetCollate | SheetUncollated | |
| | SheetCollated | |
| | SheetAndJobCollated | |
| | SheetUncollated | |
| | | |
| Sides | OneSidedFront | |
| | OneSidedBackflipX | |
| | OneSidedBackflipY | |
| | TwoSidedFlipX | |

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| <i>Key</i> | <i>Value</i> | <i>Notes</i> |
|------------------------|---------------|--------------|
| | TwoSidedFlipY | |
| | None | |
| | | |
| StitchingPosition | None | |
| | integer | |
| | | |
| StitchingReferenceEdge | Top | |
| | Bottom | |
| | Left | |
| | Right | |
| | None | |
| | | |
| StitchingType | Corner | |
| | Saddle | |
| | Side | |
| | None | |
| | | |
| StitchingCount | 1 | |
| | integer | |
| | None | |
| | | |
| StitchingAngle | 0 | |
| | integer | |
| | None | |

While it would be nice to require every driver to at least understand the above Common Job Property keys and values, we have decided to allow some of the keys to be optionally supported.

| <i>Key</i> | <i>Required/Recommended/Optional</i> |
|------------------------|--------------------------------------|
| Color | Required |
| Copies | Recommended |
| Form | Required |
| FormUnprintableMargins | Required |
| InputTray | Recommended |
| MediaColor | Optional |

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| <i>Key</i> | <i>Required/Recommended/Optional</i> |
|-------------------------------|--------------------------------------|
| MediaBackCoating | Optional |
| MediaFrontCoating | Optional |
| MediaGrain | Optional |
| MediaTooth | Optional |
| MediaType | Recommended |
| NumberUp | Optional |
| NumberUpPresentationDirection | Optional |
| OutputBin | Recommended |
| PrintQuality | Optional |
| Resolution | Required |
| Rotation | Recommended |
| ScalingType | Optional |
| ScalingPercentage | Optional |
| SheetCollate | Optional |
| Sides | Optional |
| StitchingPosition | Optional |
| StitchingReferenceEdge | Optional |
| StitchingType | Optional |
| StitchingCount | Optional |
| StitchingAngle | Optional |
| Trimming | Optional |

If a job property is Required and it is not handled by the driver, then the print job or print related query will fail. The other two categories, Recommended and Optional, are statements that tell the driver what will give the user a better print experience.

The job properties that are not Required are handled by the print sub-system (either by the driver or a higher level component like a rasterizer). They fall into a number of categories. The first one is the set of job properties that can be handled by the driver or simulated by the rasterizer. An example of this is ‘Copies’ or ‘NumberUp’. The driver can handle these properties through commands sent to the print device. Otherwise, the rasterizer will simulate the property to the driver. For example, if ‘Copies=2’ appears in the job properties and the driver does not understand ‘Copies’, then the rasterizer will send two print jobs to the driver. If it is handled by the driver, then the driver will only receive one print job. Another set of properties that cannot be simulated by the rasterizer will only allow a minimal level of support. This support is limited to one default value that can be enumerated or set. For example, ‘SheetCollate’ can only be ‘SheetCollate=SheetUncollated’ if the driver does not understand collation.

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5.2 Non-Common Job Properties

All of the other job properties for a printer driver falls in the category of non-common job properties.

5.3 Raster simulation

- 1) Handle high level drawing call
- 2) Otherwise, call is broken down into series of lower level drawing calls
- 3) Otherwise, a series of banded bitmaps is received

5.4 Discovery

The print sub-system needs some way to know what driver are installed that can handle this standard.

Registry in etc file

Certain directory

TCP/IP daemon

5.5 Communication

Separation of driver from application in regards to licensing

5.6 C-API

5.7 Java-API

APPENDIX: X CHANGES < Editor >

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| <i>Date</i> | <i>Affected Version</i> | <i>Author</i> | <i>Change</i> |
|-------------|-------------------------|---------------|---------------|
| | | | |