Linux Standard Base Imaging Specification
List of Tables

2-1 Normative References
3-1 Standard Library Names
7-1 libcups Definition
7-2 libcups - CUPS Convenience ABI Function Interfaces
7-3 libcups - CUPS Convenience ABI Deprecated Function Interfaces
7-4 libcupsimage Definition
7-5 libcupsimage - CUPS Raster ABI Function Interfaces
7-6 libcupsimage - CUPS Raster ABI Deprecated Function Interfaces
8-1 Commands And Utilities
10-1 libsane Definition
10-2 libsane - libsane interfaces Function Interfaces
A-1 libsane Function Interfaces
A-2 libcups Function Interfaces
A-3 libcupsimage Function Interfaces
Foreword

This is version 5.0 of the Linux Standard Base Imaging Specification. This specification is one of a series of volumes under the collective title Linux Standard Base:

- Common
- Core
- Desktop
- Languages
- Imaging

Note that the Core and Desktop volumes consist of a generic volume augmented by an architecture-specific volume.
Status of this Document

This is a released specification, version 5.0. Other documents may supersede or augment this specification.

A list of current released Linux Standard Base (LSB) specifications is available at http://refspecs.linuxbase.org (http://refspecs.linuxbase.org/).

If you wish to make comments regarding this document in a manner that is tracked by the LSB project, please submit them using our public bug database at http://bugs.linuxbase.org. Please enter your feedback, carefully indicating the title of the section for which you are submitting feedback, and the volume and version of the specification where you found the problem, quoting the incorrect text if appropriate. If you are suggesting a new feature, please indicate what the problem you are trying to solve is. That is more important than the solution, in fact.

If you do not have or wish to create a bug database account then you can also e-mail feedback to <lsb-discuss@lists.linuxfoundation.org> (subscribe (http://lists.linuxfoundation.org/mailman/listinfo/lsb-discuss), archives (http://lists.linuxfoundation.org/pipermail/lsb-discuss/)), and arrangements will be made to transpose the comments to our public bug database.
Introduction

The LSB defines a binary interface for application programs that are compiled and packaged for LSB-conforming implementations on many different hardware architectures. A binary specification must include information specific to the computer processor architecture for which it is intended. To avoid the complexity of conditional descriptions, the specification has instead been divided into generic parts which are augmented by one of several architecture-specific parts, depending on the target processor architecture; the generic part will indicate when reference must be made to the architecture part, and vice versa.

This document should be used in conjunction with the documents it references. This document enumerates the system components it includes, but descriptions of those components may be included entirely or partly in this document, partly in other documents, or entirely in other reference documents. For example, the section that describes system service routines includes a list of the system routines supported in this interface, formal declarations of the data structures they use that are visible to applications, and a pointer to the underlying referenced specification for information about the syntax and semantics of each call. Only those routines not described in standards referenced by this document, or extensions to those standards, are described in the detail. Information referenced in this way is as much a part of this document as is the information explicitly included here.

The specification carries a version number of either the form $x.y$ or $x.y.z$. This version number carries the following meaning:

1. The first number ($x$) is the major version number. Versions sharing the same major version number shall be compatible in a backwards direction; that is, a newer version shall be compatible with an older version. Any deletion of a library results in a new major version number. Interfaces marked as deprecated may be removed from the specification at a major version change.

2. The second number ($y$) is the minor version number. Libraries and individual interfaces may be added, but not removed. Interfaces may be marked as deprecated at a minor version change. Other minor changes may be permitted at the discretion of the LSB workgroup.

3. The third number ($z$), if present, is the editorial level. Only editorial changes should be included in such versions.

Since this specification is a descriptive Application Binary Interface, and not a source level API specification, it is not possible to make a guarantee of 100% backward compatibility between major releases. However, it is the intent that those parts of the binary interface that are visible in the source level API will remain backward compatible from version to version, except where a feature marked as "Deprecated" in one release may be removed from a future release. Implementors are strongly encouraged to make use of symbol versioning to permit simultaneous support of applications conforming to different releases of this specification.

LSB is a trademark of the Linux Foundation. Developers of applications or implementations interested in using the trademark should see the Linux Foundation Certification Policy for details.
I Introductory Elements
1 Scope

1.1 General

The Linux Standard Base (LSB) defines a system interface for compiled applications and a minimal environment for support of installation scripts. Its purpose is to enable a uniform industry standard environment for high-volume applications conforming to the LSB.

These specifications are composed of two basic parts: a common part describing those parts of the interface that remain constant across all implementations of the LSB, and an architecture-specific part describing the parts of the interface that vary by processor architecture. Together, the common part and the relevant architecture-specific part for a single hardware architecture provide a complete interface specification for compiled application programs on systems that share a common hardware architecture.

The LSB contains both a set of Application Program Interfaces (APIs) and Application Binary Interfaces (ABIs). APIs may appear in the source code of portable applications, while the compiled binary of that application may use the larger set of ABIs. A conforming implementation provides all of the ABIs listed here. The compilation system may replace (e.g. by macro definition) certain APIs with calls to one or more of the underlying binary interfaces, and may insert calls to binary interfaces as needed.

The LSB is primarily a binary interface definition. Not all of the source level APIs available to applications may be contained in this specification.

1.2 Module Specific Scope

This is the Imaging module of the Linux Standard Base (LSB). This module provides the fundamental system interfaces, libraries, and runtime environment upon which conforming applications and libraries requiring the LSB Imaging module depend.

Interfaces described in LSB Imaging are mandatory except where explicitly listed otherwise. Interfaces described in the LSB Imaging module supplement those described in the LSB Core module. They do not depend on other LSB modules.
2 Normative References

The specifications listed below are referenced in whole or in part by the LSB Imaging specification. Such references may be normative or informative; a reference to specifica-
tion shall only be considered normative if it is explicitly cited as such. The LSB Imagi-
ning specification may make normative references to a portion of these specifications
(that is, to define a specific function or group of functions); in such cases, only the ex-
plicitly referenced portion of the specification is to be considered normative.

Table 2-1 Normative References

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>CUPS API Reference</td>
<td>CUPS 1.2 API Reference</td>
<td><a href="http://www.cups.org/documentation.php/doc-1.2/">http://www.cups.org/documentation.php/doc-1.2/</a></td>
</tr>
<tr>
<td>Filesystem Hierarchy Standard</td>
<td>Filesystem Hierarchy Standard (FHS) 3.0</td>
<td><a href="http://refspecs.linuxbase.org/fhs">http://refspecs.linuxbase.org/fhs</a></td>
</tr>
</tbody>
</table>
3 Requirements

3.1 Relevant Libraries

The libraries listed in Table 3-1 shall be available on a Linux Standard Base system, with the specified runtime names. This list may be supplemented or amended by an architecture-specific specification.

Table 3-1 Standard Library Names

<table>
<thead>
<tr>
<th>Library</th>
<th>Runtime Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>libcups</td>
<td>libcups.so.2</td>
</tr>
<tr>
<td>libcupsimage</td>
<td>libcupsimage.so.2</td>
</tr>
<tr>
<td>libsane</td>
<td>libsane.so.1</td>
</tr>
</tbody>
</table>

These libraries will be in an implementation-defined directory which the dynamic linker shall search by default.
4 Terms and Definitions

For the purposes of this document, the terms given in ISO/IEC Directives, Part 2, Annex H and the following apply.

archLSB

Some LSB specification documents have both a generic, architecture-neutral part and an architecture-specific part. The latter describes elements whose definitions may be unique to a particular processor architecture. The term archLSB may be used in the generic part to refer to the corresponding section of the architecture-specific part.

Binary Standard, ABI

The total set of interfaces that are available to be used in the compiled binary code of a conforming application, including the run-time details such as calling conventions, binary format, C++ name mangling, etc.

Implementation-defined

Describes a value or behavior that is not defined by this document but is selected by an implementor. The value or behavior may vary among implementations that conform to this document. An application should not rely on the existence of the value or behavior. An application that relies on such a value or behavior cannot be assured to be portable across conforming implementations. The implementor shall document such a value or behavior so that it can be used correctly by an application.

Shell Script

A file that is read by an interpreter (e.g., awk). The first line of the shell script includes a reference to its interpreter binary.

Source Standard, API

The total set of interfaces that are available to be used in the source code of a conforming application. Due to translations, the Binary Standard and the Source Standard may contain some different interfaces.

Undefined

Describes the nature of a value or behavior not defined by this document which results from use of an invalid program construct or invalid data input. The value or behavior may vary among implementations that conform to this document. An application should not rely on the existence or validity of the value or behavior. An application that relies on any particular value or behavior cannot be assured to be portable across conforming implementations.

Unspecified

Describes the nature of a value or behavior not specified by this document which results from use of a valid program construct or valid data input. The value or behavior may vary among implementations that conform to this document. An application should not rely on the existence or validity of the value or behavior. An application that relies on any particular value or behavior cannot be assured to be portable across conforming implementations.

In addition, for the portions of this specification which build on IEEE Std 1003.1-2001, the definitions given in IEEE Std 1003.1-2001, Base Definitions, Chapter 3 apply.
5 Documentation Conventions

Throughout this document, the following typographic conventions are used:

function()
the name of a function

cmd
the name of a command or utility

CONSTANT
a constant value

parameter
a parameter

variable
a variable

Throughout this specification, several tables of interfaces are presented. Each entry in these tables has the following format:

name
the name of the interface

(symver)
An optional symbol version identifier, if required.

[refno]
A reference number indexing the table of referenced specifications that follows this table.

For example,

forkpty(GLIBC_2.0) [SUSv4]

refers to the interface named forkpty() with symbol version GLIBC_2.0 that is defined in the reference indicated by the tag SUSv4.

Note: For symbols with versions which differ between architectures, the symbol versions are defined in the architecture specific parts of of this module specification only. In the generic part, they will appear without symbol versions.
6 PPD Format Extensions

The Postscript Printer Description (PPD) format is used in a text file to describe device capabilities for a printing device. PPD files shall conform to the format described by PPD Specification and PPD Specification Update. In addition, several extensions to the standard attribute list are recognized, as listed below. The "cupsVersion" attribute is required in a compliant PPD, while the other attributes are optional.

cupsColorProfile
This string attribute specifies an sRGB-based color profile consisting of gamma and density controls and a 3x3 CMY color transform matrix.
The attribute has the following parameter usage:
*cupsColorProfile Resolution/MediaType: "density gamma m00 m01 m02 m10 m11 m12 m20 m21 m22"
The Resolution and MediaType values may be "-" to act as a wildcard. Otherwise, they must match one of the Resolution or MediaType attributes defined in the PPD file.
The density and gamma values define the gamma and density adjustment function such that (in terms of C math):
f(x) = density * pow(x, gamma)
The m00 through m22 values define a 3x3 transformation matrix for the CMY color values. The density function is applied after the CMY transformation:
\[ \begin{bmatrix} m00 & m01 & m02 \\ m10 & m11 & m12 \\ m20 & m21 & m22 \end{bmatrix} \]

cupsFax
This boolean attribute specifies whether the PPD defines a facsimile device. The default is false.

cupsFilter
The attribute has the following parameter usage:
*cupsFilter: "source/type cost program"
This string attribute provides a conversion rule from the given source type to the printer's native format using the filter "program". A source type is specified according to the conventions of the MIME specification, using "type/subtype" nomenclature, and may refer to a standard MIME type or a CUPS-specific MIME type using the prefix "vnd.cups:" in the subtype. If a printer supports the source type directly, the special filter program "-" may be specified. The cost is an arbitrary positive integer, used to calculate the relative impact a print job has on system load.

cupsManualCopies
This boolean attribute notifies the RIP filters that the destination printer does not support copy generation in hardware. The default value is false.

cupsModelNumber
This integer attribute specifies a printer-specific model number. This number can be used by a filter program to adjust the output for a specific model of printer.

cupsVersion
The attribute has the following parameter usage:
*cupsVersion: "major.minor"
This required attribute describes which version of the CUPS PPD file extensions
was used. Currently it must be the string "1.0" or "1.1". The strings "1.2" and "1.3"
represent newer versions of the CUPS PPD API that are not covered in this version
of the specification, and are currently not allowed, although they may be found in
non-conforming PPDs which use a newer version of the CUPS PPD specification.

FoomaticIDs
The attribute has the following parameter usage:
*FoomaticIDs printer driver
The parameters correspond to the IDs in the Foomatic database for the printer and
driver, respectively.

FoomaticNoPageAccounting
This boolean attribute tells foomatic-rip whether or not to insert accounting
information into the PostScript data stream. By default, foomatic-rip will insert this
information.

FoomaticRIPCommandLine
The attribute has the following parameter usage:
*FoomaticRIPCommandLine "code"
This attribute defines the command line in the "code" parameter for the renderer
that is called by foomatic-rip. The command must take PostScript on standard input
and provide the job data stream in the printer's native language on standard output.
The command must exit with status 0 if the conversion was successful and exit
with another status if an error occurs. The "code" parameter may contain option
setting wildcards, as described below under "FoomaticRIPOption".

FoomaticRIPDefault
The attribute has the following parameter usage:
*FoomaticRIPDefaultOptionName value
This attribute sets a default for a Foomatic option. The name of the attribute should
contain the name of the option appended to "FoomaticRIPDefault", with the de-
sired default value as the only parameter.

This option is only used to provide numeric options in the PPD, which are not sup-
ported by the Adobe spec, via enumerated options, and should not be used except
for that purpose.

FoomaticRIPOption
The attribute has the following parameter usage:
*FoomaticRIPOption name: type style spot [order]
This attribute sets options for the command line specified in the "FoomaticRIP-
CommandLine" attribute. The "name" parameter specifies the option name, the
"type" parameter specifies the option type, the "style" parameter specifies one of
"CmdLine", "JCL", "PS", or "Composite", and the "spot" parameter specifies a let-
ter, which is prepended with a "%" and used in the "FoomaticRIPCommandLine"
attribute to indicate where the option should go in the command line. The optional
"order" parameter indicates an order number for one-choice options.

FoomaticRIPOptionAllowedChars
The attribute has the following parameter usage:
*FoomaticRIPOptionAllowedChars name: "code"
This option sets a list of allowed characters in a string option. The "name" para-
meter identifies the option, while the "code" parameter is a list of allowed charac-
FoomaticRIPOptionAllowedRegExp

The attribute has the following parameter usage:

*FoomaticRIPOptionAllowedRegExp name: "code"

This option causes the option named by "name" to be validated by the Perl-style regular expression in "code".

FoomaticRIPOptionMaxLength

The attribute has the following parameter usage:

*FoomaticRIPOptionMaxLength name: length

For string or password options, this attribute sets a maximum length which can be returned. The "name" parameter identifies the option, and the "length" parameter is the maximum number of characters allowed.

FoomaticRIPOptionPrototype

The attribute has the following parameter usage:

*FoomaticRIPOptionPrototype name: "code"

For string, password, or simulated numeric options, this attribute sets a code prototype to be inserted into the output. This works for options where the FoomaticRIP-Option "style" parameter is set to CmdLine, JCL, or PS. The value of the option can be represented with the string "%s" in the "code" parameter.

FoomaticRIPOptionRange

The attribute has the following parameter usage:

*FoomaticRIPOptionRange name: min max

This attribute adds a minimum and maximum limit to numeric options (that are simulated by Foomatic via enumerated options). The "name" parameter identifies the option, while the "min" and "max" parameters set the minimum and maximum allowed values, respectively, for the option.

FoomaticRIPOptionSetting

The attribute has the following parameter usage:

*FoomaticRIPOptionSetting name=choice: "code"

This attribute adds code to an option, identified by "name", with a FoomaticRIP-Option "style" parameter set to Composite. It inserts options for other options that are members of the Composite option "name".

FoomaticRIPPostPipe

The attribute has the following parameter usage:

*FoomaticRIPPostPipe "code"

This attribute defines the command line in the "code" parameter for the job output command used by foomatic-rip in standalone mode. The command should take printer-native data on standard input. The "code" parameter should include the preceding shell pipe symbol ("|").
Il Printing Libraries
7 Libraries

7.1 Interfaces for libcups

Table 7-1 defines the library name and shared object name for the libcups library.

<table>
<thead>
<tr>
<th>Library:</th>
<th>libcups</th>
</tr>
</thead>
<tbody>
<tr>
<td>SONAME:</td>
<td>libcups.so.2</td>
</tr>
</tbody>
</table>

The behavior of the interfaces in this library is specified by the following specifications:
[CUPS 1.2] CUPS API Reference
[LSB] This Specification

7.1.1 CUPS Convenience ABI

7.1.1.1 Interfaces for CUPS Convenience ABI

An LSB conforming implementation shall provide the generic functions for CUPS Convenience ABI specified in Table 7-2, with the full mandatory functionality as described in the referenced underlying specification.

Table 7-2 libcups - CUPS Convenience ABI Function Interfaces

<table>
<thead>
<tr>
<th>cupsAddDest [LSB]</th>
<th>cupsAddOption [LSB]</th>
<th>cupsCancelJob [LSB]</th>
<th>cupsDoAuthentication [CUPS 1.2]</th>
</tr>
</thead>
<tbody>
<tr>
<td>cupsDoFileRequest [CUPS 1.2]</td>
<td>cupsEncodeOptions [CUPS 1.2]</td>
<td>cupsEncryption [LSB]</td>
<td>cupsFreeDest [LSB]</td>
</tr>
<tr>
<td>cupsGetDest [LSB]</td>
<td>cupsGetDest2 [CUPS 1.2]</td>
<td>cupsGetFile [CUPS 1.2]</td>
<td></td>
</tr>
<tr>
<td>cupsMarkOptions [LSB]</td>
<td>cupsParseOptions [LSB]</td>
<td>cupsPrintFile [LSB]</td>
<td>cupsPrintFile2 [CUPS 1.2]</td>
</tr>
<tr>
<td>cupsPrintFiles [LSB]</td>
<td>cupsPrintFiles2 [CUPS 1.2]</td>
<td>cupsPutFd [CUPS 1.2]</td>
<td>cupsPutFile [CUPS 1.2]</td>
</tr>
</tbody>
</table>
An LSB conforming implementation shall provide the generic deprecated functions for CUPS Convenience ABI specified in Table 7-3, with the full mandatory functionality as described in the referenced underlying specification.

**Note:** These interfaces are deprecated, and applications should avoid using them. These interfaces may be withdrawn in future releases of this specification.

### Table 7-3 libcups - CUPS Convenience ABI Deprecated Function Interfaces

<table>
<thead>
<tr>
<th>Function</th>
<th>LSB</th>
<th>CUPS 1.2</th>
<th>LSB</th>
<th>CUPS 1.2</th>
<th>LSB</th>
<th>CUPS 1.2</th>
<th>LSB</th>
<th>CUPS 1.2</th>
<th>LSB</th>
<th>CUPS 1.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>httpConnect</td>
<td></td>
<td>[CUPS 1.2]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ppdClose</td>
<td>[LSB]</td>
<td></td>
<td>[LSB]</td>
<td></td>
<td>[LSB]</td>
<td></td>
<td>[LSB]</td>
<td></td>
<td>[LSB]</td>
<td></td>
</tr>
<tr>
<td>ppdEmitFd</td>
<td>[LSB]</td>
<td></td>
<td>[LSB]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ppdFindChoice</td>
<td>[LSB]</td>
<td></td>
<td>[LSB]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ppdIsMarked</td>
<td>[LSB]</td>
<td></td>
<td>[LSB]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ppdOpen</td>
<td>[LSB]</td>
<td></td>
<td>[LSB]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ppdPageSize</td>
<td>[LSB]</td>
<td></td>
<td>[LSB]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ppdPageLength</td>
<td>[LSB]</td>
<td></td>
<td>[LSB]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

© 2015 Linux Foundation
7.2 Data Definitions for libcups

This section defines global identifiers and their values that are associated with interfaces contained in libcups. These definitions are organized into groups that correspond to system headers. This convention is used as a convenience for the reader, and does not imply the existence of these headers, or their content. Where an interface is defined as requiring a particular system header file all of the data definitions for that system header file presented here shall be in effect.

This section gives data definitions to promote binary application portability, not to repeat source interface definitions available elsewhere. System providers and application developers should use this ABI to supplement - not to replace - source interface definition specifications.

This specification uses the ISO C (1999) C Language as the reference programming language, and data definitions are specified in ISO C format. The C language is used here as a convenient notation. Using a C language description of these data objects does not preclude their use by other programming languages.

7.2.1 cups/cups.h

```c
#define _CUPS_CUPS_H_
#define CUPS_VERSION_MAJOR 1
#define CUPS_VERSION_MINOR 1
#define CUPS_VERSION PATCH 1.0123
#define cupsLangDefault() cupsLangGet(NULL)

typedef enum {
    CUPS_AUTO_ENCODING = -1,
    CUPS_US_ASCII = 0,
    CUPS_ISO8859_1 = 1,
    CUPS_ISO8859_2 = 2,
    CUPS_ISO8859_3 = 3,
    CUPS_ISO8859_4 = 4,
    CUPS_ISO8859_5 = 5,
    CUPS_ISO8859_6 = 6,
    CUPS_ISO8859_7 = 7,
    CUPS_ISO8859_8 = 8,
    CUPS_ISO8859_9 = 9,
    CUPS_ISO8859_10 = 10,
    CUPS_UTF8 = 11,
    CUPS_ISO8859_13 = 12,
    CUPS_ISO8859_14 = 13,
    CUPS_ISO8859_15 = 14,
    CUPSWINDOWS_874 = 15,
    CUPS_WINDOWS_1250 = 16,
    CUPS_WINDOWS_1251 = 17,
    CUPS_WINDOWS_1252 = 18,
    CUPS_WINDOWS_1253 = 19,
    CUPS_WINDOWS_1254 = 20,
    CUPS_WINDOWS_1255 = 21,
    CUPS_WINDOWS_1256 = 22,
    CUPS_WINDOWS_1257 = 23,
    CUPS_WINDOWS_1258 = 24,
    CUPS_KOII8 R = 25,
    CUPS_KOII8 U = 26
} cups_encoding_t;

typedef struct cups_lang_s {
    struct cups_lang_s *next;
    int used;
    cups_encoding_t encoding;
    char language[16];
    cups_array_t *strings;
};
```
typedef enum {
    HTTP_ENCRYPT_IF_REQUESTED = 0,
    HTTP_ENCRYPT_NEVER = 1,
    HTTP_ENCRYPT_REQUIRED = 2,
    HTTP_ENCRYPT_ALWAYS = 3
} http_encryption_t;

typedef struct {
    char *name;
    char *value;
} cups_option_t;

typedef struct {
    char *name;
    char *instance;
    int is_default;
    int num_options;
    cups_option_t *options;
} cups_dest_t;

typedef enum {
    HTTP_WAITING = 0,
    HTTP_OPTIONS = 1,
    HTTP_GET = 2,
    HTTP_GET_SEND = 3,
    HTTP_HEAD = 4,
    HTTP_POST = 5,
    HTTP_POST_RECV = 6,
    HTTP_POST_SEND = 7,
    HTTP_PUT = 8,
    HTTP_PUT_RECV = 9,
    HTTP_DELETE = 10,
    HTTPTRACE = 11,
    HTTP_CLOSE = 12,
    HTTP_STATUS = 13
} http_state_t;

typedef enum {
    HTTP_ERROR = -1,
    HTTP_CONTINUE = 100,
    HTTP_SWITCHING_PROTOCOLS = 101,
    HTTP_OK = 200,
    HTTP_CREATED = 201,
    HTTP_ACCEPTED = 202,
    HTTP_NOT_AUTHORITATIVE = 203,
    HTTP_NO_CONTENT = 204,
    HTTP_RESET_CONTENT = 205,
    HTTP_PARTIAL_CONTENT = 206,
    HTTP_MULTIPLE_CHOICES = 300,
    HTTP_MOVED_PERMANENTLY = 301,
    HTTP_MOVED_TEMPORARILY = 302,
    HTTPSEE_OTHER = 303,
    HTTP_NOT_MODIFIED = 304,
    HTTP_USE_PROXY = 305,
    HTTP_BAD_REQUEST = 400,
    HTTP_UNAUTHORIZED = 401,
    HTTP_PAYMENT_REQUIRED = 402,
    HTTP_FORBIDDEN = 403,
    HTTP_NOT_FOUND = 404,
    HTTP_METHOD_NOT_ALLOWED = 405,
    HTTP_NOTACCEPTABLE = 406,
    HTTP_PROXY_AUTHENTICATION = 407,
    HTTP_REQUEST_TIMEOUT = 408,
    HTTP_CONFLICT = 409,
    HTTP_GONE = 410,
    HTTP_LENGTH_REQUIRED = 411,
    HTTP_PRECONDITION = 412,
    HTTP_REQUEST_TOO_LARGE = 413,
    HTTP_URI_TOO_LONG = 414,
}
typedef enum {HTTP_0_9 = 9, HTTP_1_0 = 100, HTTP_1_1 = 101} http_version_t;

typedef enum {HTTP_KEEPALIVE_OFF = 0, HTTP_KEEPALIVE_ON = 1} http_keepalive_t;

typedef enum {HTTP_ENCODE_LENGTH = 0, HTTP_ENCODE_CHUNKED = 1} http_encoding_t;

typedef enum {IPP_JOB_PENDING = 3, IPP_JOB_HELD = 4, IPP_JOB_PROCESSING = 5, IPP_JOB_STOPPED = 6, IPP_JOB_CANCELLMED = 7, IPP_JOB_ABORTED = 8, IPP_JOB_COMPLETED = 9} ipp_jstate_t;

typedef struct {
    int id;
    char *dest;
    char *title;
    char *user;
    char *format;
    ipp_jstate_t state;
    int size;
    int priority;
    time_t completed_time;
    time_t creation_time;
    time_t processing_time;
} cups_job_t;

typedef struct _cups_array_s cups_array_t;

extern int cupsAddDest(const char *name, const char *instance, int num_dests, cups_dest_t * *dests);
extern int cupsAddOption(const char *name, const char *value, int num_options, cups_option_t *options);
extern int cupsCancelJob(const char *printer, int job);
extern int cupsDoAuthentication(http_t * http, const char *method, const char *resource);
extern ipp_t *cupsDoFileRequest(http_t * http, ipp_t * request, const char *resource, const char *filename);
extern void cupsEncodeOptions(ipp_t * ipp, int num_options, cups_option_t * options);
extern http_encryption_t cupsEncryption(void);
extern void cupsFreeDests(int num_dests, cups_dest_t * dests);
extern void cupsFreeJobs(int num_jobs, cups_job_t * jobs);
extern void cupsFreeOptions(int num_options, cups_option_t * options);
extern const char *cupsGetDefault(void);
extern const char *cupsGetDefault2(http_t * http);
extern cups_dest_t *cupsGetDest(const char *name, const char *instance,
    int num_dests, cups_dest_t * dests);
extern int cupsGetDests(cups_dest_t * *dests);
extern int cupsGetDests2(http_t * http, cups_dest_t * *dests);
extern http_status_t cupsGetFd(http_t * http, const char *resource,
    int fd);
extern http_status_t cupsGetFile(http_t * http, const char *resource,
    const char *filename);
extern int cupsGetJobs(cups_job_t * *jobs, const char *dest, int myjobs,
    int completed);
extern int cupsGetJobs2(http_t * http, cups_job_t * *jobs,
    const char *dest, int myjobs, int completed);
extern const char *cupsGetOption(const char *name, int num_options,
    cups_option_t * options);
extern const char *cupsGetPPD(const char *printer);
extern const char *cupsGetPPD2(http_t * http, const char *printer);
extern const char *cupsGetPassword(const char *prompt);
extern const char *cupsLangEncoding(cups_lang_t * lang);
extern void cupsLangFlush(void);
extern void cupsLangFree(cups_lang_t * lang);
extern cups_lang_t *cupsLangGet(const char *language);
extern ipp_status_t cupsLastError(void);
extern int cupsMarkOptions(ppd_file_t * ppd, int num_options,
    cups_option_t * options);
extern int cupsParseOptions(const char *arg, int num_options,
    cups_option_t * *options);
extern int cupsPrintFile(const char *printer, const char *filename,
    const char *title, int num_options,
    cups_option_t * options);
extern int cupsPrintFile2(http_t * http, const char *printer,
    const char *filename, const char *title, int num_options,
    cups_option_t * options);
extern int cupsPrintFiles(const char *printer, int num_files,
    const char **files, const char *title, int num_options,
    cups_option_t * options);
extern int cupsPrintFiles2(http_t * http, const char *printer,
    int num_files, const char **files, const char *title, int num_options,
    cups_option_t * options);
extern http_status_t cupsPutFd(http_t * http, const char *resource,
    int fd);
extern http_status_t cupsPutFile(http_t * http, const char *resource,
    const char *filename);
extern const char *cupsServer(void);
extern void cupsSetDests(int num_dests, cups_dest_t * dests);
extern int cupsSetDests2(http_t * http, int num_dests,
    cups_dest_t * dests);
extern void cupsSetEncryption(http_encryption_t e);
extern void cupsSetPasswordCB(const char *(*cb) (const char *));
extern void cupsSetServer(const char *server);
extern void cupsSetUser(const char *user);
extern int cupsTempFd(char *filename, int len);
extern const char *cupsUser(void);

7.2.2 cups/http.h

#define HTTP_MAX_URI 1024
#define HTTP_MAX_BUFFER 2048
#define HTTP_MAX_HOST 256
#define HTTP_MAX_VALUE 256

typedef enum http_auth_e {
    HTTP_AUTH_NONE,
    HTTP_AUTH_BASIC,
    HTTP_AUTH_MD5,
    HTTP_AUTH_MD5_SESS,
    HTTP_AUTH_MD5_INT,
    HTTP_AUTH_MD5_SESS_INT,
    HTTP_AUTH_NEGOTIATE
} http_auth_t;

typedef enum http_field_e {
    HTTP_FIELD_UNKNOWN,
    HTTP_FIELD_ACCEPT_LANGUAGE,
    HTTP_FIELD_ACCEPT_RANGES,
    HTTP_FIELD_AUTHORIZATION,
    HTTP_FIELD_CONNECTION,
    HTTP_FIELD_CONTENT_ENCODING,
    HTTP_FIELD_CONTENT_LANGUAGE,
    HTTP_FIELD_CONTENT_LENGTH,
    HTTP_FIELD_CONTENT_LOCATION,
    HTTP_FIELD_CONTENT_MD5,
    HTTP_FIELD_CONTENT_RANGE,
    HTTP_FIELD_CONTENT_TYPE,
    HTTP_FIELD_CONTENT_VERSION,
    HTTP_FIELD_DATE,
    HTTP_FIELD_HOST,
    HTTP_FIELD_IF_MODIFIED_SINCE,
    HTTP_FIELD_IF_UNMODIFIED_SINCE,
    HTTP_FIELD_KEEP_ALIVE,
    HTTP_FIELD_LAST_MODIFIED,
    HTTP_FIELD_LINK,
    HTTP_FIELD_LOCATION,
    HTTP_FIELD_RANGE,
    HTTP_FIELD_REFERER,
    HTTP_FIELD_RETRY_AFTERT,
    HTTP_FIELD_TRANSFER_ENCODING,
    HTTP_FIELD_UPGRADE,
    HTTP_FIELD_USER_AGENT,
    HTTP_FIELD_WWW_AUTHENTICATE,
    HTTP_FIELD_MAX
} http_field_t;

typedef enum http_uri_status_e {
    HTTP_URI_OVERFLOW,
    HTTP_URI_BAD_ARGUMENTS,
    HTTP_URI_BAD_RESOURCE,
    HTTP_URI_BAD_PORT,
    HTTP_URI_BAD_HOSTNAME,
    HTTP_URI_BAD_USERNAME,
    HTTP_URI_BAD_SCHEME,
    HTTP_URI_BAD_URI,
    HTTP_URI_OK,
    HTTP_URI_MISSING_SCHEME,
    HTTP_URI_UNSUPPORTED_SCHEME,
    HTTP_URI_MISSING_RESOURCE
} http_uri_status_t;
typedef enum http_uri_coding_e {
    HTTP_URI_CODING_NONE,
    HTTP_URI_CODING_USERNAME,
    HTTP_URI_CODING_HOSTNAME,
    HTTP_URI_CODING_RESOURCE,
    HTTP_URI_CODING_MOST,
    HTTP_URI_CODING_QUERY,
    HTTP_URI_CODING_ALL
} http_uri_coding_t;

typedef union _http_addr_u {
    struct sockaddr addr;
    struct sockaddr_in ipv4;
    struct sockaddr_in6 ipv6;
    struct sockaddr_un un;
    char pad[256];
} http_addr_t;

typedef struct http_addrlist_s {
    struct http_addrlist_s *next;
    http_addr_t addr;
} http_addrlist_t;

extern void httpBlocking(http_t * http, int b);
extern int httpCheck(http_t * http);
extern void httpClearCookie(http_t * http);
extern void httpClearFields(http_t * http);
extern void httpClose(http_t * http);
extern http_t *httpConnect(const char *host, int port);
extern http_t *httpConnectEncrypt(const char *host, int port,
    http_encryption_t encryption);
extern char *httpDecode64_2(char *out, int *outlen, const char *
in);
extern int httpDelete(http_t * http, const char *uri);
extern char *httpEncode64_2(char *out, int outlen, const char *
in,
    int inlen);
extern int httpEncryption(http_t * http, http_encryption_t e);
extern int httpError(http_t * http);
extern void httpFlush(http_t * http);
extern int httpGet(http_t * http, const char *uri);
extern const char *httpGetCookie(http_t * http);
extern const char *httpGetDateString(time_t t);
extern const char *httpGetDateTime(const char *s);
extern const char *httpGetField(http_t * http, http_field_t field);
extern struct hostent *httpGetHostByName(const char *name);
extern char *httpGetSubField(http_t * http, http_field_t field,
    const char *name, char *value);
extern int httpGet(char *line, int length, http_t * http);
extern int httpHead(http_t * http, const char *uri);
extern void httpInitialize(void);
extern char *httpMD5(const char *, const char *, const char *,
    char *);
extern char *httpMD5Final(const char *, const char *, const char *,
    char *);
extern char *httpMD5String(const unsigned char *, char *);
extern int httpOptions(http_t * http, const char *uri);
extern int httpPost(http_t * http, const char *uri);
extern int httpPut(http_t * http, const char *uri);
extern void httpReconnect(http_t * http);
extern void httpSetCookie(http_t * http, const char *cookie);
extern void httpSetField(http_t * http, http_field_t field,
    const char *value);
extern const char *httpStatus(http_status_t status);
extern int httpTrace(http_t * http, const char *uri);
extern http_status_t httpUpdate(http_t * http);
extern int httpWait(http_t * http, int msec);
#defineIPP_MAX_NAME256
#defineIPP_MAX_LENGTH32767
#defineIPP_PORT631
#defineIPP_MAX_VALUES8
#defineCUPS_ADD_CLASSCUPS_ADD_MODIFY_CLASS
#defineCUPS_ADD_PRINTERCUPS_ADD_MODIFY_PRINTER
#defineIPP_ERROR_JOB_CANCELLEDIPP_JOB_CANCELED
#defineIPP_JOB_CANCELEDIPP_JOB_CANCELED
#defineIPP_VERSION"\001\001"

typedefenum{
    IPP_OK = 0,
    IPP_OK_SUBST = 1,
    IPP_OK_CONFLICT = 2,
    IPP_OK_IGNORED_SUBSCRIPTIONS = 3,
    IPP_OK_IGNORED_NOTIFICATIONS = 4,
    IPP_OK_TOO_MANY_EVENTS = 5,
    IPP_OK_BUT_CANCEL_SUBSCRIPTION = 6,
    IPP_BAD_REQUEST = 1024,
    IPP_OK_SUBST = 1025,
    IPP_OK_SUBST = 1026,
    IPP_OK_SUBST = 1027,
    IPP_OK_SUBST = 1028,
    IPP_OK_SUBST = 1029,
    IPP_OK_SUBST = 1030,
    IPP_OK_SUBST = 1031,
    IPP_OK_SUBST = 1032,
    IPP_OK_SUBST = 1033,
    IPP_OK_SUBST = 1034,
    IPP_OK_SUBST = 1035,
    IPP_OK_SUBST = 1036,
    IPP_OK_SUBST = 1037,
    IPP_OK_SUBST = 1038,
    IPP_OK_SUBST = 1039,
    IPP_OK_SUBST = 1040,
    IPP_OK_SUBST = 1041,
    IPP_OK_SUBST = 1042,
    IPP_OK_SUBST = 1043,
    IPP_OK_SUBST = 1044,
    IPP_OK_SUBST = 1045,
    IPP_OK_SUBST = 1046,
    IPP_OK_SUBST = 1047,
    IPP_OK_SUBST = 1048,
    IPP_OK_SUBST = 1049,
    IPP_OK_SUBST = 1050,
    IPP_OK_SUBST = 1051,
    IPP_OK_SUBST = 1052,
    IPP_OK_SUBST = 1053,
    IPP_OK_SUBST = 1054,
    IPP_OK_SUBST = 1055,
    IPP_OK_SUBST = 1056,
    IPP_OK_SUBST = 1057,
    IPP_OK_SUBST = 1058,
    IPP_OK_SUBST = 1059,
    IPP_OK_SUBST = 1060,
    IPP_OK_SUBST = 1061,
    IPP_OK_SUBST = 1062,
    IPP_OK_SUBST = 1063,
    IPP_OK_SUBST = 1064,
    IPP_OK_SUBST = 1065,
    IPP_OK_SUBST = 1066,
    IPP_OK_SUBST = 1067,
    IPP_OK_SUBST = 1068,
    IPP_OK_SUBST = 1069,
    IPP_OK_SUBST = 1070,
    IPP_OK_SUBST = 1071,
    IPP_OK_SUBST = 1072,
    IPP_OK_SUBST = 1073,
    IPP_OK_SUBST = 1074,
    IPP_OK_SUBST = 1075,
    IPP_OK_SUBST = 1076,
    IPP_OK_SUBST = 1077,
    IPP_OK_SUBST = 1078,
    IPP_OK_SUBST = 1079,
    IPP_OK_SUBST = 1080,
    IPP_OK_SUBST = 1081,
    IPP_OK_SUBST = 1082,
    IPP_OK_SUBST = 1083,
    IPP_OK_SUBST = 1084,
    IPP_OK_SUBST = 1085,
    IPP_OK_SUBST = 1086,
    IPP_OK_SUBST = 1087,
    IPP_OK_SUBST = 1088,
    IPP_OK_SUBST = 1089,
    IPP_OK_SUBST = 1090
}ipp_status_t;
typedefenumipp_tag_e{
    IPP_TAG_ZERO,
    IPP_TAG_OPERATION,
    IPP_TAG_JOB,
    IPP_TAG_END,
    IPP_TAG_PRINTER,
    IPP_TAG_UNSUPPORTED_GROUP,
    IPP_TAG_SUBSCRIPTION,
IPP_TAG_EVENT_NOTIFICATION,
IPP_TAG_UNSUPPORTED_VALUE,
IPP_TAG_DEFAULT,
IPP_TAG_UNKNOWN,
IPP_TAG_NOVALUE,
IPP_TAG_NOTSETTABLE,
IPP_TAG_DELETEATTR,
IPP_TAG_ADMINDEFINE,
IPP_TAG_INTEGER,
IPP_TAG_BOOLEAN,
IPP_TAG_ENUM,
IPP_TAG_STRING,
IPP_TAG_DATE,
IPP_TAG_RESOLUTION,
IPP_TAG_RANGE,
IPP_TAG_BEGIN_COLLECTION,
IPP_TAG_TEXTLANG,
IPP_TAG_NAMELANG,
IPP_TAG_END_COLLECTION,
IPP_TAG_TEXT,
IPP_TAG_NAME,
IPP_TAG_KEYWORD,
IPP_TAG_URI,
IPP_TAG_URISCHEME,
IPP_TAG_CHARSET,
IPP_TAG_LANGUAGE,
IPP_TAG_MIMETYPE,
IPP_TAG_MEMBERNAME,
IPP_TAG_MASK,
IPP_TAG_COPY
} ipp_tag_t;
typedef enum ipp_res_e {
  IPP_RES_PER_INCH,
  IPP_RES_PER_CM
} ipp_res_t;
typedef enum ipp_finish_e {
  IPP_FINISHINGS_NONE,
  IPP_FINISHINGS_STAPLE,
  IPP_FINISHINGS_PUNCH,
  IPP_FINISHINGS_COVER,
  IPP_FINISHINGS_BIND,
  IPP_FINISHINGS_SADDLE_STITCH,
  IPP_FINISHINGS_EDGE_STITCH,
  IPP_FINISHINGS_FOLD,
  IPP_FINISHINGS_TRIM,
  IPP_FINISHINGS_BALE,
  IPP_FINISHINGS_BOOKLET MAKER,
  IPP_FINISHINGS_JOB_OFFSET,
  IPP_FINISHINGS_STAPLE TOP_LEFT,
  IPP_FINISHINGS_STAPLE BOTTOM LEFT,
  IPP_FINISHINGS_STAPLE TOP_RIGHT,
  IPP_FINISHINGS_STAPLE BOTTOM RIGHT,
  IPP_FINISHINGS_EDGE STITCH_LEFT,
  IPP_FINISHINGS_EDGE STITCH TOP,
  IPP_FINISHINGS_EDGE STITCH BOTTOM,
  IPP_FINISHINGS_EDGE STITCH TOP,
  IPP_FINISHINGS_EDGE STITCH BOTTOM,
  IPP_FINISHINGS_STAPLE DUAL LEFT,
  IPP_FINISHINGS_STAPLE DUAL TOP,
  IPP_FINISHINGS_STAPLE DUAL RIGHT,
  IPP_FINISHINGS_STAPLE DUAL BOTTOM,
  IPP_FINISHINGS BIND LEFT,
  IPP_FINISHINGS BIND TOP,
  IPP_FINISHINGS BIND RIGHT,
  IPP_FINISHINGS BIND BOTTOM
} ipp_finish_t;
typedef enum ipp_orient_e {
typedef enum ipp_orient_t {
    IPP_PORTRAIT,
    IPP_LANDSCAPE,
    IPP_REVERSE_LANDSCAPE,
    IPP_REVERSE_PORTRAIT
} ipp_orient_t;
typedef enum ipp_quality_e {
    IPP_QUALITY_DRAFT,
    IPP_QUALITY_NORMAL,
    IPP_QUALITY_HIGH
} ipp_quality_t;
typedef enum ipp_pstate_e {
    IPP_PRINTER_IDLE,
    IPP_PRINTER_PROCESSING,
    IPP_PRINTER_STOPPED
} ipp_pstate_t;
typedef enum ipp_state_e {
    IPP_ERROR,
    IPP_IDLE,
    IPP_HEADER,
    IPP_ATTRIBUTE,
    IPP_DATA
} ipp_state_t;
typedef enum ipp_op_e {
    IPP_PRINT_JOB,
    IPP_PRINT_URI,
    IPP_VALIDATE_JOB,
    IPP_CREATE_JOB,
    IPP_SEND_DOCUMENT,
    IPP_SEND_URI,
    IPPCANCEL_JOB,
    IPP_GET_JOB_ATTRIBUTES,
    IPP Get_JOBS,
    IPP_GET_PRINTER_ATTRIBUTES,
    IPP_HOLD_JOB,
    IPP_RELEASE_JOB,
    IPP_RESTART_JOB,
    IPP_PAUSE_PRINTER,
    IPP_RESUME_PRINTER,
    IPP_PURGE_JOBS,
    IPP_SET_PRINTER_ATTRIBUTES,
    IPP_SET_JOB_ATTRIBUTES,
    IPP_GET_PRINTER_SUPPORTED_VALUES,
    IPP_CREATE_PRINTER_SUBSCRIPTION,
    IPP CREATE_JOB_SUBSCRIPTION,
    IPP Get_SUBSCRIPTION_ATTRIBUTES,
    IPP Get_SUBSCRIPTIONS,
    IPP RENEW_SUBSCRIPTION,
    IPP CANCEL_SUBSCRIPTION,
    IPP_GET_NOTIFICATIONS,
    IPP_SEND_NOTIFICATIONS,
    IPP_GET_PRINT_SUPPORT_FILES,
    IPP_ENABLE_PRINTER,
    IPP_DISABLE_PRINTER,
    IPP_PAUSE_PRINTER_AFTER_CURRENT_JOB,
    IPP_HOLD_NEW_JOBS,
    IPP_RELEASE_HELD_NEW_JOBS,
    IPP DEACTIVATE_PRINTER,
    IPP ACTIVATE_PRINTER,
    IPP RESTART_PRINTER,
    IPP_SHUTDOWN_PRINTER,
    IPP STARTUP.PRINTER,
    IPP_REPROCESS_JOB,
    IPPCANCEL_CURRENT_JOB,
    IPP SUSPEND_CURRENT_JOB,
    IPP_RESUME_JOB,
    IPP PROMOTE_JOB,
IPP_SCHEDULE_JOB_AFTER,
IPP_PRIVATE,
CUPS_GET_DEFAULT,
CUPS_GET_PRINTERS,
CUPS_ADD_MODIFY_PRINTER,
CUPS_DELETE_PRINTER,
CUPS_GET_CLASSES,
CUPS_ADD_MODIFY_CLASS,
CUPS_DELETE_CLASS,
CUPS_ACCEPT_JOBS,
CUPS_REJECT_JOBS,
CUPS_SET_DEFAULT,
CUPS_GET_DEVICES,
CUPS_GET_PPDS,
CUPS_MOVE_JOB,
CUPS_AUTHENTICATE_JOB,
CUPS_GET_PPD
} ipp_op_t;
typedef unsigned char ipp uchar_t;
typedef ssize_t(*ipp iocb_t) (void *, ipp uchar_t *, size_t);
typedef union ipp request_u {
  struct {
    ipp uchar_t version[2];
    int op status;
    int request_id;
  } any;
  struct {
    ipp uchar_t version[2];
    ipp op t operation_id;
    int request_id;
  } op;
  struct {
    ipp uchar_t version[2];
    ipp status t status code;
    int request_id;
  } status;
  struct {
    ipp uchar_t version[2];
    ipp status t status code;
    int request_id;
  } event;
} ipp request t;
typedef struct ipp s {
  ipp state t state;
  ipp request t request;
  ipp attribute t *attrs;
  ipp attribute t *last;
  ipp attribute t *current;
  ipp tag t curtag;
} ipp t;
typedef union ipp value u {
  int integer;
  char boolean;
  ipp uchar t date[11];
  struct {
    int xres;
    int yres;
    ipp res t units;
  } resolution;
  struct {
    int lower;
    int upper;
  } range;
  struct {
    char *charset;
    char *text;
typedef struct ipp_attribute_s {
    struct ipp_attribute_s *next;
    ipp_tag_t group_tag;
    ipp_value_t value_tag;
    char *name;
    int num_values;
    ipp_value_t values[1];
} ipp_attribute_t;

extern ipp_attribute_t *ippAddBoolean(ipp_t *ipp, ipp_tag_t group,
                                      const char *name, char value);
extern ipp_attribute_t *ippAddBooleans(ipp_t *ipp, ipp_tag_t group,
                                       const char *name, int num_values,
                                       const char *values);
extern ipp_attribute_t *ippAddCollection(ipp_t *ipp, ipp_tag_t group,
                                         const char *name, ipp_t *value);
extern ipp_attribute_t *ippAddCollections(ipp_t *ipp, ipp_tag_t group,
                                           const char *name, int num_values,
                                           const ipp_t *values);
extern ipp_attribute_t *ippAddDate(ipp_t *ipp, ipp_tag_t group,
                                    const char *name,
                                    const ipp_uchar_t *value);
extern ipp_attribute_t *ippAddInteger(ipp_t *ipp, ipp_tag_t group,
                                     ipp_tag_t type, const char *name,
                                     int value);
extern ipp_attribute_t *ippAddIntegers(ipp_t *ipp, ipp_tag_t group,
                                       ipp_tag_t type, const char *name,
                                       int num_values, const int *values);
extern ipp_attribute_t *ippAddRange(ipp_t *ipp, ipp_tag_t group,
                                     const char *name, int lower,
                                     int upper);
extern ipp_attribute_t *ippAddRanges(ipp_t *ipp, ipp_tag_t group,
                                      const char *name, int num_values,
                                      int *lower, const int *upper);
extern ipp_attribute_t *ippAddResolution(ipp_t *ipp, ipp_tag_t group,
                                        const char *name,
                                        ipp_res_t units, int xres, int yres);
extern ipp_attribute_t *ippAddResolutions(ipp_t *ipp, ipp_tag_t group,
                                          const char *name, int num_values,
                                          ipp_res_t units, const
int *xres,
const int *yres);
extern ipp_attribute_t *ippAddSeparator(ipp_t *ipp);
extern ipp_attribute_t *ippAddString(ipp_t *ipp, ipp_tag_t
    group,
    ipp_tag_t type, const char
    *name,
    const char *charset,
    const char *value);
extern ipp_attribute_t *ippAddStrings(ipp_t *ipp, ipp_tag_t
    group,
    ipp_tag_t type, const char
    *name,
    int num_values, const char
    *charset,
    const char *const *values);
extern time_t ippDateToTime(const ipp_uchar_t *date);
extern void ippDelete(ipp_t *ipp);
extern void ippDeleteAttribute(ipp_t *ipp, ipp_attribute_t *attr);
extern const char *ippErrorString(ipp_status_t error);
extern ipp_attribute_t *ippFindAttribute(ipp_t *ipp, const char
    *name,
    ipp_tag_t type);
extern ipp_attribute_t *ippFindNextAttribute(ipp_t *ipp, const
    char *name,
    ipp_tag_t type);
extern size_t ippLength(ipp_t *ipp);
extern ipp_t *ippNew(void);
extern int ippPort(void);
extern ipp_state_t ippRead(http_t *http, ipp_t *ipp);
extern ipp_state_t ippReadFile(int fd, ipp_t *ipp);
extern ipp_state_t ippReadIO(void *src, ipp_iocb_t cb, int
    blocking,
    ipp_t *parent, ipp_t *ipp);
extern void ippSetPort(int p);
extern const ipp_uchar_t *ippTimeToDate(time_t t);
extern ipp_state_t ippWrite(http_t *http, ipp_t *ipp);
extern ipp_state_t ippWriteFile(int fd, ipp_t *ipp);
extern ipp_state_t ippWriteIO(void *dst, ipp_iocb_t cb, int
    blocking,
    ipp_t *parent, ipp_t *ipp);

7.2.4 cups/ppd.h

#define _CUPS_PPD_H_
define PPD_MAX_LINE 256
define PPD_VERSION 4.3
define PPD_MAX_NAME 41
define PPD_MAX_TEXT 81
typedef enum {
    PPD_CS_CMYK = -4,
    PPD_CS_CMY = -3,
    PPD_CS_GRAY = 1,
    PPD_CS_RGB = 3,
    PPD_CS_RGBK = 4,
    PPD_CS_N = 5
} ppd_cs_t;
typedef struct {
    char name[41];
    char *start;
    char *stop;
} ppd_emul_t;
typedef enum {
typedef enum {
    PPD_ORDER_ANY = 0,
    PPD_ORDER_DOCUMENT = 1,
    PPD_ORDER_EXIT = 2,
    PPD_ORDER_JCL = 3,
    PPD_ORDER_PAGE = 4,
    PPD_ORDER_PROLOG = 5
} ppd_section_t;

typedef struct {
    char marked;
    char choice[41];
    char text[81];
    char *code;
    void *option;
} ppd_choice_t;

typedef struct {
    char conflicted;
    char keyword[41];
    char defchoice[41];
    char text[81];
    ppd_ui_t ui;
    ppd_section_t section;
    float order;
    int num_choices;
    ppd_choice_t *choices;
} ppd_option_t;

typedef struct ppd_group_str {
    char text[40];
    char name[41];
    int num_options;
    ppd_option_t *options;
    int num_subgroups;
    struct ppd_group_str *subgroups;
} ppd_group_t;

typedef struct {
    int marked;
    char name[41];
    float width;
    float length;
    float left;
    float bottom;
    float right;
    float top;
} ppd_size_t;

typedef struct {
    char option1[41];
    char choice1[41];
    char option2[41];
    char choice2[41];
} ppd_const_t;

typedef struct {
    char resolution[41];
    char media_type[41];
    float density;
    float gamma;
    float matrix[3][3];
} ppd_profile_t;

typedef struct {
    char name[41];
    char spec[41];
    char text[81];
    char *value;
} 

© 2015 Linux Foundation
typedef struct {
    int language_level;
    int color_device;
    int variable_sizes;
    int accurate_screens;
    int contone_only;
    int landscape;
    int model_number;
    int manual_copies;
    int throughput;
    ppd_cs_t colorspace;
    char *patches;
    int num_emulations;
    ppd_emul_t *emulations;
    char *jcl_begin;
    char *jcl_ps;
    char *jcl_end;
    char *lang_encoding;
    char *lang_version;
    char *modelname;
    char *ttrasterizer;
    char *manufacturer;
    char *product;
    char *nickname;
    char *shortnickname;
    int num_groups;
    ppd_group_t *groups;
    int num_sizes;
    ppd_size_t *sizes;
    float custom_min[2];
    float custom_max[2];
    float custom_margins[4];
    int numconsts;
    ppd_const_t *consts;
    int num_fonts;
    char **fonts;
    int num_profiles;
    ppd_profile_t *profiles;
    int num_filters;
    char **filters;
    int flip_duplex;
    char *protocols;
    char *pcfilename;
    int num_attrs;
    int cur_attr;
    ppd_attr_t **attrs;
} ppd_file_t;

 typedef enum {
    PPD_OK = 0,
    PPD_FILE_OPEN_ERROR = 1,
    PPD_NULL_FILE = 2,
    PPD_ALLOC_ERROR = 3,
    PPD_MISSING_PPDADOBE4 = 4,
    PPD_MISSING_VALUE = 5,
    PPD_INTERNAL_ERROR = 6,
    PPD_BAD_OPEN_GROUP = 7,
    PPD_NESTED_OPEN_GROUP = 8,
    PPD_BAD_OPEN_UI = 9,
    PPD_NESTED_OPEN_UI = 10,
    PPD_BAD_ORDER_DEPENDENCY = 11,
    PPD_BAD_UI_CONSTRAINTS = 12,
    PPD_MISSING_ASTERISK = 13,
    PPD_LINE_TOO_LONG = 14,
    PPD_ILLEGAL_CHARACTER = 15,
    PPD_ILLEGAL_MAIN_KEYWORD = 16,
} ppd_enum_t;
7.3 Interface Definitions for libcups

The interfaces defined on the following pages are included in libcups and are defined by this specification. Unless otherwise noted, these interfaces shall be included in the source standard.

Other interfaces listed in Section 7.1 shall behave as described in the referenced base document.
cupsAddDest

Name
cupsAddDest — Add a destination to the list of destinations.

Synopsis

#include <cups/cups.h>
int cupsAddDest(const char * name, const char * instance, int num_dests, cups_dest_t ** dests);

Description
Add a destination to the list of destinations.
This function cannot be used to add a new class or printer queue, it only adds a new container of saved options for the named destination or instance.
If the named destination already exists, the destination list is returned unchanged. Adding a new instance of a destination creates a copy of that destination's options.
Use the cupsSaveDests() function to save the updated list of destinations to the user's printer options file.

Return Value
New number of destinations

cupsAddOption

Name
cupsAddOption — Add an option to an option array.

Synopsis

#include <cups/cups.h>
int cupsAddOption(const char * name, const char * value, int num_options, cups_option_t ** options);

Description
Add an option to an option array.

Return Value
Number of options
cupsCancelJob

**Name**
cupsCancelJob — Cancel a print job on the default server.

**Synopsis**
```
#include <cups/cups.h>
int cupsCancelJob(const char *name, int job);
```

**Description**
Cancel a print job on the default server.
Use the cupsLastError() and cupsLastErrorString() functions to get the cause of any failure.

**Return Value**
1 on success, 0 on failure

cupsEncryption

**Name**
cupsEncryption — Get the default encryption settings.

**Synopsis**
```
#include <cups/cups.h>
http_encryption_t cupsEncryption(void);
```

**Description**
Get the default encryption settings.
The default encryption setting comes from the CUPS_ENCRYPTION environment variable, then the ~/.cupsrc file, and finally the /etc/cups/client.conf file. If not set, the default is HTTP_ENCRYPT_IF_REQUESTED.

**Return Value**
Encryption settings
**cupsFreeDests**

**Name**

cupsFreeDests — Free the memory used by the list of destinations.

**Synopsis**

```c
#include <cups/cups.h>
void cupsFreeDests(int num_dests, cups_dest_t * dests);
```

**Description**

Free the memory used by the list of destinations.

**Return Value**

This function does not return a value.

**cupsFreeJobs**

**Name**

cupsFreeJobs — Free memory used by job data.

**Synopsis**

```c
#include <cups/cups.h>
void cupsFreeJobs(int num_jobs, cups_job_t * jobs);
```

**Description**

Free memory used by job data.

**Return Value**

This function does not return a value.

**cupsFreeOptions**

**Name**

cupsFreeOptions — Free all memory used by options.

**Synopsis**

```c
#include <cups/cups.h>
void cupsFreeOptions(int num_options, cups_option_t * options);
```

**Description**

Free all memory used by options.

**Return Value**

This function does not return a value.
cupsGetDefault

Name

cupsGetDefault — Get the default printer or class for the default server.

Synopsis

#include <cups/cups.h>
const char * cupsGetDefault(void);

Description

Get the default printer or class for the default server.

This function returns the default printer or class as defined by the LPDEST or PRINTER environment variables. If these environment variables are not set, the server default destination is returned. Applications should use the cupsGetDest() and cupsGetDest() functions to get the user-defined default printer, as this function does not support the Ipoptions-defined default printer.

Return Value

Default printer or NULL

cupsGetDest

Name

cupsGetDest — Get the named destination from the list.

Synopsis

#include <cups/cups.h>
cups_dest_t * cupsGetDest(const char * name, const char * instance, int num_dests, cups_dest_t * dests);

Description

Get the named destination from the list.

Use the cupsGetDest() or cupsGetDest2() functions to get a list of supported destinations for the current user.

Return Value

Destination pointer or NULL
cupsGetDest

Name
cupsGetDest — Get the list of destinations from the default server.

Synopsis
#include <cups/cups.h>
int cupsGetDest(cups_dest_t ** dests);

Description
Get the list of destinations from the default server.
Starting with CUPS 1.2, the returned list of destinations include the printer-info, printer-is-accepting-jobs, printer-is-shared, printer-make-and-model, printer-state, printer-state-change-time, printer-state-reasons, and printer-type attributes as options.
Use the cupsFreeDest() function to free the destination list and the cupsGetDest() function to find a particular destination.

Return Value
Number of destinations

cupsGetJobs

Name
cupsGetJobs — Get the jobs from the default server.

Synopsis
#include <cups/cups.h>
int cupsGetJobs(cups_job_t ** jobs, const char * mydest, int myjobs, int completed);

Description
Get the jobs from the default server.

Return Value
Number of jobs
cupsGetOption

Name
cupsGetOption — Get an option value.

Synopsis
#include <cups/cups.h>
const char * cupsGetOption(const char * name, int num_options,
cups_option_t * options);

Description
Get an option value.

Return Value
Option value or NULL

cupsGetPPD

Name
cupsGetPPD — Get the PPD file for a printer on the default server.

Synopsis
#include <cups/cups.h>
const char * cupsGetPPD(const char * name);

Description
Get the PPD file for a printer on the default server.
For classes, cupsGetPPD() returns the PPD file for the first printer in the class.

Return Value
Filename for PPD file
cupsGetPassword

**Name**

cupsGetPassword — Get a password from the user.

**Synopsis**

```c
#include <cups/cups.h>
const char * cupsGetPassword(const char * prompt);
```

**Description**

Get a password from the user.
Uses the current password callback function. Returns NULL if the user does not provide a password.

**Return Value**

Password

cupsLangEncoding

**Name**

cupsLangEncoding — Return the character encoding (us-ascii, etc.)

**Synopsis**

```c
#include <cups/cups.h>
const char * cupsLangEncoding(cups_lang_t * lang);
```

**Description**

Return the character encoding (us-ascii, etc.) for the given language.

**Return Value**

Character encoding

cupsLangFlush

**Name**

cupsLangFlush — Flush all language data out of the cache.

**Synopsis**

```c
#include <cups/cups.h>
void cupsLangFlush(void);
```

**Description**

Flush all language data out of the cache.

**Return Value**

This function does not return a value.
cupsLangFree

Name

cupsLangFree — Free language data.

Synopsis

```c
#include <cups/cups.h>
void cupsLangFree(cups_lang_t * lang);
```

Description

Free language data.
This does not actually free anything; use cupsLangFlush() for that.

Return Value

This function does not return a value.

cupsLangGet

Name

cupsLangGet — Get a language.

Synopsis

```c
#include <cups/cups.h>
cups_lang_t * cupsLangGet(const char * language);
```

Description

Get a language.

Return Value

Language data

cupsLastError

Name

cupsLastError — Return the last IPP status code.

Synopsis

```c
#include <cups/cups.h>
ipp_status_t cupsLastError(void);
```

Description

Return the last IPP status code.

Return Value

IPP status code from last request
cupsMarkOptions

**Name**
cupsMarkOptions — Mark command-line options in a PPD file.

**Synopsis**
```
#include <cups/cups.h>
int cupsMarkOptions(ppd_file_t * ppd, int num_options, cups_option_t * options);
```

**Description**
Mark command-line options in a PPD file.

**Return Value**
1 if conflicting

cupsParseOptions

**Name**
cupsParseOptions — Parse options from a command-line argument.

**Synopsis**
```
#include <cups/cups.h>
int cupsParseOptions(const char * arg, int num_options, cups_option_t ** options);
```

**Description**
Parse options from a command-line argument.

This function converts space-delimited name/value pairs according to the PAPI text option ABNF specification. Collection values ("name={a=... b=... c=...}") are stored with the curley brackets intact - use cupsParseOptions() on the value to extract the collection attributes.

**Return Value**
Number of options found
cupsPrintFile

Name

cupsPrintFile — Print a file to a printer or class on the default server.

Synopsis

#include <cups/cups.h>
int cupsPrintFile(const char * name, const char * filename, const char * title, int num_options, cups_option_t * options);

Description

Print a file to a printer or class on the default server.

Return Value

Job ID

cupsPrintFiles

Name

cupsPrintFiles — Print one or more files to a printer or class on the

Synopsis

#include <cups/cups.h>
int cupsPrintFiles(const char * name, int num_files, const char ** files, const char * title, int num_options, cups_option_t * options);

Description

Print one or more files to a printer or class on the default server.

Return Value

Job ID
cupsServer

Name
cupsServer — Return the hostname/address of the default server.

Synopsis
#include <cups/cups.h>
const char * cupsServer(void);

Description
Return the hostname/address of the default server.
The returned value can be a fully-qualified hostname, a numeric IPv4 or IPv6 address,
or a domain socket pathname.

Return Value
Server name

cupsSetDestss

Name
cupsSetDests — Save the list of destinations for the default server.

Synopsis
#include <cups/cups.h>
void cupsSetDests(int num_dests, cups_dest_t * dests);

Description
Save the list of destinations for the default server.
This function saves the destinations to /etc/cups/lpoptions when run as root and
~/.cups/lpoptions when run as a normal user.

Return Value
This function does not return a value.
cupsSetEncryption

**Name**
cupsSetEncryption — Set the encryption preference.

**Synopsis**
```c
#include <cups/cups.h>
void cupsSetEncryption(http_encryption_t e);
```

**Description**
Set the encryption preference.

**Return Value**
This function does not return a value.

cupsSetPasswordCB

**Name**
cupsSetPasswordCB — Set the password callback for CUPS.

**Synopsis**
```c
#include <cups/cups.h>
void cupsSetPasswordCB(cups_password_cb_t cb);
```

**Description**
Set the password callback for CUPS.
Pass NULL to restore the default (console) password callback.

**Return Value**
This function does not return a value.

cupsSetServer

**Name**
cupsSetServer — Set the default server name.

**Synopsis**
```c
#include <cups/cups.h>
void cupsSetServer(const char * server);
```

**Description**
Set the default server name.
The "server" string can be a fully-qualified hostname, a numeric IPv4 or IPv6 address, or a domain socket pathname. Pass NULL to restore the default server name.

**Return Value**
This function does not return a value.
cupsSetUser

**Name**
cupsSetUser — Set the default user name.

**Synopsis**
```
#include <cups/cups.h>
void cupsSetUser(const char * user);
```

**Description**
Set the default user name.
Pass NULL to restore the default user name.

**Return Value**
This function does not return a value.

cupsTempFd

**Name**
cupsTempFd — Creates a temporary file.

**Synopsis**
```
#include <cups/cups.h>
int cupsTempFd(char * filename, int len);
```

**Description**
Creates a temporary file.
The temporary filename is returned in the filename buffer. The temporary file is opened
for reading and writing.

**Return Value**
New file descriptor or -1 on error

cupsUser

**Name**
cupsUser — Return the current user's name.

**Synopsis**
```
#include <cups/cups.h>
const char * cupsUser(void);
```

**Description**
Return the current user's name.

**Return Value**
User name
ppdClose

Name
ppdClose — Free all memory used by the PPD file.

Synopsis

#include <cups/cups.h>
void ppdClose(ppd_file_t * ppd);

Description
Free all memory used by the PPD file.

Return Value
This function does not return a value.

ppdCollect

Name
ppdCollect — Collect all marked options that reside in the specified

Synopsis

#include <cups/cups.h>
int ppdCollect(ppd_file_t * ppd, ppd_section_t section, ppd_choice_t *** choices);

Description
Collect all marked options that reside in the specified section.

Return Value
Number of options marked

ppdConflicts

Name
ppdConflicts — Check to see if there are any conflicts.

Synopsis

#include <cups/cups.h>
int ppdConflicts(ppd_file_t * ppd);

Description
Check to see if there are any conflicts.

Return Value
Number of conflicts found
ppdEmit

Name
ppdEmit — Emit code for marked options to a file.

Synopsis
#include <cups/cups.h>
int ppdEmit(ppd_file_t * ppd, FILE * fp, ppd_section_t section);

Description
Emit code for marked options to a file.

Return Value
0 on success, -1 on failure

ppdEmitFd

Name
ppdEmitFd — Emit code for marked options to a file.

Synopsis
#include <cups/cups.h>
int ppdEmitFd(ppd_file_t * ppd, int fd, ppd_section_t section);

Description
Emit code for marked options to a file.

Return Value
0 on success, -1 on failure

ppdEmitJCL

Name
ppdEmitJCL — Emit code for JCL options to a file.

Synopsis
#include <cups/cups.h>
int ppdEmitJCL(ppd_file_t * ppd, FILE * fp, int job_id, const char * user, const char * title);

Description
Emit code for JCL options to a file.

Return Value
0 on success, -1 on failure
ppdErrorString

**Name**

ppdErrorString — Returns the text associated with a status.

**Synopsis**

```c
#include <cups/cups.h>
const char * ppdErrorString(ppd_status_t status);
```

**Description**

Returns the text associated with a status.

**Return Value**

Status string

ppdFindAttr

**Name**

ppdFindAttr — Find the first matching attribute...

**Synopsis**

```c
#include <cups/cups.h>
ppd_attr_t * ppdFindAttr(ppd_file_t * ppd, const char * name, const char * spec);
```

**Description**

Find the first matching attribute...

**Return Value**

Attribute or NULL if not found

ppdFindChoice

**Name**

ppdFindChoice — Return a pointer to an option choice.

**Synopsis**

```c
#include <cups/cups.h>
ppd_choice_t * ppdFindChoice(ppd_option_t * o, const char * choice);
```

**Description**

Return a pointer to an option choice.

**Return Value**

Choice pointer or NULL
ppdFindMarkedChoice

Name
ppdFindMarkedChoice — Return the marked choice for the specified option.

Synopsis
#include <cups/cups.h>
ppd_choice_t * ppdFindMarkedChoice(ppd_file_t * ppd, const char * option);

Description
Return the marked choice for the specified option.

Return Value
Pointer to choice or NULL

ppdFindNextAttr

Name
ppdFindNextAttr — Find the next matching attribute...

Synopsis
#include <cups/cups.h>
ppd_attr_t * ppdFindNextAttr(ppd_file_t * ppd, const char * name, const char * spec);

Description
Find the next matching attribute...

Return Value
Attribute or NULL if not found

ppdFindOption

Name
ppdFindOption — Return a pointer to the specified option.

Synopsis
#include <cups/cups.h>
ppd_option_t * ppdFindOption(ppd_file_t * ppd, const char * option);

Description
Return a pointer to the specified option.

Return Value
Pointer to option or NULL
ppdIsMarked

**Name**

ppdIsMarked — Check to see if an option is marked...

**Synopsis**

```c
#include <cups/cups.h>
int ppdIsMarked(ppd_file_t * ppd, const char * option, const char * choice);
```

**Description**

Check to see if an option is marked...

**Return Value**

Non-zero if option is marked

ppdLastError

**Name**

ppdLastError — Return the status from the last ppdOpen*().

**Synopsis**

```c
#include <cups/cups.h>
ppd_status_t ppdLastError(int * line);
```

**Description**

Return the status from the last ppdOpen*().

**Return Value**

Status code

ppdMarkDefaults

**Name**

ppdMarkDefaults — Mark all default options in the PPD file.

**Synopsis**

```c
#include <cups/cups.h>
void ppdMarkDefaults(ppd_file_t * ppd);
```

**Description**

Mark all default options in the PPD file.

**Return Value**

This function does not return a value.
ppdMarkOption

Name

ppdMarkOption — Mark an option in a PPD file.

Synopsis

#include <cups/cups.h>
int ppdMarkOption(ppd_file_t * ppd, const char * option, const char * choice);

Description

Mark an option in a PPD file.

Notes:
-1 is returned if the given option would conflict with any currently selected option.

Return Value

Number of conflicts

ppdOpen

Name

ppdOpen — Read a PPD file into memory.

Synopsis

#include <cups/cups.h>
ppd_file_t * ppdOpen(FILE * fp);

Description

Read a PPD file into memory.

Return Value

PPD file record

ppdOpenFd

Name

ppdOpenFd — Read a PPD file into memory.

Synopsis

#include <cups/cups.h>
ppd_file_t * ppdOpenFd(int fd);

Description

Read a PPD file into memory.

Return Value

PPD file record
**ppdOpenFile**

**Name**
ppdOpenFile — Read a PPD file into memory.

**Synopsis**
#include <cups/cups.h>
ppd_file_t * ppdOpenFile(const char * filename);

**Description**
Read a PPD file into memory.

**Return Value**
PPD file record

**ppdPageLength**

**Name**
ppdPageLength — Get the page length for the given size.

**Synopsis**
#include <cups/cups.h>
float ppdPageLength(ppd_file_t * ppd, const char * name);

**Description**
Get the page length for the given size.

**Return Value**
Length of page in points or 0.0

**ppdPageSize**

**Name**
ppdPageSize — Get the page size record for the given size.

**Synopsis**
#include <cups/cups.h>
ppd_size_t * ppdPageSize(ppd_file_t * ppd, const char * name);

**Description**
Get the page size record for the given size.

**Return Value**
Size record for page or NULL
ppdPageWidth

**Name**

ppdPageWidth — Get the page width for the given size.

**Synopsis**

```
#include <cups/cups.h>
float ppdPageWidth(ppd_file_t * ppd, const char * name);
```

**Description**

Get the page width for the given size.

**Return Value**

Width of page in points or 0.0

ppdSetConformance

**Name**

ppdSetConformance — Set the conformance level for PPD files.

**Synopsis**

```
#include <cups/cups.h>
void ppdSetConformance(ppd_conform_t c);
```

**Description**

Set the conformance level for PPD files.

**Return Value**

This function does not return a value.

### 7.4 Interfaces for libcupsimage

Table 7-4 defines the library name and shared object name for the libcupsimage library

<table>
<thead>
<tr>
<th>Library:</th>
<th>libcupsimage</th>
</tr>
</thead>
<tbody>
<tr>
<td>SONAME:</td>
<td>libcupsimage.so.2</td>
</tr>
</tbody>
</table>

The behavior of the interfaces in this library is specified by the following specifications: [LSB] This Specification

#### 7.4.1 CUPS Raster ABI

#### 7.4.1.1 Interfaces for CUPS Raster ABI

An LSB conforming implementation shall provide the generic functions for CUPS Raster ABI specified in Table 7-5, with the full mandatory functionality as described in the referenced underlying specification.

| cupsRasterClose | cupsRasterOpen | cupsRasterReadH | cupsRasterReadPi |
An LSB conforming implementation shall provide the generic deprecated functions for CUPS Raster ABI specified in Table 7-6, with the full mandatory functionality as described in the referenced underlying specification.

**Note:** These interfaces are deprecated, and applications should avoid using them. These interfaces may be withdrawn in future releases of this specification.

### Table 7-6 libcupsimage - CUPS Raster ABI Deprecated Function Interfaces

<table>
<thead>
<tr>
<th>cupsRasterReadH</th>
<th>cupsRasterWriteH</th>
</tr>
</thead>
<tbody>
<tr>
<td>eader [LSB]</td>
<td>eader [LSB]</td>
</tr>
<tr>
<td>xels [LSB]</td>
<td>xels [LSB]</td>
</tr>
</tbody>
</table>

### 7.5 Data Definitions for libcupsimage

This section defines global identifiers and their values that are associated with interfaces contained in libcupsimage. These definitions are organized into groups that correspond to system headers. This convention is used as a convenience for the reader, and does not imply the existence of these headers, or their content. Where an interface is defined as requiring a particular system header file all of the data definitions for that system header file presented here shall be in effect.

This section gives data definitions to promote binary application portability, not to repeat source interface definitions available elsewhere. System providers and application developers should use this ABI to supplement - not to replace - source interface definition specifications.

This specification uses the ISO C (1999) C Language as the reference programming language, and data definitions are specified in ISO C format. The C language is used here as a convenient notation. Using a C language description of these data objects does not preclude their use by other programming languages.

#### 7.5.1 cups/raster.h

```c
#define _CUPS_RASTER_H_
#define CUPS_RASTER_SYNC        0x52615374
#define CUPS_RASTER_REVSYNC     0x74536152
#define CUPS_RASTER_HAVE_COLORIMETRIC   1
typedef enum {
    CUPS_RASTER_READ = 0,
    CUPS_RASTER_WRITE = 1
} cups_mode_t;
typedef struct __cups_raster_s cups_raster_t;
typedef enum {
    CUPS_ADVANCE_NONE = 0,
    CUPS_ADVANCE_FILE = 1,
    CUPS_ADVANCE_JOB = 2,
    CUPS_ADVANCE_SET = 3,
    CUPS_ADVANCE_PAGE = 4
} cups_adv_t;
typedef enum {
    CUPS_FALSE = 0,
    CUPS_TRUE = 1
} cups_bool_t;
typedef enum {
    CUPS_CUT_NONE = 0,
    CUPS_CUT_FILE = 1,
    CUPS_CUT_JOB = 2,
```
typedef enum {
    CUPS_JOG_NONE = 0,
    CUPS_JOG_FILE = 1,
    CUPS_JOG_JOB = 2,
    CUPS_JOG_SET = 3
} cups_jog_t;

typedef enum {
    CUPS_EDGE_TOP = 0,
    CUPS_EDGE_RIGHT = 1,
    CUPS_EDGE_BOTTOM = 2,
    CUPS_EDGE_LEFT = 3
} cups_edge_t;

typedef enum {
    CUPS_ORIENT_0 = 0,
    CUPS_ORIENT_90 = 1,
    CUPS_ORIENT_180 = 2,
    CUPS_ORIENT_270 = 3
} cups_orient_t;

typedef enum {
    CUPS_ORDER_CHUNKED = 0,
    CUPS_ORDER_BANDED = 1,
    CUPS_ORDER_PLANAR = 2
} cups_order_t;

typedef enum {
    CUPS_CSPACE_W = 0,
    CUPS_CSPACE_RGB = 1,
    CUPS_CSPACE_RGBA = 2,
    CUPS_CSPACE_K = 3,
    CUPS_CSPACE_CMY = 4,
    CUPS_CSPACE_YMC = 5,
    CUPS_CSPACE_CMYK = 6,
    CUPS_CSPACE_YMCK = 7,
    CUPS_CSPACE_KCMY = 8,
    CUPS_CSPACE_KCMYcm = 9,
    CUPS_CSPACE_GMCK = 10,
    CUPS_CSPACE_GMCS = 11,
    CUPS_CSPACE_WHITE = 12,
    CUPS_CSPACE_GOLD = 13,
    CUPS_CSPACE_SILVER = 14,
    CUPS_CSPACE_CIEXYZ = 15,
    CUPS_CSPACE_CIELab = 16,
    CUPS_CSPACE_ICC1 = 32,
    CUPS_CSPACE_ICC2 = 33,
    CUPS_CSPACE_ICC3 = 34,
    CUPS_CSPACE_ICC4 = 35,
    CUPS_CSPACE_ICC5 = 36,
    CUPS_CSPACE_ICC6 = 37,
    CUPS_CSPACE_ICC7 = 38,
    CUPS_CSPACE_ICC8 = 39,
    CUPS_CSPACE_ICC9 = 40,
    CUPS_CSPACE_ICCA = 41,
    CUPS_CSPACE_ICCB = 42,
    CUPS_CSPACE_ICCC = 43,
    CUPS_CSPACE_ICCD = 44,
    CUPS_CSPACE_ICCE = 45,
    CUPS_CSPACE_ICCF = 46
} cups_cspace_t;

typedef struct {
    char MediaClass[64];
    char MediaColor[64];
    char MediaType[64];
    char OutputType[64];
    unsigned int AdvanceDistance;
} cups_cut_t;

cups_adv_t AdvanceMedia;
cups_bool_t Collate;
cups_cut_t CutMedia;
cups_bool_t Duplex;
unsigned int HWResolution[2];
unsigned int ImagingBoundingBox[4];
cups_bool_t InsertSheet;
cups_jog_t Jog;
cups_edge_t LeadingEdge;
unsigned int Margins[2];
cups_bool_t ManualFeed;
unsigned int MediaPosition;
unsigned int MediaWeight;
cups_bool_t MirrorPrint;
cups_bool_t NegativePrint;
unsigned int NumCopies;
cups_orient_t Orientation;
cups_bool_t OutputFaceUp;
unsigned int PageSize[2];
cups_bool_t Separations;
cups_bool_t TraySwitch;
cups_bool_t Tumble;
unsigned int cupsWidth;
unsigned int cupsHeight;
unsigned int cupsMediaType;
unsigned int cupsBitsPerColor;
unsigned int cupsBitsPerPixel;
unsigned int cupsBytesPerLine;
cups_order_t cupsColorOrder;
cups_cspace_t cupsColorSpace;
unsigned int cupsCompression;
unsigned int cupsRowCount;
unsigned int cupsRowFeed;
unsigned int cupsRowStep;
} cups_page_header_t;
typedef struct cups_page_header2_s {
    char MediaClass[64];
    char MediaColor[64];
    char MediaType[64];
    char OutputType[64];
    unsigned int AdvanceDistance;
cups_adv_t AdvanceMedia;
cups_bool_t Collate;
cups_cut_t CutMedia;
unsigned int HWResolution[3];
unsigned int ImagingBoundingBox[4];
cups_bool_t InsertSheet;
cups_jog_t Jog;
cups_edge_t LeadingEdge;
unsigned int Margins[3];
cups_bool_t ManualFeed;
unsigned int MediaPosition;
unsigned int MediaWeight;
cups_bool_t MirrorPrint;
cups_bool_t NegativePrint;
unsigned int NumCopies;
cups_orient_t Orientation;
cups_bool_t OutputFaceUp;
unsigned int PageSize[3];
cups_bool_t Separations;
cups_bool_t TraySwitch;
cups_bool_t Tumble;
unsigned int cupsWidth;
unsigned int cupsHeight;
unsigned int cupsMediaType;
7.6 Interface Definitions for libcupsimage

The interfaces defined on the following pages are included in libcupsimage and are defined by this specification. Unless otherwise noted, these interfaces shall be included in the source standard.

Other interfaces listed in Section 7.4 shall behave as described in the referenced base document.
cupsRasterClose

Name
cupsRasterClose — Close a raster stream.

Synopsis
#include <cups/raster.h>
void cupsRasterClose(cups_raster_t * r);

Description
Close a raster stream.

Return Value
This function does not return a value.

cupsRasterOpen

Name
cupsRasterOpen — Open a raster stream.

Synopsis
#include <cups/raster.h>
cups_raster_t * cupsRasterOpen(int fd, cups_mode_t mode);

Description
Open a raster stream.

Return Value
New stream

cupsRasterReadHeader

Name
cupsRasterReadHeader — Read a raster page header and store it in a

Synopsis
#include <cups/raster.h>
unsigned cupsRasterReadHeader(cups_raster_t * r, cups_page_header_t * h);

Description
Read a raster page header and store it in a V1 page header structure.

Return Value
1 on success, 0 on fail
cupsRasterReadPixels

Name
cupsRasterReadPixels — Read raster pixels.

Synopsis
#include <cups/raster.h>
unsigned cupsRasterReadPixels(cups_raster_t * r, unsigned char * p, unsigned len);

Description
Read raster pixels.

Return Value
Number of bytes read

cupsRasterWriteHeader

Name
cupsRasterWriteHeader — Write a raster page header from a V1 page

Synopsis
#include <cups/raster.h>
unsigned cupsRasterWriteHeader(cups_raster_t * r, cups_page_header_t * h);

Description
Write a raster page header from a V1 page header structure.

Return Value
1 on success, 0 on failure

cupsRasterWritePixels

Name
cupsRasterWritePixels — Write raster pixels.

Synopsis
#include <cups/raster.h>
unsigned cupsRasterWritePixels(cups_raster_t * r, unsigned char * p, unsigned len);

Description
Write raster pixels.

Return Value
Number of bytes written
III Printing Commands
8 Printing Commands

8.1 Commands and Utilities

An LSB conforming implementation shall provide the commands and utilities as described in Table 8-1, with at least the behavior described as mandatory in the referenced underlying specification, with the following exceptions:

1. If any operand (except one which follows - - ) starts with a hyphen, the behavior is unspecified.

Rationale (Informative): Applications should place options before operands, or use - - , as needed. This text is needed because, by default, GNU option parsing differs from POSIX, unless the environment variable POSIXLY_CORRECT is set. For example, ls . -a in GNU ls means to list the current directory, showing all files (that is, " . " is an operand and - a is an option). In POSIX, " . " and - a are both operands, and the command means to list the current directory, and also the file named - a . Suggesting that applications rely on the setting of the POSIXLY_CORRECT environment variable, or try to set it, seems worse than just asking the applications to invoke commands in ways which work with either the POSIX or GNU behaviors.

Table 8-1 Commands And Utilities

<table>
<thead>
<tr>
<th>Command</th>
<th>Referenced Specification(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>foomatic-rip</td>
<td>[1]</td>
</tr>
<tr>
<td>gs</td>
<td>[1]</td>
</tr>
</tbody>
</table>

Referenced Specification(s)

[1]. This Specification

8.2 Command Behavior

This section contains descriptions for commands and utilities whose specified behavior in the LSB contradicts or extends the standards referenced. It also contains commands and utilities only required by the LSB and not specified by other standards.
foomatic-rip

2002-11-26

Name
foomatic-rip — Universal print filter/RIP wrapper

SYNOPSIS

Standalone Mode
foomatic-rip [-v] [-q] [-d] [ --ppd ppdfile ] [ -J jobtitle ] [ -o option=value […] ] [ files ]

CUPS Mode
foomatic-rip jobid user jobtitle numcopies options [file]

DESCRIPTION

foomatic-rip is a universal print filter which works with every known free software printer spooler.

This page describes the facilities of foomatic-rip when used as a CUPS filter and when used outside of a print system. While implementations of foomatic-rip may support other print systems, such use is not documented here.

When run as a CUPS filter, foomatic-rip reads the job from the specified file, or from standard input if no file is specified. It renders the file into a printer-specific format, and writes the result to standard output.

When run standalone, foomatic-rip will read the job from the specified files, or from standard input if no files are given. The files are rendered into a printer-specific format, which is then output according to the PPD option "FoomaticRIPPostPipe", documented in the LSB.

Printer capabilities are described to foomatic-rip via PPD files, as described (with extensions used by foomatic-rip) in the LSB. The method foomatic-rip uses to determine the proper PPD file for the printer in question is defined by the implementation of both the spooler and foomatic-rip.

CUPS OPTIONS

Unless otherwise noted, all parameters are required when running foomatic-rip as a CUPS filter.

jobid
   The internal Job ID from CUPS.

username
   The username of the user who submitted the job.

jobtitle
   The job's title, as submitted by the user.

numcopies
   The number of copies of the job requested.

options
A series of printer options, separated by spaces, each of which take the form name or name=value. The specific list of options supported is dependent on the printer and spooler, and is usually documented in the PPD file for the printer.

An option may be preceded by a page specification, describing the pages to which the option should apply. A page specification consists of one or more items, separated by commas, and separated from the option name by a colon. Valid items include the words "even" and "odd", a single page number, and a page range. Page ranges are described with a starting page, a dash ("-"), and an ending page. If omitted, the starting and ending pages are the first and last page, respectively, but only one of the ends of the range may be omitted.

file

The full path to the file containing the job. This parameter is optional; if it is not supplied, the job is read from standard input.

SPOOLER-LESS OPTIONS

-v

Verbose mode. Intended for debugging and testing purposes only.

-q

Quiet mode - minimal information output.

-d

Identical to the 'opts' option, but option information is left in text format. The PPD file will need to be specified using the --ppd option.

--ppd ppdfile

The PPD file ppdfile should be applied for processing this job.

-J jobtitle

Print the given job title in the header of every page of a plain text job.

-o option=value

Set an option setting for this job.

EXIT STATUS

foomatic-rip returns 0 unless something unexpected happens.

AUTHOR

Till Kamppeter <till.kamppeter@gmail.com> with parts of Manfred Wassmanns's <manolo@NCC-1701.B.Shuttle.de> man pages for the Foomatic 2.0.x filters.

Jeff Licquia <licquia@linux-foundation.org> adapted the original man page for the LSB.
gs

2007-11-29

Name

gs — GhostScript (PostScript and PDF language interpreter)

SYNOPSIS

gs -h | --help

 gs [ options ] ps-file [ [ options ] ps-file2 ] ...

DESCRIPTION

The gs command invokes Ghostscript, an interpreter of Adobe Systems' PostScript(tm) and Portable Document Format (PDF) languages. gs reads the files named by ps-file in sequence and executes them as Ghostscript programs. After doing this, it reads further input from the standard input stream (normally the keyboard), interpreting each line separately. The interpreter exits gracefully when it encounters the "quit" command (either in a file or from the keyboard), at end-of-file, or at an interrupt signal (such as Control-C at the keyboard).

Some of GhostScript's options are set via command-line options; others are set as processing parameters, each of which consists of a name and a value.

OPTIONS

-h, --help

Show GhostScript's help, as well as lists of the supported input formats, supported devices, and the search path for gs components.

-q

Suppress normal startup messages, and also set the processing parameter QUIET.

-c

Begin interpreting arguments as PostScript code. All following arguments are sent to the interpreter up to the next argument beginning with "-" followed by a non-digit, or with "@". This code is interpolated with the file list, so files specified before -c are interpreted beforehand, and files after -c are interpreted afterwards.

-f

Specifies a PostScript file to run as its argument. This is equivalent to the ps-file arguments, but is useful for terminating PostScript code as passed via -c.

-d, -D

Set a processing parameter. The "name=value" pair follows immediately after the option, as in "-Dfoo=bar". The values here must be integers or the values "true" or "false". The equals sign and value may be omitted; this is assumed to set the name to "true".

-s, -S

Set a processing parameter to a string value. The "name=value" pair follows immediately after the option, as in "-Sfoo=bar".

-u

Unset a processing parameter. The name to be unset follows immediately after the option, as in "-ufoo".

-o
Write rendered output to the named file, and also inhibit pauses and the interactive shell. This is equivalent to setting the processing parameters BATCH and NOPAUSE to true, and OutputFile to the parameter after -o.

-r
Set the device resolution. The resolution is specified as two numbers separated with an "x", as in "300x150", corresponding to the X and Y axis resolutions, respectively. If a single number is given without an "x", it is treated as the value for both resolutions.

This is equivalent to setting DEVICEXRESOLUTION and DEVICEYRESOLUTION in systemdict.

-g
Set the device size, in pixels. The size is specified as two numbers separated with an "x", as in "640x480", corresponding to the width and height, respectively.

This is equivalent to setting DEVICEWIDTH and DEVICEHEIGHT in systemdict.

RECOGNIZED PROCESSING PARAMETERS

Processing parameters may have arbitrary names; no limits are placed on the settings that may be made. However, certain settings have meaning to the gs interpreter, and drivers may use other settings. Below is a list of recognized settings that the gs interpreter must respect.

BATCH
If set to true, do not enter an interactive shell after processing all command-line files.

DEVICE
Contains the name of the device used to render the page, as a string.

The list of available devices can be discovered with the -h parameter, as described above. At least the following devices must be present: cups (CUPS Raster), ijs, pxlmono, pxlcolor, and opvp (OpenPrinting Vector).

DEVICEHEIGHT
Contains the height, in pixels, of the output device.

The effect of this setting when the current driver is a vector driver is undefined.

DEVICEHEIGHTPOINTS
Sets the initial page height, in units of 1/72 of an inch.

DEVICEWIDTH
Contains the width, in pixels, of the output device.

The effect of this setting when the current driver is a vector driver is undefined.

DEVICEWIDTHPOINTS
Sets the initial page width, in units of 1/72 of an inch.

DEVICEXRESOLUTION
Contains the resolution, in pixels per inch, of the X dimension (horizontal) of the output device.

**DEVICEYRESOLUTION**
Contains the resolution, in pixels per inch, of the Y dimension (vertical) of the output device.

**NOPAUSE**
If set to true, disable the prompt and pause normally displayed after rendering a page.

**OutputFile**
Contains the path to the file to which gs should write its output, as a string. This parameter may be set to '-', in which case gs's output is sent to standard output.

**PAPERSIZE**
Contains the string representation of the paper size. The ISO paper sizes a0-a10 (plus a4small), isob0-isob6, and c0-c6 are recognized, as are jisb0-jisb6 (JIS standard sizes) and the US paper sizes 11x17, ledger, legal, letter, lettersmall, and archA-archE.

**QUIET**
If set to true, suppress routine information comments on standard output.

**SAFER**
If set to true, disable several unsafe PostScript features: the deletefile and renamefile operators, piped commands, reading or writing to general files, and changing of certain system settings.

**STRICT**
If set to true, disable as many extensions to the Adobe PostScript specification as possible.

**EXIT STATUS**
gs returns 0 on successful execution. Any other return value indicates an error.

**AUTHOR**
Jeff Licquia (licquia@linux-foundation.org) wrote this man page for the LSB specification.

Portions of this page were taken from the GhostScript documentation. The maintainer and rights holder for GhostScript is Artifex Software, Inc.
IV Execution Environment
9 File System Hierarchy

In addition to the requirements for `/usr/share` in the Filesystem Hierarchy Standard, an LSB conforming system shall also provide the following directories or symbolic links to directories:

`/usr/share/ppd`

PostScript Printer Description (ppd) files
V Scanning Libraries
10 Libraries

10.1 Interfaces for libsane

Table 10-1 defines the library name and shared object name for the libsane library.

<table>
<thead>
<tr>
<th>Library</th>
<th>libsane</th>
</tr>
</thead>
<tbody>
<tr>
<td>SONAME</td>
<td>libsane.so.1</td>
</tr>
</tbody>
</table>

The behavior of the interfaces in this library is specified by the following specifications: [SANE] SANE Standard Version 1.04.

10.1.1 libsane interfaces

10.1.1.1 Interfaces for libsane interfaces

An LSB conforming implementation shall provide the generic functions for libsane interfaces specified in Table 10-2, with the full mandatory functionality as described in the referenced underlying specification.

Table 10-2 libsane - libsane interfaces Function Interfaces

<table>
<thead>
<tr>
<th>sane_cancel</th>
<th>sane_close</th>
<th>sane_control_option</th>
<th>sane_exit</th>
</tr>
</thead>
<tbody>
<tr>
<td>[SANE]</td>
<td>[SANE]</td>
<td>[SANE]</td>
<td>[SANE]</td>
</tr>
<tr>
<td>sane_get_devices</td>
<td>sane_get_option_descriptor</td>
<td>sane_get_parameters</td>
<td>sane_get_select_file</td>
</tr>
<tr>
<td>[SANE]</td>
<td>[SANE]</td>
<td>[SANE]</td>
<td>[SANE]</td>
</tr>
<tr>
<td>sane_init</td>
<td>sane_open</td>
<td>sane_read</td>
<td>sane_set_ioctl_mode</td>
</tr>
<tr>
<td>[SANE]</td>
<td>[SANE]</td>
<td>[SANE]</td>
<td>[SANE]</td>
</tr>
<tr>
<td>sane_start</td>
<td>sane_strstatus</td>
<td>[SANE]</td>
<td>[SANE]</td>
</tr>
</tbody>
</table>

10.2 Data Definitions for libsane

This section defines global identifiers and their values that are associated with interfaces contained in libsane. These definitions are organized into groups that correspond to system headers. This convention is used as a convenience for the reader, and does not imply the existence of these headers, or their content. Where an interface is defined as requiring a particular system header file all of the data definitions for that system header file presented here shall be in effect.

This section gives data definitions to promote binary application portability, not to repeat source interface definitions available elsewhere. System providers and application developers should use this ABI to supplement - not to replace - source interface definition specifications.

This specification uses the ISO C (1999) C Language as the reference programming language, and data definitions are specified in ISO C format. The C language is used here as a convenient notation. Using a C language description of these data objects does not preclude their use by other programming languages.

10.2.1 sane/sane.h

```c
#define sane_h
#define SANE_VERSION_CODE(major,minor,build)    (((SANE_Word)(major) & 0xff) << 24) | (((SANE_Word)(minor) & 0xff) << 16) | (((SANE_Word)(build) & 0xffff) << 0))
#define SANE_VERSION_BUILD(code)        ((((SANE_Word)(code)) >>
```
#define SANE_VERSION_MINOR(code)        (((SANE_Word)(code)) >> 16) & 0xff)
#define SANE_VERSION_MAJOR(code)        (((SANE_Word)(code)) >> 24) & 0xff)
#define  SANE_OPTION_IS_ACTIVE(cap)       (((cap) & SANE_CAP_INACTIVE) == 0)
#define  SANE_OPTION_IS_SETTABLE(cap)     (((cap) & SANE_CAP_SOFT_SELECT) != 0)
#define SANE_UNFIX(v)    ((double)(v) / (1 << SANE_FIXED_SCALE_SHIFT))
#define SANE_FIX(v)      ((SANE_Word) ((v) * (1 << SANE_FIXED_SCALE_SHIFT)))
#define SANE_CAP_SOFT_SELECT    (1 << 0)
#define SANE_INFO_INEXACT       (1 << 0)
#define SANE_CAP_HARD_SELECT    (1 << 1)
#define SANE_INFO_RELOAD_PARAMS (1 << 1)
#define SANE_CAP_SOFT_DETECT    (1 << 2)
#define SANE_INFO_RELOAD_OPTIONS (1 << 2)
#define SANE_CAP_EMULATED       (1 << 3)
#define SANE_CAP_AUTOMATIC      (1 << 4)
#define SANE_CAP_INACTIVE       (1 << 5)
#define SANE_CAP_ADVANCED       (1 << 6)
#define SANE_CURRENT_MINOR      0
#define SANE_FALSE      0
#define SANE_CURRENT_MAJOR      1
#define SANE_TRUE       1
#define SANE_MAX_PASSWORD_LEN   128
#define SANE_MAX_USERNAME_LEN   128
#define SANE_FIXED_SCALE_SHIFT  16

typedef unsigned char SANE_Byte;
typedef int SANE_Word;
typedef int SANE_Bool;
typedef int SANE_Int;
typedef char SANE_Char;
typedef char *SANE_String;
typedef const SANE_Char *SANE_String_Const;
typedef void *SANE_Handle;
typedef int SANE_Fixed;
typedef enum {
    SANE_STATUS_GOOD,
    SANE_STATUS_UNSUPPORTED,
    SANE_STATUS_CANCELLED,
    SANE_STATUS_DEVICE_BUSY,
    SANE_STATUS_INVAL,
    SANE_STATUS_EOF,
    SANE_STATUS_JAMMED,
    SANE_STATUS_NO_DOCS,
    SANE_STATUSCOVER_OPEN,
    SANE_STATUS_IO_ERROR,
    SANE_STATUS_NO_MEM,
    SANE_STATUS_ACCESS_DENIED
} SANE_Status;
typedef enum {
    SANE_TYPE_BOOL,
    SANE_TYPE_INT,
    SANE_TYPE_FIXED,
    SANE_TYPE_STRING,
    SANE_TYPE_BUTTON,
    SANE_TYPE_GROUP
} SANE_Value_Type;
typedef enum {
    SANE_UNIT_NONE,
    SANE_UNIT_PIXEL,
    SANE_UNIT_BIT,
typedef struct {
    SANE_String_Const name;
    SANE_String_Const vendor;
    SANE_String_Const model;
    SANE_String_Const type;
} SANE_Device;

typedef enum {
    SANE_CONSTRAINT_NONE,
    SANE_CONSTRAINT_RANGE,
    SANE_CONSTRAINT_WORD_LIST,
    SANE_CONSTRAINT_STRING_LIST
} SANE_Constraint_Type;

typedef struct {
    SANE_Word min;
    SANE_Word max;
    SANE_Word quant;
} SANE_Range;

typedef struct {
    SANE_String_Const name;
    SANE_String_Const title;
    SANE_String_Const desc;
    SANE_Value_Type type;
    SANE_Unit unit;
    SANE_Int size;
    SANE_Int cap;
    SANE_Constraint_Type constraint_type;
    union {
        const SANE_String_Const *string_list;
        const SANE_Word *word_list;
        const SANE_Range *range;
    } constraint;
} SANE_Option_Descriptor;

typedef enum {
    SANE_ACTION_GET_VALUE,
    SANE_ACTION_SET_VALUE,
    SANE_ACTION_SET_AUTO
} SANE_Action;

typedef enum {
    SANE_FRAME_GRAY,
    SANE_FRAME_RGB,
    SANE_FRAME_RED,
    SANE_FRAME_GREEN,
    SANE_FRAME_BLUE
} SANE_Frame;

typedef struct {
    SANE_Frame format;
    SANE_Bool last_frame;
    SANE_Int bytes_per_line;
    SANE_Int pixels_per_line;
    SANE_Int lines;
    SANE_Int depth;
} SANE_Parameters;

typedef void (*SANE_Auth_Callback) (SANE_String_Const, SANE_Char *,
    SANE_Char *);

extern void sane_cancel(SANE_Handle handle);
extern void sane_close(SANE_Handle handle);
extern SANE_Status sane_control_option(SANE_Handle handle,
    SANE_Int option, SANE_Action action, void *value,
extern void sane_exit(void);
extern SANE_Status sane_get_devices(const SANE_Device **device_list, SANE_Bool local_only);
extern const SANE_Option_Descriptor *sane_get_option_descriptor(SANE_Handle handle, SANE_Int option);
extern SANE_Status sane_get_parameters(SANE_Handle handle, SANE_Parameters *params);
extern SANE_Status sane_get_select_fd(SANE_Handle handle, SANE_Int *fd);
extern SANE_Status sane_init(SANE_Int *version_code, SANE_Auth_Callback authorize);
extern SANE_Status sane_open(SANE_String_Const devicename, SANE_Handle *handle);
extern SANE_Status sane_read(SANE_Handle handle, SANE_Byte *data, SANE_Int max_length, SANE_Int *length);
extern SANE_Status sane_set_io_mode(SANE_Handle handle, SANE_Bool non_blocking);
extern SANE_Status sane_start(SANE_Handle handle);
extern SANE_String_Const sane_strstatus(SANE_Status status);

10.2.2 sane/saneopts.h

#define SANE_NAME_NUM_OPTIONS ""
#define saneopts_h
#define SANE_NAME_ADVANCED "advanced"
#define SANE_NAME_ANALOG_GAMMA "analog-gamma"
#define SANE_NAME_ANALOG_GAMMA_B "analog-gamma-b"
#define SANE_NAME_ANALOG_GAMMA_BIND "analog-gamma-bind"
#define SANE_NAME_ANALOG_GAMMA_G "analog-gamma-g"
#define SANE_NAME_ANALOG_GAMMA_R "analog-gamma-r"
#define SANE_NAME_BACKTRACK "backtrack"
#define SANE_NAME_BLACK_LEVEL "black-level"
#define SANE_NAME_GAMMA_VECTOR_B "blue-gamma-table"
#define SANE_NAME_SCAN_BR_X "br-x"
#define SANE_NAME_SCAN_BR_Y "br-y"
#define SANE_NAME_BRIGHTNESS "brightness"
#define SANE_NAME_CAL_EXPOS_TIME "cal-exposure-time"
#define SANE_NAME_CAL_EXPOS_TIME_B "cal-exposure-time-b"
#define SANE_NAME_CAL_EXPOS_TIME_G "cal-exposure-time-g"
#define SANE_NAME_CAL_EXPOS_TIME_R "cal-exposure-time-r"
#define SANE_NAME_CAL_LAMP_DEN "cal-lamp-density"
#define SANE_NAME_CANCEL "cancel"
#define SANE_TITLE_CANCEL "Cancel button"
#define SANE_NAME_CONTRAST "contrast"
#define SANE_NAME_COPY "copy"
#define SANE_TITLE_COPY "Copy button"
#define SANE_TITLECOVER_OPEN "Cover open"
#define SANE_NAMECOVER_OPEN "cover-open"
#define SANE_NAME_CUSTOM_GAMMA "custom-gamma"
#define SANE_NAME_BIT_DEPTH "depth"
#define SANE_NAME_DOR "double-res"
#define SANE_NAME_EMAIL "email"
#define SANE_TITLE_EMAIL "Email button"
#define SANE_NAME_ENHANCEMENT "enhancement"
#define SANE_NAME_FAX "fax"
#define SANE_TITLE_FAX  "Fax button"
#define SANE_NAME_FILE  "filename"
#define SANE_NAME_GAMMA_VECTOR "gamma-table"
#define SANE_NAME_GEOMETRY "geometry"
#define SANE_NAME_GRAIN_SIZE "grain"
#define SANE_NAME_GAMMA_VECTOR_G "green-gamma-table"
#define SANE_NAME_HALFTONE_PATTERN "halftone-pattern"
#define SANE_NAME_HALFTONE_DIMENSION "halftone-size"
#define SANE_NAME_HALFTONE "halftoning"
#define SANE_NAME_HIGHLIGHT "highlight"
#define SANE_NAME_HIGHLIGHT_B "highlight-b"
#define SANE_NAME_HIGHLIGHT_G "highlight-g"
#define SANE_NAME_HIGHLIGHT_R "highlight-r"
#define SANE_NAME_HUE "hue"
#define SANE_NAME_LAMP_OFF_AT_EXIT "lamp-off-at-exit"
#define SANE_NAME_SCAN_MODE "mode"
#define SANE_NAME_NEGATIVE "negative"
#define SANE_TITLE_PAGE_LOADED "Page loaded"
#define SANE_NAME_PAGE_HEIGHT "page-height"
#define SANE_NAME_PAGE_WIDTH "page-width"
#define SANE_NAME_PDF "pdf"
#define SANE_NAME_PREVIEW "preview"
#define SANE_NAME_GRAY_PREVIEW "preview-in-gray"
#define SANE_NAME_QUALITY_CAL "quality-cal"
#define SANE_NAME_GAMMA_VECTOR_R "red-gamma-table"
#define SANE_NAME_SCAN_RESOLUTION "resolution"
#define SANE_NAME_RESOLUTION_BIND "resolution-bind"
#define SANE_NAME_RGB_BIND "rgb-bind"
#define SANE_TITLE_ADVANCED SANE_I18N("Advanced")
#define SANE_TITLE_ANALOG_GAMMA_B SANE_I18N("Analog gamma
blue")
#define SANE_TITLE_ANALOG_GAMMA_G SANE_I18N("Analog gamma
green")
#define SANE_TITLE_ANALOG_GAMMA_R SANE_I18N("Analog gamma
red")
#define SANE_DESC_ANALOG_GAMMA_B SANE_I18N("Analog gamma-
correction for blue")
#define SANE_DESC_ANALOG_GAMMA_G SANE_I18N("Analog gamma-
correction for green")
#define SANE_DESC_ANALOG_GAMMA_R SANE_I18N("Analog gamma-
correction for red")
#define SANE_DESC_ANALOG_GAMMA SANE_I18N("Analog gamma-
correction")
#define SANE_TITLE_ANALOG_GAMMA_BIND SANE_I18N("Bind analog
gamma")
#define SANE_TITLE_RGB_BIND SANE_I18N("Bind RGB")
#define SANE_TITLE_RESOLUTION_BIND SANE_I18N("Bind X and Y
resolution")
#define SANE_TITLE_BIT_DEPTH SANE_I18N("Bit depth")
#define SANE_TITLE_BLACK_LEVEL SANE_I18N("Black level")
#define SANE_TITLE_GAMMA_VECTOR_B SANE_I18N("Blue
intensity")
#define SANE_DESC_SCAN_BR_X SANE_I18N("Bottom-right x
position of scan area.")
#define SANE_DESC_SCAN_BR_Y SANE_I18N("Bottom-right y
position of scan area.")
#define SANE_TITLE_SCAN_BR_X SANE_I18N("Bottom-right x")
#define SANE_TITLE_SCAN_BR_Y SANE_I18N("Bottom-right y")
#define SANE_TITLE_CAL_EXPOS_TIME_G SANE_I18N("Cal. exposure-
time for "green")
#define SANE_TITLE_CAL_EXPOS_TIME_B SANE_I18N("Cal. exposure-
time for blue")
#define SANE_TITLE_CAL_EXPOS_TIME_R     SANE_I18N("Cal. exposure-time for red")
#define SANE_TITLE_CAL_EXPOS_TIME       SANE_I18N("Cal. exposure-time")
#define SANE_DESC_CANCEL        SANE_I18N("Cancel button")
#define SANE_VALUE_SCAN_MODE_COLOR      SANE_I18N("Color")
#define SANE_TITLE_CONTRAST     SANE_I18N("Contrast")
#define SANE_DESC_BRIGHTNESS     SANE_I18N("Controls the brightness of the acquired image.")
#define SANE_DESC_CONTRAST      SANE_I18N("Controls the contrast of the acquired image.")
#define SANE_DESC_HUE   SANE_I18N("Controls the "hue" (blue-level) of the acquired image.")
#define SANE_DESC_BACKTRACK      SANE_I18N("Controls whether backtracking is forced.")
#define SANE_DESC_COPY  SANE_I18N("Copy button")
#define SANE_DESC_COVER_OPEN    SANE_I18N("Cover open")
#define SANE_DESC_CAL_EXPOS_TIME_B       SANE_I18N("Define exposure-time for blue calibration")
#define SANE_DESC_SCAN_EXPOS_TIME_B      SANE_I18N("Define exposure-time for blue scan")
#define SANE_DESC_CAL_EXPOS_TIME         SANE_I18N("Define exposure-time for calibration")
#define SANE_DESC_CAL_EXPOS_TIME_G       SANE_I18N("Define exposure-time for green calibration")
#define SANE_DESC_SCAN_EXPOS_TIME_G      SANE_I18N("Define exposure-time for green scan")
#define SANE_DESC_CAL_EXPOS_TIME_R       SANE_I18N("Define exposure-time for red calibration")
#define SANE_DESC_SCAN_EXPOS_TIME_R      SANE_I18N("Define exposure-time for red scan")
#define SANE_DESC_SCAN_EXPOS_TIME        SANE_I18N("Define exposure-time for scan")
#define SANE_DESC_CAL_LAMP_DEN  SANE_I18N("Define lamp density for calibration")
#define SANE_DESC_SCAN_LAMP_DEN  SANE_I18N("Define lamp density for scan")
#define SANE_DESC_HALFTONE_PATTERN      SANE_I18N("Defines the halftoning (dithering) pattern for scanning "halftoned images.")
#define SANE_DESC_SCAN_SPEED    SANE_I18N("Determines the speed at which the scan proceeds.")
#define SANE_DESC_CUSTOM_GAMMA  SANE_I18N("Determines whether a builtin or a custom gamma-table should be "used.")
#define SANE_DESC_QUALITY_CAL   SANE_I18N("Do a quality white-calibration")
#define SANE_TITLE_DOR  SANE_I18N("Double Optical Resolution")
#define SANE_DESC_EMAIL SANE_I18N("Email button")
#define SANE_DESC_SELECT_EXPOSURE_TIME   SANE_I18N("Enable selection of exposure-time")
#define SANE_DESC_SELECT_LAMP_DENSITY    SANE_I18N("Enable selection of lamp density")
#define SANE_TITLE_ENHANCEMENT  SANE_I18N("Enhancement")
#define SANE_DESC_FAX   SANE_I18N("Fax button")
#define SANE_TITLE_FILE SANE_I18N("Filename")
#define SANE_TITLE_BACKTRACK    SANE_I18N("Force backtracking")
#define SANE_TITLE_GRAY_PREVIEW  SANE_I18N("Force monochrome preview")
#define SANE_DESC_GAMMA_VECTOR_B         SANE_I18N("Gamma-correction table for the blue band.")
#define SANE_DESC_GAMMA_VECTOR_G         SANE_I18N("Gamma-correction table for the green band.")
#define SANE_DESC_GAMMA_VECTOR_R         SANE_I18N("Gamma-correction table for the red band.")
LSB Imaging 5.0

#define SANE_DESC_GAMMA_VECTOR SANE_I18N("Gamma-correction table. In color mode this option equally affects the red, green, and blue channels simultaneously (i.e., it is an "intensity gamma table.")")
#define SANE_TITLE_GEOMETRY SANE_I18N("Geometry")
#define SANE_TITLE_GRAIN_SIZE SANE_I18N("Grain size")
#define SANE_VALUE_SCAN_MODE_GRAY SANE_I18N("Gray")
#define SANE_TITLE_GAMMA_VECTOR_G SANE_I18N("Green intensity")
#define SANE_TITLE_HALFTONE_DIMENSION SANE_I18N("Halftone pattern size")
#define SANE_TITLE_HALFTONE_PATTERN SANE_I18N("Halftone pattern")
#define SANE_TITLE_HIGHLIGHT B SANE_I18N("Highlight for blue")
#define SANE_TITLE_HIGHLIGHT_G SANE_I18N("Highlight for green")
#define SANE_TITLE_HIGHLIGHT_R SANE_I18N("Highlight for red")
#define SANE_TITLE_HIGHLIGHT SANE_I18N("Highlight")
#define SANE_TITLE_HUE SANE_I18N("Hue")
#define SANE_TITLE_GAMMA_VECTOR SANE_I18N("Image intensity")
#define SANE_TITLE_HIGHLIGHT B SANE_I18N("Highlight for blue")
#define SANE_DESC_ADVANCED SANE_I18N("Hardware specific options")
#define SANE_TITLE_HIGHLIGHT_G SANE_I18N("Highlight for green")
#define SANE_TITLE_HIGHLIGHT_R SANE_I18N("Highlight for red")
#define SANE_TITLE_HIGHLIGHT SANE_I18N("Highlight")
#define SANE_TITLE_HUE SANE_I18N("Hue")
#define SANE_TITLE_GAMMA_VECTOR SANE_I18N("Image intensity")
#define SANE_DESC_ENHANCEMENT SANE_I18N("Image modification options")
#define SANE_DESC_ANALOG_GAMMA_BIND SANE_I18N("In RGB-mode use same values for each color")
#define SANE_DESC_RGB_BIND SANE_I18N("In RGB-mode use same values for each color")
#define SANE_VALUE_SCAN_MODE_LINEART SANE_I18N("Lineart")
#define SANE_TITLE_NEGATIVE SANE_I18N("Negative")
#define SANE_DESC_BIT_DEPTH SANE_I18N("Number of bits per sample, typical values are 1 for "line-art" and 8 for multibit scans.")
#define SANE_TITLE_NUM_OPTIONS SANE_I18N("Number of options")
#define SANE_TITLE_PAGE_HEIGHT SANE_I18N("Page height")
#define SANE_DESC_PAGE_LOADED SANE_I18N("Page loaded")
#define SANE_TITLE_PAGE_WIDTH SANE_I18N("Page width")
#define SANE_DESC_PDF SANE_I18N("PDF button")
#define SANE_VALUE_SCAN_MODE_LINEART SANE_I18N("Lineart")
#define SANE_TITLE_PREVIEW SANE_I18N("Preview")
#define SANE_TITLE_QUALITY_CAL SANE_I18N("Quality calibration")
#define SANE_DESC_NUM_OPTIONS SANE_I18N("Read-only option that specifies how many options a specific device supports.")
#define SANE_TITLE_GAMMA_VECTOR_R SANE_I18N("Red intensity")
#define SANE_DESC_PREVIEW SANE_I18N("Request a preview-quality scan.")
#define SANE_DESC_GRAY_PREVIEW SANE_I18N("Request that all previews are done in monochrome mode. On a "three-pass scanner this cuts down the number of passes to one and on a "one-pass scanner, it reduces the memory requirements and scan-time of the "preview.")
#define SANE_TITLE_SATURATION SANE_I18N("Saturation")
#define SANE_DESC_GEOMETRY SANE_I18N("Scan area and media size options")
#define SANE_DESC_SCAN SANE_I18N("Scan button")
#define SANE_VALUE_SCAN_EXPOS_TIME_G SANE_I18N("Scan exposure-time for "green")
#define SANE_VALUE_SCAN_EXPOS_TIME_B SANE_I18N("Scan exposure-time for blue")
#define SANE_VALUE_SCAN_EXPOS_TIME_R SANE_I18N("Scan exposure-time for red")
#define SANE_TITLE_LAMP_OFF_AT_EXIT SANE_I18N("Lamp off at exit")
#define SANE_TITLE_NUM_OPTIONS SANE_I18N("Read-only option that specifies how many options a specific device supports.")
#define SANE_TITLE_GAMMA_VECTOR_R SANE_I18N("Red intensity")
#define SANE_DESC_SCAN SANE_I18N("Scan button")
#define SANE_VALUE_SCAN_EXPOS_TIME_G SANE_I18N("Scan exposure-time for "green")
#define SANE_VALUE_SCAN_EXPOS_TIME_B SANE_I18N("Scan exposure-time for blue")
#define SANE_VALUE_SCAN_EXPOS_TIME_R SANE_I18N("Scan exposure-time for red")
#define SANE_TITLE_LAMP_OFF_AT_EXIT SANE_I18N("Lamp off at exit")
#define SANE_TITLE_SCAN_EXPOS_TIME_G SANE_I18N("Scan exposure-time for "green")
#define SANE_TITLE_SCAN_EXPOS_TIME_B SANE_I18N("Scan exposure-time for blue")
#define SANE_TITLE_SCAN_EXPOS_TIME_R SANE_I18N("Scan exposure-time for red")
#define SANE_TITLE_SCAN_EXPOS_TIME SANE_I18N("Scan exposure-time")
#define SANE_TITLE_SCAN_LAMP_DEN SANE_I18N("Scan lamp

© 2015 Linux Foundation
#define SANE_TITLE_SCAN_MODE SANE_I18N("Scan mode")
#define SANE_TITLE_SCAN_RESOLUTION SANE_I18N("Scan resolution")
#define SANE_TITLE_SCAN_SOURCE SANE_I18N("Scan source")
#define SANE_TITLE_SCAN_SPEED SANE_I18N("Scan speed")
#define SANE_DESC_SENSORS SANE_I18N("Scanner sensors and buttons")
#define SANE_DESC_THRESHOLD SANE_I18N("Select minimum-brightness to get a white point")
#define SANE_DESC_SCAN_MODE SANE_I18N("Selects the scan mode (e.g., lineart, monochrome, or color).")
#define SANE_DESC_SCAN_SOURCE SANE_I18N("Selects the scan source (such as a document-feeder).")
#define SANE_DESC_GRAIN_SIZE SANE_I18N("Selects the \"graininess\" of the acquired image. Smaller values \"result in sharper images.\")
#define SANE_DESC_SHADOW_B SANE_I18N("Selects what blue radiance level should be considered \"black\".")
#define SANE_DESC_HIGHLIGHT_B SANE_I18N("Selects what blue radiance level should be considered \"full blue\".")
#define SANE_DESC_WHITE_LEVEL_B SANE_I18N("Selects what blue radiance level should be considered \"white\".")
#define SANE_DESC_SHADOW_G SANE_I18N("Selects what green radiance level should be considered \"black\".")
#define SANE_DESC_HIGHLIGHT_G SANE_I18N("Selects what green radiance level should be considered \"full green\".")
#define SANE_DESC_WHITE_LEVEL_G SANE_I18N("Selects what green radiance level should be considered \"white\".")
#define SANE_DESC_SHADOW_R SANE_I18N("Selects what red radiance level should be considered \"black\".")
#define SANE_DESC_HIGHLIGHT_R SANE_I18N("Selects what red radiance level should be considered \"full red\".")
#define SANE_DESC_WHITE_LEVEL_R SANE_I18N("Selects what red radiance level should be considered \"white\".")
#define SANE_DESC_HALFTONE SANE_I18N("Selects whether the acquired image should be halftoned (dithered).")
#define SANE_TITLE_SELECT_EXPOSURE_TIME SANE_I18N("Set exposure-time")
#define SANE_TITLE_SELECT_LAMP_DENSITY SANE_I18N("Set lamp density")
#define SANE_DESC_SCAN_X_RESOLUTION SANE_I18N("Sets the horizontal resolution of the scanned image.")
#define SANE_DESC_SCAN_RESOLUTION SANE_I18N("Sets the resolution of the scanned image.")
#define SANE_DESC_HALFTONE_DIMENSION SANE_I18N("Sets the size of the halftoning (dithering) pattern used when \"scanning halftoned images.\")
#define SANE_DESC_SCAN_Y_RESOLUTION SANE_I18N("Sets the vertical resolution of the scanned image.")
#define SANE_TITLE_SHADOW_B SANE_I18N("Shadow for blue")
#define SANE_TITLE_SHADOW_G SANE_I18N("Shadow for green")
#define SANE_TITLE_SHADOW_R SANE_I18N("Shadow for red")
#define SANE_TITLE_SHADOW SANE_I18N("Shadow")
#define SANE_DESC_STANDARD SANE_I18N("Source, mode and resolution options")
#define SANE_DESC_PAGE_HEIGHT SANE_I18N("Specifies the height"
of the media.
#define SANE_DESC_PAGE_WIDTH SANE_I18N("Specifies the width of the media. Required for automatic " centering of sheet-fed scans.")
#define SANE_TITLE_STANDARD SANE_I18N("Standard")
#define SANE_DESC_NEGATIVE SANE_I18N("Swap black and white")
#define SANE_DESC_FILE SANE_I18N("The filename of the image to be loaded.")
#define SANE_DESC_SATURATION SANE_I18N("The saturation level controls the amount of \"blooming\" that \"occurs when acquiring an image with a camera. Larger values cause more \"blooming.\"")
#define SANE_TITLE_THRESHOLD SANE_I18N("Threshold")
#define SANE_DESC_SCAN_TL_X SANE_I18N("Top-left x position of scan area.")
#define SANE_TITLE_SCAN_TL_X SANE_I18N("Top-left x")
#define SANE_DESC_SCAN_TL_Y SANE_I18N("Top-left y position of scan area.")
#define SANE_TITLE_SCAN_TL_Y SANE_I18N("Top-left y")
#define SANE_DESC_LAMP_OFF_AT_EXIT SANE_I18N("Turn off lamp when program exits")
#define SANE_TITLE_CUSTOM_GAMMA SANE_I18N("Use custom gamma table")
#define SANE_DESC_DOR SANE_I18N("Use lens that doubles optical resolution")
#define SANE_DESC_RESOLUTION_BIND SANE_I18N("Use same values for X and Y resolution")
#define SANE_DESC_WARMUP SANE_I18N("Warmup lamp before scanning")
#define SANE_TITLE_WARMUP SANE_I18N("Warmup lamp")
#define SANE_TITLE_WHITE_LEVEL_B SANE_I18N("White level for blue")
#define SANE_TITLE_WHITE_LEVEL_G SANE_I18N("White level for green")
#define SANE_TITLE_WHITE_LEVEL_R SANE_I18N("White level for red")
#define SANE_TITLE_WHITE_LEVEL SANE_I18N("White level")
#define SANE_TITLE_SCAN_X_RESOLUTION SANE_I18N("X-resolution")
#define SANE_TITLE_SCAN_Y_RESOLUTION SANE_I18N("Y-resolution")
#define SANE_NAME_SATURATION "saturation"
#define SANE_NAME_SCAN "scan"
#define SANE_NAME_SCAN_EXPOS_TIME "scan-exposure-time"
#define SANE_NAME_SCAN_EXPOS_TIME_B "scan-exposure-time-b"
#define SANE_NAME_SCAN_EXPOS_TIME_G "scan-exposure-time-g"
#define SANE_NAME_SCAN_EXPOS_TIME_R "scan-exposure-time-r"
#define SANE_NAME_SCAN_LAMP_DEN "scan-lamp-density"
#define SANE_NAME_SELECT_EXPOS_TIME "select-exposure-time"
#define SANE_NAME_SELECT_LAMP_DENSITY "select-lamp-density"
#define SANE_NAME_SENSORS "sensors"
#define SANE_NAME_SHADOW "shadow"
#define SANE_NAME_SHADOW_B "shadow-b"
#define SANE_NAME_SHADOW_G "shadow-g"
#define SANE_NAME_SHADOW_R "shadow-r"
#define SANE_NAME_SCAN_SOURCE "source"
#define SANE_NAME_SCAN_SPEED "speed"
#define SANE_NAME_STANDARD "standard"
#define SANE_I18N(text) text
#define SANE_NAME_THRESHOLD "threshold"
#define SANE_NAME_SCAN_TL_X "tl-x"
#define SANE_NAME_SCAN_TL_Y "tl-y"
#define SANE_NAME_WARMUP "warmup"
#define SANE_NAME_WHITE_LEVEL "white-level"
#define SANE_NAME_WHITE_LEVEL_B "white-level-b"
#define SANE_NAME_WHITE_LEVEL_G "white-level-g"
#define SANE_NAME_WHITE_LEVEL_R "white-level-r"
#define SANE_NAME_SCAN_X_RESOLUTION "x-resolution"
#define SANE_NAME_SCAN_Y_RESOLUTION     "y-resolution"
11 Software Installation

11.1 Package Dependencies

The LSB runtime environment shall provide the following dependencies.

lsb-imaging

This dependency is used to indicate that the application is dependent on features contained in the LSB Imaging module specification.

These dependencies shall have a version of 5.0.
Annex A Alphabetical Listing of Interfaces by Library

A.1 libsane

The behavior of the interfaces in this library is specified by the following Standards.

SANE Standard Version 1.04 [SANE]

<table>
<thead>
<tr>
<th>Function Interfaces</th>
<th>SANE Standard Version 1.04 [SANE]</th>
</tr>
</thead>
<tbody>
<tr>
<td>sane_cancel</td>
<td>sane_get_option_descript</td>
</tr>
<tr>
<td>sane_close</td>
<td>sane_set_io_mode</td>
</tr>
<tr>
<td>sane_control_option</td>
<td>sane_get_select_fd</td>
</tr>
<tr>
<td>sane_exit</td>
<td>sane_init</td>
</tr>
<tr>
<td>sane_get_devices</td>
<td>sane_open</td>
</tr>
</tbody>
</table>

A.2 libcups

The behavior of the interfaces in this library is specified by the following Standards.

CUPS API Reference [CUPS 1.2]
This Specification [LSB]

<table>
<thead>
<tr>
<th>Function Interfaces</th>
<th>CUPS API Reference [CUPS 1.2]</th>
</tr>
</thead>
<tbody>
<tr>
<td>cupsAddDest</td>
<td>httpBlocking</td>
</tr>
<tr>
<td>cupsAddOption</td>
<td>httpCheck</td>
</tr>
<tr>
<td>cupsCancelJob</td>
<td>httpClearCookie</td>
</tr>
<tr>
<td>cupsDoAuthentication</td>
<td>httpClearFields</td>
</tr>
<tr>
<td>cupsDoFileRequest</td>
<td>httpClose</td>
</tr>
<tr>
<td>cupsEncodeOptions</td>
<td>httpConnect</td>
</tr>
<tr>
<td>cupsEncryption</td>
<td>httpConnectEncrypt</td>
</tr>
<tr>
<td>cupsFreeDests</td>
<td>httpDecode64_2</td>
</tr>
<tr>
<td>cupsFreeJobs</td>
<td>httpDelete</td>
</tr>
<tr>
<td>cupsFreeOptions</td>
<td>httpDeleteAttribute</td>
</tr>
<tr>
<td>cupsGetDefault</td>
<td>httpEncryption</td>
</tr>
<tr>
<td>cupsGetDefault2</td>
<td>httpError</td>
</tr>
<tr>
<td>cupsGetDest</td>
<td>httpFlush</td>
</tr>
<tr>
<td>cupsGetDest2</td>
<td>httpGetCookie</td>
</tr>
<tr>
<td>cupsGetDests</td>
<td>httpGet</td>
</tr>
<tr>
<td>cupsGetDests2</td>
<td>httpInit</td>
</tr>
<tr>
<td>cupsGetDests2_2</td>
<td>httpList</td>
</tr>
<tr>
<td>cupsGetDests2_2_2</td>
<td>ippAddString</td>
</tr>
<tr>
<td>cupsGetDests2_2_2_2</td>
<td>ippDelete</td>
</tr>
<tr>
<td>cupsGetDests2_2_2_2_2</td>
<td>ippDeleteAttribute</td>
</tr>
<tr>
<td>cupsGetDests2_2_2_2_2_2</td>
<td>ippErrorString</td>
</tr>
<tr>
<td>cupsGetDests2_2_2_2_2_2_2</td>
<td>ippFindAttribute</td>
</tr>
<tr>
<td>cupsGetDests2_2_2_2_2_2_2_2</td>
<td>ippFindAttribute2</td>
</tr>
<tr>
<td>cupsGetDests2_2_2_2_2_2_2_2_2</td>
<td>ippList</td>
</tr>
<tr>
<td>cupsGetDests2_2_2_2_2_2_2_2_2_2</td>
<td>ippNew</td>
</tr>
<tr>
<td>cupsGetDests2_2_2_2_2_2_2_2_2_2_2</td>
<td>ippPort</td>
</tr>
<tr>
<td>cupsGetDests2_2_2_2_2_2_2_2_2_2_2_2</td>
<td>ippRead</td>
</tr>
</tbody>
</table>
## Interfaces by Library

<table>
<thead>
<tr>
<th>Function</th>
<th>Library</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>cupsGetFd</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>httpGetDateString</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>ippReadFile</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>cupsGetFile</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>httpGetField</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>ippReadIO</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>cupsGetJobs</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>httpGetField</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>ippTimeToDate</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>cupsGetJobs2</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>httpGetHostByName</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>cupsGetOption</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>httpGetSubField</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>ippWrite</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>cupsGetPPD</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>httpGet</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>ippWriteFile</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>cupsGetPPD2</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>httpHead</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>ippWriteIO</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>cupsLangEncoding</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>httpMD5</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>ppdCollect</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>cupsLangFlush</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>httpMD5Final</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>ppdConflicts</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>cupsLangFree</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>httpMD5String</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>ppdEmit</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>cupsLangGet</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>httpOptions</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>ppdEmitFd</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>cupsLastError</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>httpPost</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>ppdEmitJCL</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>cupsMarkOptions</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>httpPut</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>ppdErrorString</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>cupsParseOptions</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>httpReconnect</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>ppdFindAttr</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>cupsPrintFile</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>httpSetCookie</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>ppdFindChoice</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>cupsPrintFile2</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>httpSetField</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>ppdFindMarkedChoice</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>cupsPrintFiles</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>httpStatus</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>ppdFindNextAttr</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>cupsPrintFiles2</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>httpTrace</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>ppdFindOption</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>cupsPutFd</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>httpUpdate</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>ppdIsMarked</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>cupsPutFile</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>httpWait</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>ppdLastError</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>cupsServer</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>ippAddBoolean</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>ppdMarkDefaults</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>cupsSetDests</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>ippAddBooleans</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>ppdMarkOption</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>cupsSetDests2</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>ippAddCollection</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>ppdOpen</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>cupsSetEncryption</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>ippAddCollections</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>ppdOpenFd</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>cupsSetPasswordCB</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>ippAddDate</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>ppdOpenFile</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>cupsSetServer</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>ippAddInteger</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>ppdPageSize</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>cupsSetUser</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>ippAddIntegers</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>ppdPageSize</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>cupsTempFd</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>ippAddRange</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>ppdPageWidth</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>cupsUser</td>
<td>LSB</td>
<td></td>
</tr>
<tr>
<td>ippAddRanges</td>
<td>CUPS 1.2</td>
<td></td>
</tr>
<tr>
<td>ppdSetConformance</td>
<td>LSB</td>
<td></td>
</tr>
</tbody>
</table>

### A.3 libcupsimage

The behavior of the interfaces in this library is specified by the following Standards.
# LSB Imaging 5.0

This Specification [LSB]

## Table A-3 libcupsimage Function Interfaces

<table>
<thead>
<tr>
<th>Function</th>
<th>Function</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>cupsRasterClose[LSB]</td>
<td>cupsRasterReadHeader[LSB]</td>
<td>cupsRasterWriteHeader[LSB]</td>
</tr>
<tr>
<td>cupsRasterOpen[LSB]</td>
<td>cupsRasterReadPixels[LSB]</td>
<td>cupsRasterWritePixels[LSB]</td>
</tr>
</tbody>
</table>
Annex B GNU Free Documentation License (Informative)

This specification is published under the terms of the GNU Free Documentation License, Version 1.1, March 2000

Copyright (C) 2000 Free Software Foundation, Inc. 59 Temple Place, Suite 330, Boston, MA 02111-1307 USA Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

B.1 PREAMBLE

The purpose of this License is to make a manual, textbook, or other written document "free" in the sense of freedom: to assure everyone the effective freedom to copy and redistribute it, with or without modifying it, either commercially or noncommercially. Secondarily, this License preserves for the author and publisher a way to get credit for their work, while not being considered responsible for modifications made by others.

This License is a kind of "copyleft", which means that derivative works of the document must themselves be free in the same sense. It complements the GNU General Public License, which is a copyleft license designed for free software.

We have designed this License in order to use it for manuals for free software, because free software needs free documentation: a free program should come with manuals providing the same freedoms that the software does. But this License is not limited to software manuals; it can be used for any textual work, regardless of subject matter or whether it is published as a printed book. We recommend this License principally for works whose purpose is instruction or reference.

B.2 APPLICABILITY AND DEFINITIONS

This License applies to any manual or other work that contains a notice placed by the copyright holder saying it can be distributed under the terms of this License. The "Document", below, refers to any such manual or work. Any member of the public is a licensee, and is addressed as "you".

A "Modified Version" of the Document means any work containing the Document or a portion of it, either copied verbatim, or with modifications and/or translated into another language.

A "Secondary Section" is a named appendix or a front-matter section of the Document that deals exclusively with the relationship of the publishers or authors of the Document to the Document's overall subject (or to related matters) and contains nothing that could fall directly within that overall subject. (For example, if the Document is in part a textbook of mathematics, a Secondary Section may not explain any mathematics.) The relationship could be a matter of historical connection with the subject or with related matters, or of legal, commercial, philosophical, ethical or political position regarding them.

The "Invariant Sections" are certain Secondary Sections whose titles are designated, as being those of Invariant Sections, in the notice that says that the Document is released under this License.

The "Cover Texts" are certain short passages of text that are listed, as Front-Cover Texts or Back-Cover Texts, in the notice that says that the Document is released under this License.

The "Cover Texts" consist of Short passages of text that are listed, as Front-Cover Texts or Back-Cover Texts, in the notice that says that the Document is released under this License.

A "Transparent" copy of the Document means a machine-readable copy, represented in a format whose specification is available to the general public, whose contents can be viewed and edited directly and straightforwardly with generic text editors or (for images composed of pixels) generic paint programs or (for drawings) some widely available drawing editor, and that is suitable for input to text formatters or for automatic translation to a variety of formats suitable for input to text formatters. A copy made in an otherwise Transparent file format whose markup has been designed to thwart or discourage subsequent modification by readers is not Transparent. A copy that is not "Transparent"
Examples of suitable formats for Transparent copies include plain ASCII without markup, Texinfo input format, LaTeX input format, SGML or XML using a publicly available DTD, and standard-conforming simple HTML designed for human modification. Opaque formats include PostScript, PDF, proprietary formats that can be read and edited only by proprietary word processors, SGML or XML for which the DTD and/or processing tools are not generally available, and the machine-generated HTML produced by some word processors for output purposes only.

The "Title Page" means, for a printed book, the title page itself, plus such following pages as are needed to hold, legibly, the material this License requires to appear in the title page. For works in formats which do not have any title page as such, "Title Page" means the text near the most prominent appearance of the work's title, preceding the beginning of the body of the text.

### B.3 VERBATIM COPYING

You may copy and distribute the Document in any medium, either commercially or non-commercially, provided that this License, the copyright notices, and the license notice saying this License applies to the Document are reproduced in all copies, and that you add no other conditions whatsoever to those of this License. You may not use technical measures to obstruct or control the reading or further copying of the copies you make or distribute. However, you may accept compensation in exchange for copies. If you distribute a large enough number of copies you must also follow the conditions in section 3.

You may also lend copies, under the same conditions stated above, and you may publicly display copies.

### B.4 COPYING IN QUANTITY

If you publish printed copies of the Document numbering more than 100, and the Document's license notice requires Cover Texts, you must enclose the copies in covers that carry, clearly and legibly, all these Cover Texts: Front-Cover Texts on the front cover, and Back-Cover Texts on the back cover. Both covers must also clearly and legibly identify you as the publisher of these copies. The front cover must present the full title with all words of the title equally prominent and visible. You may add other material on the covers in addition. Copying with changes limited to the covers, as long as they preserve the title of the Document and satisfy these conditions, can be treated as verbatim copying in other respects.

If the required texts for either cover are too voluminous to fit legibly, you should put the first ones listed (as many as fit reasonably) on the actual cover, and continue the rest onto adjacent pages.

If you publish or distribute Opaque copies of the Document numbering more than 100, you must either include a machine-readable Transparent copy along with each Opaque copy, or state in or with each Opaque copy a publicly-accessible computer-network location containing a complete Transparent copy of the Document, free of added material, which the general network-using public has access to download anonymously at no charge using public-standard network protocols. If you use the latter option, you must take reasonably prudent steps, when you begin distribution of Opaque copies in quantity, to ensure that this Transparent copy will remain thus accessible at the stated location until at least one year after the last time you distribute an Opaque copy (directly or through your agents or retailers) of that edition to the public.

It is requested, but not required, that you contact the authors of the Document well before redistributing any large number of copies, to give them a chance to provide you with an updated version of the Document.
B.5 MODIFICATIONS

You may copy and distribute a Modified Version of the Document under the conditions of sections 2 and 3 above, provided that you release the Modified Version under precisely this License, with the Modified Version filling the role of the Document, thus licensing distribution and modification of the Modified Version to whoever possesses a copy of it. In addition, you must do these things in the Modified Version:

A. Use in the Title Page (and on the covers, if any) a title distinct from that of the Document, and from those of previous versions (which should, if there were any, be listed in the History section of the Document). You may use the same title as a previous version if the original publisher of that version gives permission.

B. List on the Title Page, as authors, one or more persons or entities responsible for authorship of the modifications in the Modified Version, together with at least five of the principal authors of the Document (all of its principal authors, if it has less than five).

C. State on the Title page the name of the publisher of the Modified Version, as the publisher.

D. Preserve all the copyright notices of the Document.

E. Add an appropriate copyright notice for your modifications adjacent to the other copyright notices.

F. Include, immediately after the copyright notices, a license notice giving the public permission to use the Modified Version under the terms of this License, in the form shown in the Addendum below.

G. Preserve in that license notice the full lists of Invariant Sections and required Cover Texts given in the Document's license notice.

H. Include an unaltered copy of this License.

I. Preserve the section entitled "History", and its title, and add to it an item stating at least the title, year, new authors, and publisher of the Modified Version as given on the Title Page. If there is no section entitled "History" in the Document, create one stating the title, year, authors, and publisher of the Document as given on its Title Page, then add an item describing the Modified Version as stated in the previous sentence.

J. Preserve the network location, if any, given in the Document for public access to a Transparent copy of the Document, and likewise the network locations given in the Document for previous versions it was based on. These may be placed in the "History" section. You may omit a network location for a work that was published at least four years before the Document itself, or if the original publisher of the version it refers to gives permission.

K. In any section entitled "Acknowledgements" or "Dedications", preserve the section's title, and preserve in the section all the substance and tone of each of the contributor acknowledgements and/or dedications given therein.

L. Preserve all the Invariant Sections of the Document, unaltered in their text and in their titles. Section numbers or the equivalent are not considered part of the section titles.

M. Delete any section entitled "Endorsements". Such a section may not be included in the Modified Version.

N. Do not retitle any existing section as "Endorsements" or to conflict in title with any Invariant Section.

If the Modified Version includes new front-matter sections or appendices that qualify as Secondary Sections and contain no material copied from the Document, you may at your option designate some or all of these sections as invariant. To do this, add their titles to the list of Invariant Sections in the Modified Version's license notice. These
titles must be distinct from any other section titles.

You may add a section entitled "Endorsements", provided it contains nothing but endorsements of your Modified Version by various parties—for example, statements of peer review or that the text has been approved by an organization as the authoritative definition of a standard.

You may add a passage of up to five words as a Front-Cover Text, and a passage of up to 25 words as a Back-Cover Text, to the end of the list of Cover Texts in the Modified Version. Only one passage of Front-Cover Text and one of Back-Cover Text may be added by (or through arrangements made by) any one entity. If the Document already includes a cover text for the same cover, previously added by you or by arrangement made by the same entity you are acting on behalf of, you may not add another; but you may replace the old one, on explicit permission from the previous publisher that added the old one.

The author(s) and publisher(s) of the Document do not by this License give permission to use their names for publicity for or to assert or imply endorsement of any Modified Version.

B.6 COMBINING DOCUMENTS

You may combine the Document with other documents released under this License, under the terms defined in section 4 above for modified versions, provided that you include in the combination all of the Invariant Sections of all of the original documents, unmodified, and list them all as Invariant Sections of your combined work in its license notice.

The combined work need only contain one copy of this License, and multiple identical Invariant Sections may be replaced with a single copy. If there are multiple Invariant Sections with the same name but different contents, make the title of each such section unique by adding at the end of it, in parentheses, the name of the original author or publisher of that section if known, or else a unique number. Make the same adjustment to the section titles in the list of Invariant Sections in the license notice of the combined work.

In the combination, you must combine any sections entitled "History" in the various original documents, forming one section entitled "History"; likewise combine any sections entitled "Acknowledgements", and any sections entitled "Dedications". You must delete all sections entitled "Endorsements."

B.7 COLLECTIONS OF DOCUMENTS

You may make a collection consisting of the Document and other documents released under this License, and replace the individual copies of this License in the various documents with a single copy that is included in the collection, provided that you follow the rules of this License for verbatim copying of each of the documents in all other respects.

You may extract a single document from such a collection, and distribute it individually under this License, provided you insert a copy of this License into the extracted document, and follow this License in all other respects regarding verbatim copying of that document.

B.8 AGGREGATION WITH INDEPENDENT WORKS

A compilation of the Document or its derivatives with other separate and independent documents or works, in or on a volume of a storage or distribution medium, does not as a whole count as a Modified Version of the Document, provided no compilation copyright is claimed for the compilation. Such a compilation is called an "aggregate", and this License does not apply to the other self-contained works thus compiled with the Document, on account of their being thus compiled, if they are not themselves derivative works of the Document.
If the Cover Text requirement of section 3 is applicable to these copies of the Document, then if the Document is less than one quarter of the entire aggregate, the Document's Cover Texts may be placed on covers that surround only the Document within the aggregate. Otherwise they must appear on covers around the whole aggregate.

**B.9 TRANSLATION**

Translation is considered a kind of modification, so you may distribute translations of the Document under the terms of section 4. Replacing Invariant Sections with translations requires special permission from their copyright holders, but you may include translations of some or all Invariant Sections in addition to the original versions of these Invariant Sections. You may include a translation of this License provided that you also include the original English version of this License. In case of a disagreement between the translation and the original English version of this License, the original English version will prevail.

**B.10 TERMINATION**

You may not copy, modify, sublicense, or distribute the Document except as expressly provided for under this License. Any other attempt to copy, modify, sublicense or distribute the Document is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

**B.11 FUTURE REVISIONS OF THIS LICENSE**

The Free Software Foundation may publish new, revised versions of the GNU Free Documentation License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns. See http://www.gnu.org/copyleft/.

Each version of the License is given a distinguishing version number. If the Document specifies that a particular numbered version of this License "or any later version" applies to it, you have the option of following the terms and conditions either of that specified version or of any later version that has been published (not as a draft) by the Free Software Foundation. If the Document does not specify a version number of this License, you may choose any version ever published (not as a draft) by the Free Software Foundation.

**B.12 How to use this License for your documents**

To use this License in a document you have written, include a copy of the License in the document and put the following copyright and license notices just after the title page:

```
Copyright (c) YEAR YOUR NAME. Permission is granted to copy, distribute and/or modify
this document under the terms of the GNU Free Documentation License, Version 1.1 or any
later version published by the Free Software Foundation; with the Invariant Sections being
LIST THEIR TITLES, with the Front-Cover Texts being LIST, and with the Back-Cover
Texts being LIST. A copy of the license is included in the section entitled "GNU Free
Documentation License".
```

If you have no Invariant Sections, write "with no Invariant Sections" instead of saying
which ones are invariant. If you have no Front-Cover Texts, write "no Front-Cover
Texts" instead of "Front-Cover Texts being LIST"; likewise for Back-Cover Texts.

If your document contains nontrivial examples of program code, we recommend releasing
these examples in parallel under your choice of free software license, such as the
GNU General Public License, to permit their use in free software.