Linux Standard Base Core Specification for PPC32 2.0.1

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Specification Introduction

Specification Introduction

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Foreword

This is version 2.0.1 of the Linux Standard Base Core Specification for PPC32. An implementation of this version of the specification may not claim to be an implementation of the Linux Standard Base unless it has successfully completed the compliance process as defined by the Free Standards Group.

Introduction

The LSB defines a binary interface for application programs that are compiled and packaged for LSB-conforming implementations on many different hardware architectures. Since a binary specification shall include information specific to the computer processor architecture for which it is intended, it is not possible for a single document to specify the interface for all possible LSB-conforming implementations. Therefore, the LSB is a family of specifications, rather than a single one.

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.

I. Introductory Elements

Chapter 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 specification ("LSB-generic") describing those parts of the interface that remain constant across all implementations of the LSB, and an architecture-specific specification ("LSB-arch") describing the parts of the interface that vary by processor architecture. Together, the LSB-generic and the architecture-specific supplement for a single hardware architecture provide a complete interface specification for compiled application programs on systems that share a common hardware architecture.

The LSB-generic document shall be used in conjunction with an architecture-specific supplement. Whenever a section of the LSB-generic specification shall be supplemented by architecture-specific information, the LSB-generic document includes a reference to the architecture supplement. Architecture supplements may also contain additional information that is not referenced in the LSB-generic document.

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 shall provide 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 PPC32 architecture specific Core module of the Linux Standards Base (LSB). This module supplements the generic LSB Core module with those interfaces that differ between architectures.

Interfaces described in this module are mandatory except where explicitly listed otherwise. Core interfaces may be supplemented by other modules; all modules are built upon the core.

Chapter 2. Normative References

The specifications listed below are referenced in whole or in part by the Linux Standard Base. In this specification, where only a particular section of one of these references is identified, then the normative reference is to that section alone, and the rest of the referenced document is informative.

Table 2-1. Normative References

Name	Title	URL
DWARF Debugging Information Format	DWARF Debugging Information Format, Revision 2.0.0 (July 27, 1993)	http://www.eagercon.com/dwarf/dwarf-2.0.0.pdf
Filesystem Hierarchy Standard	Filesystem Hierarchy Standard (FHS) 2.3	http://www.pathname.com/fhs/
IEEE Std 754-1985	IEEE Standard 754 for Binary Floating-Point Arithmetic	http://www.ieee.org/
ISO C (1999)	ISO/IEC 9899: 1999, Programming Languages --C	
ISO POSIX (2003)	ISO/IEC 9945-1:2003 Information technology -- Portable Operating System Interface (POSIX) -- Part 1: Base Definitions ISO/IEC 9945-2:2003 Information technology -- Portable Operating System Interface (POSIX) -- Part 2: System Interfaces ISO/IEC 9945-3:2003 Information technology -- Portable Operating System Interface (POSIX) -- Part 3: Shell and Utilities ISO/IEC 9945-4:2003 Information technology -- Portable Operating System Interface (POSIX) -- Part 4: Rationale	http://www.unix.org/version3/
Large File Support	Large File Support	http://www.UNIX-systems.org/version2/whatsnew/lfs20mar.html
Li18nux Globalization Specification	LI18NUX 2000 Globalization Specification, Version 1.0 with Amendment 4	http://www.li18nux.org/docs/html/LI18NUX-2000-amd4.htm
Linux Allocated Device Registry	LINUX ALLOCATED DEVICES	http://www.lanana.org/docs/device-

Name	Title	URL
		list/devices.txt
PAM	Open Software Foundation, Request For Comments: 86.0 , October 1995, V. Samar & R.Schemers (SunSoft)	http://www.opengroup.org/tech/rfc/mirror-rfc/rfc86.0.txt
RFC 1321: The MD5 Message-Digest Algorithm	IETF RFC 1321: The MD5 Message-Digest Algorithm	http://www.ietf.org/rfc/rfc1321.txt
RFC 1833: Binding Protocols for ONC RPC Version 2	IETF RFC 1833: Binding Protocols for ONC RPC Version 2	http://www.ietf.org/rfc/rfc1833.txt
RFC 1951: DEFLATE Compressed Data Format Specification	IETF RFC 1951: DEFLATE Compressed Data Format Specification version 1.3	http://www.ietf.org/rfc/rfc1951.txt
RFC 1952: GZIP File Format Specification	IETF RFC 1952: GZIP file format specification version 4.3	http://www.ietf.org/rfc/rfc1952.txt
RFC 2440: OpenPGP Message Format	IETF RFC 2440: OpenPGP Message Format	http://www.ietf.org/rfc/rfc2440.txt
SUSv2	CAE Specification, January 1997, System Interfaces and Headers (XSH),Issue 5 (ISBN: 1-85912-181-0, C606)	http://www.opengroup.org/publications/catalog/un.htm
SUSv2 Command and Utilities	The Single UNIX® Specification(SUS) Version 2, Commands and Utilities (XCU), Issue 5 (ISBN: 1-85912-191-8, C604)	http://www.opengroup.org/publications/catalog/un.htm
SVID Issue 3	American Telephone and Telegraph Company, System V Interface Definition, Issue 3 ; Morristown, NJ, UNIX Press, 1989.(ISBN 0201566524)	
SVID Issue 4	System V Interface Definition,Fourth Edition	
System V ABI	System V Application Binary Interface, Edition 4.1	http://www.caldera.com/developers/devspecs/gabi41.pdf
System V ABI Update	System V Application Binary Interface - DRAFT - 17 December 2003	http://www.caldera.com/developers/gabi/2003-12-17/contents.html
System V Application Binary Interface PowerPC Processor Supplement	System V Application Binary Interface PowerPC Processor Supplement	http://www.esofta.com/pdfs/SVR4abippc.pdf

Name	Title	URL
The PowerPC ™ Architecture	The PowerPC ™ Architecture: A Specification for a new family of RISC processors	http://www.austin.ibm.com
The PowerPC ™ Architecture Book I Changes	The PowerPC Architecture Book I changes	http://www-1.ibm.com/servers/eserver/pseries/library/ppc_chg1.html
The PowerPC ™ Architecture Book II Changes	The PowerPC Architecture Book II changes	http://www-1.ibm.com/servers/eserver/pseries/library/ppc_chg2.html
The PowerPC ™ Architecture Book III Changes	The PowerPC Architecture Book III changes	http://www-1.ibm.com/servers/eserver/pseries/library/ppc_chg3.html
this specification	Linux Standard Base	http://www.linuxbase.org/spec/
X/Open Curses	CAE Specification, May 1996, X/Open Curses, Issue 4, Version 2 (ISBN: 1-85912-171-3, C610), plus Corrigendum U018	http://www.opengroup.org/publications/catalog/un.htm
zlib Manual	zlib 1.2 Manual	http://www.gzip.org/zlib/

Chapter 3. Requirements

3.1. Relevant Libraries

The libraries listed in Table 3-1 shall be available on PPC32 Linux Standard Base systems, with the specified runtime names. These names override or supplement the names specified in the generic LSB specification. The specified program interpreter, referred to as proginterp in this table, shall be used to load the shared libraries specified by `DT_NEEDED` entries at run time.

Table 3-1. Standard Library Names

Library	Runtime Name
libm	libm.so.6
libc	libc.so.6
proginterp	/lib/ld-lsb-ppc32.so.2
libpthread	libpthread.so.0
libdl	libdl.so.2
libcrypt	libcrypt.so.1
libgcc_s	libgcc_s.so.1
libz	libz.so.1
libncurses	libncurses.so.5
libutil	libutil.so.1

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

3.2. LSB Implementation Conformance

A conforming implementation shall satisfy the following requirements:

- The implementation shall implement fully the architecture described in the hardware manual for the target processor architecture.
- The implementation shall be capable of executing compiled applications having the format and using the system interfaces described in this document.
- The implementation shall provide libraries containing the interfaces specified by this document, and shall provide a dynamic linking mechanism that allows these interfaces to be attached to applications at runtime. All the interfaces shall behave as specified in this document.
- The map of virtual memory provided by the implementation shall conform to the requirements of this document.
- The implementation's low-level behavior with respect to function call linkage, system traps, signals, and other such activities shall conform to the formats described in this document.

- The implementation shall provide all of the mandatory interfaces in their entirety.
- The implementation may provide one or more of the optional interfaces. Each optional interface that is provided shall be provided in its entirety. The product documentation shall state which optional interfaces are provided.
- The implementation shall provide all files and utilities specified as part of this document in the format defined here and in other referenced documents. All commands and utilities shall behave as required by this document. The implementation shall also provide all mandatory components of an application's runtime environment that are included or referenced in this document.
- The implementation, when provided with standard data formats and values at a named interface, shall provide the behavior defined for those values and data formats at that interface. However, a conforming implementation may consist of components which are separately packaged and/or sold. For example, a vendor of a conforming implementation might sell the hardware, operating system, and windowing system as separately packaged items.
- The implementation may provide additional interfaces with different names. It may also provide additional behavior corresponding to data values outside the standard ranges, for standard named interfaces.

3.3. LSB Application Conformance

A conforming application shall satisfy the following requirements:

- Its executable files are either shell scripts or object files in the format defined for the Object File Format system interface.
- Its object files participate in dynamic linking as defined in the Program Loading and Linking System interface.
- It employs only the instructions, traps, and other low-level facilities defined in the Low-Level System interface as being for use by applications.
- If it requires any optional interface defined in this document in order to be installed or to execute successfully, the requirement for that optional interface is stated in the application's documentation.
- It does not use any interface or data format that is not required to be provided by a conforming implementation, unless:
  - If such an interface or data format is supplied by another application through direct invocation of that application during execution, that application is in turn an LSB conforming application.
  - The use of that interface or data format, as well as its source, is identified in the documentation of the application.
- It shall not use any values for a named interface that are reserved for vendor extensions.

A strictly conforming application does not require or use any interface, facility, or implementation-defined extension that is not defined in this document in order to be installed or to execute successfully.

Chapter 4. Definitions

For the purposes of this document, the following definitions, as specified in the *ISO/IEC Directives, Part 2, 2001, 4th Edition*, apply:

can

be able to; there is a possibility of; it is possible to

cannot

be unable to; there is no possibilty of; it is not possible to

may

is permitted; is allowed; is permissible

need not

it is not required that; no...is required

shall

is to; is required to; it is required that; has to; only...is permitted; it is necessary

shall not

is not allowed [permitted] [acceptable] [permissible]; is required to be not; is required that...be not; is not to be

should

it is recommended that; ought to

should not

it is not recommended that; ought not to

Chapter 5. Terminology

For the purposes of this document, the following terms apply:

archLSB

The architectural part of the LSB Specification which describes the specific parts of the interface that are platform specific. The archLSB is complementary to the gLSB.

Binary Standard

The total set of interfaces that are available to be used in the compiled binary code of a conforming application.

gLSB

The common part of the LSB Specification that describes those parts of the interface that remain constant across all hardware implementations of the LSB.

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

The set of interfaces that are available to be used in the source code of a conforming application.

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.

Other terms and definitions used in this document shall have the same meaning as defined in Chapter 3 of the Base Definitions volume of ISO POSIX (2003).

Chapter 6. Documentation Conventions

Throughout this document, the following typographic conventions are used:

`function()`

: the name of a function

command

: 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) [1]

refers to the interface named `forkpty` with symbol version `GLIBC_2.0` that is defined in the first of the listed references below the table.

ELF Specification

ELF Specification

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I. Low Level System Information

Chapter 1. Machine Interface

1.1. Processor Architecture

The PowerPC Architecture is specified by the following documents:

- System V Application Binary Interface PowerPC Processor Supplement
- The PowerPC ™ Architecture
- The PowerPC ™ Architecture Book I Changes
- The PowerPC ™ Architecture Book II Changes
- The PowerPC ™ Architecture Book III Changes

Only the features of the PowerPC processor instruction set may be assumed to be present. An application is responsible for determining if any additional instruction set features are available before using those additional features. If a feature is not present, then the application may not use it.

Only instructions which do not require elevated privileges may be used.

Applications may not make system calls directly. The interfaces in the C library must be used instead.

An implementation must support the 32-bit computation mode as described in The PowerPC ™ Architecture. Conforming applications shall not use instructions provided only for the 64-bit mode.

Applications conforming to this specification must provide feedback to the user if a feature that is required for correct execution of the application is not present. Applications conforming to this specification should attempt to execute in a diminished capacity if a required feature is not present.

This specification does not provide any performance guarantees of a conforming system. A system conforming to this specification may be implemented in either hardware or software.

1.2. Data Representation

LSB-conforming applications shall use the data representation as defined in Chapter 3 of the System V Application Binary Interface PowerPC Processor Supplement.

1.2.1. Byte Ordering

LSB-conforming applications shall use big-endian byte ordering. LSB-conforming implementations may support little-endian applications.

1.2.2. Fundamental Types

In addition to the fundamental types specified in Chapter 3 of the System V Application Binary Interface PowerPC Processor Supplement, a 64 bit data type is defined here.

25 **Table 1-1. Scalar Types**

Type	C	sizeof	Alignment (bytes)	IntelI386 Architecture
Integral	long long	8	8	signed double word
	signed long long			
	unsigned long long	8	8	unsigned double word

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27 LSB-conforming applications shall not use the long double fundamental type.

1.2.3. Aggregates and Unions

1.2.4. Bit Fields

Chapter 2. Function Calling Sequence

LSB-conforming applications shall use the function calling sequence as defined in Chapter 3 of the System V Application Binary Interface PowerPC Processor Supplement.

2.1. CPU Registers

See Chapter 3 of the System V Application Binary Interface PowerPC Processor Supplement.

2.2. Floating Point Registers

See Chapter 3 of the System V Application Binary Interface PowerPC Processor Supplement.

2.3. Stack Frame

See Chapter 3 of the System V Application Binary Interface PowerPC Processor Supplement.

2.4. Arguments

See Chapter 3 of the System V Application Binary Interface PowerPC Processor Supplement.

2.5. Return Values

LSB-conforming applications shall not return structures or unions in registers as described in Section 3 of System V Application Binary Interface PowerPC Processor Supplement. Instead they must use the alternative method of passing the address of a buffer in a register as shown in the same section.

Chapter 3. Operating System Interface

LSB-conforming applications shall use the Operating System Interfaces as defined in Chapter 3 of the System V Application Binary Interface PowerPC Processor Supplement.

3.1. Processor Execution Mode

See Chapter 3 of the System V Application Binary Interface PowerPC Processor Supplement.

3.2. Exception Interface

See Chapter 3 of the System V Application Binary Interface PowerPC Processor Supplement.

3.2.1. Hardware Exception Types

See Chapter 3 of the System V Application Binary Interface PowerPC Processor Supplement.

3.2.2. Software Trap Types

See Chapter 3 of the System V Application Binary Interface PowerPC Processor Supplement.

3.2.3. Debugging Support

See Chapter 3 of the System V Application Binary Interface PowerPC Processor Supplement.

3.2.4. Process Startup

See Chapter 3 of the System V Application Binary Interface PowerPC Processor Supplement.

3.3. Signal Delivery

3.3.1. Signal Handler Interface

See Chapter 3 of the System V Application Binary Interface PowerPC Processor Supplement.

Chapter 4. Process Initialization

LSB-conforming applications shall use the Operating System Interfaces as defined in Chapter 3 of the System V Application Binary Interface PowerPC Processor Supplement.

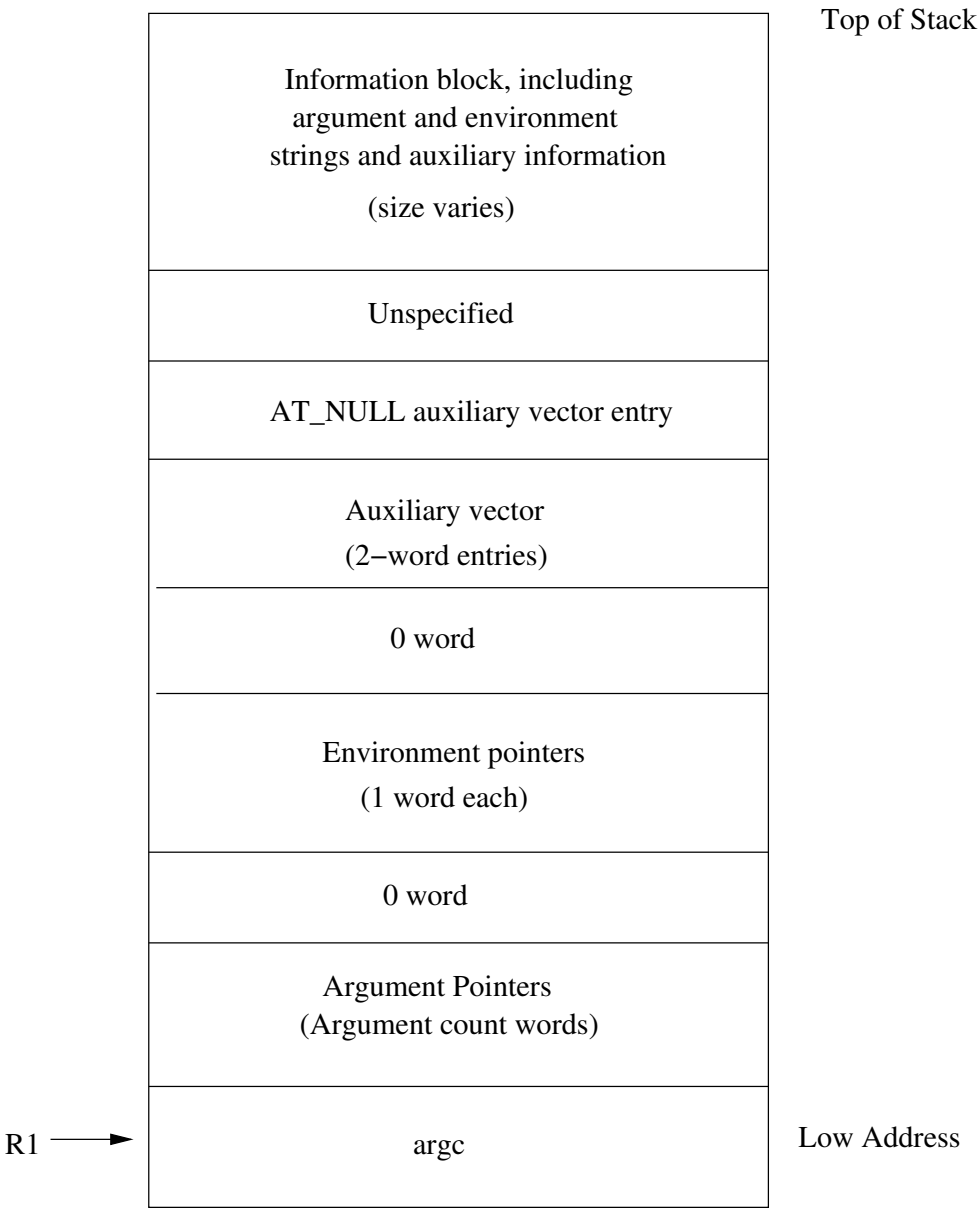
4.1. Special Registers

Contrary to what is stated in the Registers part of Chapter 3 of the System V Application Binary Interface PowerPC Processor Supplement there are no values set in registers r3, r4, r5, r6 and r7. Instead the values specified to appear in all of those registers except r7 are placed on the stack. The value to be placed into register r7, the termination function pointer is not passed to the process.

4.2. Process Stack (on entry)

Figure 3-31 in System V Application Binary Interface PowerPC Processor Supplement is incorrect. The initial stack must look like the following.

Figure 4-1. Initial Process Stack



4.3. Auxiliary Vector

In addition to the types defined in Chapter 3 of the System V Application Binary Interface PowerPC Processor Supplement the following are also supported:

Table 4-1. Extra Auxiliary Types

Name	Value	Comment
AT_NOTELF	10	Program is not ELF

Name	Value	Comment
AT_UID	11	Real uid
AT_EUID	12	Effective uid
AT_GID	13	Real gid
AT_EGID	14	Effective gid
AT_PLATFORM	15	String identifying CPU for optimizations
AT_HWCAP	16	Arch dependent hints at CPU capabilities
AT_CLKTCK	17	Frequency at which times() increments
AT_DCACHEBSIZE	19	The a_val member of this entry gives the data cache block size for processors on the system on which this program is running. If the processors have unified caches, AT_DCACHEBSIZE is the same as AT_UCACHEBSIZE
AT_ICACHEBSIZE	20	The a_val member of this entyr gives the instruction cache block size for processors on the system on which this program is running. If the processors have unified caches, AT_DCACHEBSIZE is the same as AT_UCACHEBSIZE.
AT_UCACHEBSIZE	21	The a_val member of this entry is zero if the processors on the system on which this program is running do not have a unified instruction and data cache. Otherwise it gives the cache block size.
AT_IGNOREPPC	22	All entries of this type should be ignored.

The last three entries in the table above override the values specified in System V Application Binary Interface PowerPC Processor Supplement.

4.4. Environment

Chapter 5. Coding Examples

LSB-conforming applications may implement fundamental operations using the Coding Examples as defined in Chapter 3 of the System V Application Binary Interface PowerPC Processor Supplement.

5.1. Code Model Overview/Architecture Constraints

See Chapter 3 of the System V Application Binary Interface PowerPC Processor Supplement.

5.2. Position-Independent Function Prologue

See Chapter 3 of the System V Application Binary Interface PowerPC Processor Supplement.

5.3. Data Objects

5.3.1. Absolute Load & Store

See Chapter 3 of the System V Application Binary Interface PowerPC Processor Supplement.

5.3.2. Position Relative Load & Store

See Chapter 3 of the System V Application Binary Interface PowerPC Processor Supplement.

5.4. Function Calls

See Chapter 3 of the System V Application Binary Interface PowerPC Processor Supplement.

5.4.1. Absolute Direct Function Call

See Chapter 3 of the System V Application Binary Interface PowerPC Processor Supplement.

5.4.2. Absolute Indirect Function Call

See Chapter 3 of the System V Application Binary Interface PowerPC Processor Supplement.

5.4.3. Position-Independent Direct Function Call

See Chapter 3 of the System V Application Binary Interface PowerPC Processor Supplement.

5.4.4. Position-Independent Indirect Function Call

See Chapter 3 of the System V Application Binary Interface PowerPC Processor Supplement.

5.5. Branching

12 See Chapter 3 of the System V Application Binary Interface PowerPC Processor Supplement.

5.5.1. Branch Instruction

13 See Chapter 3 of the System V Application Binary Interface PowerPC Processor Supplement.

5.5.2. Absolute switch() code

14 See Chapter 3 of the System V Application Binary Interface PowerPC Processor Supplement.

5.5.3. Position-Independent switch() code

15 See Chapter 3 of the System V Application Binary Interface PowerPC Processor Supplement.

Chapter 6. C Stack Frame

6.1. Variable Argument List

1 See Chapter 3 of the System V Application Binary Interface PowerPC Processor Supplement.

6.2. Dynamic Allocation of Stack Space

2 See Chapter 3 of the System V Application Binary Interface PowerPC Processor Supplement.

Chapter 7. Debug Information

1 The LSB does not currently specify the format of Debug information.

II. Object Format

LSB-conforming implementations shall support an object file , called Executable and Linking Format (ELF) as defined by the System V Application Binary Interface PowerPC Processor Supplement and as supplemented by the Linux Standard Base Specification and this document. LSB-conforming implementations need not support tags related functionality. LSB-conforming applications must not rely on tags related functionality.

Chapter 8. ELF Header

8.1. Machine Information

LSB-conforming applications shall use the Machine Information as defined in System V Application Binary Interface PowerPC Processor Supplement, Chapter 4.

8.1.1. File Class

8.1.2. Data Encoding

8.1.3. OS Identification

8.1.4. Processor Identification

See Chapter 4 of the System V Application Binary Interface PowerPC Processor Supplement.

8.1.5. Processor Specific Flags

See Chapter 4 of the System V Application Binary Interface PowerPC Processor Supplement.

Chapter 9. Sections

9.1. Special Sections

The following sections are defined in the System V Application Binary Interface PowerPC Processor Supplement.

Table 9-1. ELF Special Sections

Name	Type	Attributes
.got	SHT_PROGBITS	SHF_ALLOC+SHF_WRITE+SHF_EXECINSTR
.plt	SHT_NOBITS	SHF_ALLOC+SHF_WRITE+SHF_EXECINSTR
.sdata	SHT_PROGBITS	SHF_ALLOC+SHF_WRITE

.got

This section holds the global offset table. See `Coding Examples' in Chapter 3, `Special Sections' in Chapter 4, and `Global Offset Table' in Chapter 5 of the processor supplement for more information.

.plt

This section holds the Procedure Linkage Table

.sdata

This section holds initialized small data that contribute to the program memory image

Note that the `.tags`, `.taglist` and `.tagsym` sections described in System V Application Binary Interface PowerPC Processor Supplement are not supported.

9.2. Linux Special Sections

The following Linux PPC32 specific sections are defined here.

Table 9-2. Additional Special Sections

Name	Type	Attributes
.got2	SHT_PROGBITS	SHF_ALLOC+SHF_WRITE
.rela.bss	SHT_RELA	SHF_ALLOC
.rela.dyn	SHT_RELA	SHF_ALLOC
.rela.got	SHT_RELA	SHF_ALLOC
.rela.got2	SHT_RELA	SHF_ALLOC

Name	Type	Attributes
.rela.plt	SHT_RELA	SHF_ALLOC
.rela.sbss	SHT_RELA	SHF_ALLOC
.sbss	SHT_NOBITS	SHF_ALLOC+SHF_WRITE
.sdata2	SHT_PROGBITS	SHF_ALLOC

.got2

This section holds the second level GOT

.rela.bss

This section holds RELA type relocation information for the BSS section of a shared library or dynamically linked application

.rela.dyn

This section holds RELA type relocation information for all sections of a shared library except the PLT

.rela.got

This section holds RELA type relocation information for the GOT section of a shared library or dynamically linked application

.rela.got2

This section holds RELA type relocation information for the second level GOT section of a shared library or dynamically linked application

.rela.plt

This section holds RELA type relocation information for the PLT section of a shared library or dynamically linked application

.rela.sbss

This section holds RELA type relocation information for the SBSS section of a shared library or dynamically linked application

.sbss

This section holds uninitialized data that contribute to the program's memory image. The system initializes the data with zeroes when the program begins to run.

.sdata2

This section holds the second level of initialised small data

9.3. Section Types

See Chapter 4 of the System V Application Binary Interface PowerPC Processor Supplement.

9.4. Section Attribute Flags

41 See Chapter 4 of the System V Application Binary Interface PowerPC Processor Supplement.

9.5. Special Section Types

42 See Chapter 4 of the System V Application Binary Interface PowerPC Processor Supplement.

Chapter 10. Symbol Table

LSB-conforming applications shall use the Symbol Table as defined in Chapter 4 of the System V Application Binary Interface PowerPC Processor Supplement.

Chapter 11. Relocation

LSB-conforming applications shall use Relocations as defined in Chapter 4 of the System V Application Binary Interface PowerPC Processor Supplement.

11.1. Relocation Types

The relocation type `R_PPC_ADDR30` as specified in Table 4-8 of System V Application Binary Interface PowerPC Processor Supplement is not supported.

III. Program Loading and Dynamic Linking

LSB-conforming implementations shall support the object file information and system actions that create running programs as specified in the System V ABI, System V Application Binary Interface PowerPC Processor Supplement and as supplemented by the generic Linux Standard Base Specification and this document.

Chapter 12. Program Header

12.1. Types

12.2. Flags

Chapter 13. Program Loading

1 See System V Application Binary Interface PowerPC Processor Supplement, Chapter 5.1.

Chapter 14. Dynamic Linking

See System V Application Binary Interface PowerPC Processor Supplement, Chapter 5.4.

14.1. Program Interpreter/Dynamic Linker

The LSB specifies the Program Interpreter to be /lib/ld-lsb-ppc32.so.2.

14.2. Dynamic Section

The following dynamic entries are defined in the System V Application Binary Interface PowerPC Processor Supplement, Chapter 5.4.

DT_JMPREL

This entry is associated with a table of relocation entries for the procedure linkage table. This entry is mandatory both for executable and shared object files

DT_PLTGOT

This entry's d_ptr member gives the address of the first byte in the procedure linkage table

In addtion the following dynamic entries are also supported:

DT_RELACOUNT

The number of relative relocations in .rela.dyn

14.3. Global Offset Table

See System V Application Binary Interface PowerPC Processor Supplement, Chapter 5.4.

14.4. Shared Object Dependencies

See Chapter 5 of the System V Application Binary Interface PowerPC Processor Supplement.

14.5. Function Addresses

See Chapter 5 of the System V Application Binary Interface PowerPC Processor Supplement.

14.6. Procedure Linkage Table

See Chapter 5 of the System V Application Binary Interface PowerPC Processor Supplement.

14.7. Initialization and Termination Functions

Linux Standard Base Specification

Linux Standard Base Specification

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I. Base Libraries

Chapter 1. Libraries

An LSB-conforming implementation shall support base libraries which provide interfaces for accessing the operating system, processor and other hardware in the system.

Only those interfaces that are unique to the PowerPC 32 platform are defined here. This section should be used in conjunction with the corresponding section in the Linux Standard Base Specification.

1.1. Program Interpreter/Dynamic Linker

The LSB specifies the Program Interpreter to be /lib/ld-lsb-ppc32.so.2.

1.2. Interfaces for libc

Table 1-1 defines the library name and shared object name for the libc library

Table 1-1. libc Definition

Library:	libc
SONAME:	libc.so.6

The behavior of the interfaces in this library is specified by the following specifications:

Large File Support
this specification
SUSv2
ISO POSIX (2003)
SVID Issue 3
SVID Issue 4

1.2.1. RPC

1.2.1.1. Interfaces for RPC

An LSB conforming implementation shall provide the architecture specific functions for RPC specified in Table 1-2, with the full functionality as described in the referenced underlying specification.

Table 1-2. libc - RPC Function Interfaces

authnone_create(GLIBC_2.0) [1]	pmap_unset(GLIBC_2.0) [2]	svcerr_weakauth(GLIBC_2.0) [3]	xdr_float(GLIBC_2.0) [3]	xdr_u_char(GLIBC_2.0) [3]
clnt_create(GLIBC_2.0) [1]	setdomainname(GLIBC_2.0) [2]	svctcp_create(GLIBC_2.0) [2]	xdr_free(GLIBC_2.0) [3]	xdr_u_int(GLIBC_2.0) [2]
clnt_pcreateerror(GLIBC_2.0) [1]	svc_getreqset(GLIBC_2.0) [3]	svcudp_create(GLIBC_2.0) [2]	xdr_int(GLIBC_2.0) [3]	xdr_u_long(GLIBC_2.0) [3]

clnt_perrno(GLIBC_2.0) [1]	svc_register(GLIBC_2.0) [2]	xdr_accepted_reply(GLIBC_2.0) [3]	xdr_long(GLIBC_2.0) [3]	xdr_u_short(GLIBC_2.0) [3]
clnt_perror(GLIBC_2.0) [1]	svc_run(GLIBC_2.0) [2]	xdr_array(GLIBC_2.0) [3]	xdr_opaque(GLIBC_2.0) [3]	xdr_union(GLIBC_2.0) [3]
clnt_spcreateerror(GLIBC_2.0) [1]	svc_sendreply(GLIBC_2.0) [2]	xdr_bool(GLIBC_2.0) [3]	xdr_opaque_auth(GLIBC_2.0) [3]	xdr_vector(GLIBC_2.0) [3]
clnt_sperrno(GLIBC_2.0) [1]	svcerr_auth(GLIBC_2.0) [3]	xdr_bytes(GLIBC_2.0) [3]	xdr_pointer(GLIBC_2.0) [3]	xdr_void(GLIBC_2.0) [3]
clnt_sperror(GLIBC_2.0) [1]	svcerr_decode(GLIBC_2.0) [3]	xdr_callhdr(GLIBC_2.0) [3]	xdr_reference(GLIBC_2.0) [3]	xdr_wrapstring(GLIBC_2.0) [3]
getdomainname(GLIBC_2.0) [2]	svcerr_noproc(GLIBC_2.0) [3]	xdr_callmsg(GLIBC_2.0) [3]	xdr_rejected_reply(GLIBC_2.0) [3]	xdrmem_create(GLIBC_2.0) [3]
key_decryptsession(GLIBC_2.1) [3]	svcerr_noprog(GLIBC_2.0) [3]	xdr_char(GLIBC_2.0) [3]	xdr_replymsg(GLIBC_2.0) [3]	xdrrec_create(GLIBC_2.0) [3]
pmap_getport(GLIBC_2.0) [2]	svcerr_progvers(GLIBC_2.0) [3]	xdr_double(GLIBC_2.0) [3]	xdr_short(GLIBC_2.0) [3]	xdrrec_eof(GLIBC_2.0) [3]
pmap_set(GLIBC_2.0) [2]	svcerr_systemerr(GLIBC_2.0) [3]	xdr_enum(GLIBC_2.0) [3]	xdr_string(GLIBC_2.0) [3]	

Referenced Specification(s)

[1]. SVID Issue 4

[2]. this specification

[3]. SVID Issue 3

1.2.2. System Calls

1.2.2.1. Interfaces for System Calls

An LSB conforming implementation shall provide the architecture specific functions for System Calls specified in Table 1-3, with the full functionality as described in the referenced underlying specification.

Table 1-3. libc - System Calls Function Interfaces

__fxstat(GLIBC_2.0) [1]	fchmod(GLIBC_2.0) [2]	getwd(GLIBC_2.0) [2]	read(GLIBC_2.0) [2]	setrlimit(GLIBC_2.2) [2]
__getpgid(GLIBC_2.0) [1]	fchown(GLIBC_2.0) [2]	initgroups(GLIBC_2.0) [1]	readdir(GLIBC_2.0) [2]	setrlimit64(GLIBC_2.1) [3]
__lxstat(GLIBC_2.0) [1]	fcntl(GLIBC_2.0) [1]	ioctl(GLIBC_2.0) [1]	readdir_r(GLIBC_2.0) [2]	setsid(GLIBC_2.0) [2]
__xmknod(GLIBC_2.0) [1]	fdatasync(GLIBC_2.0) [2]	kill(GLIBC_2.0) [1]	readlink(GLIBC_2.0) [2]	setuid(GLIBC_2.0) [2]

__xstat(GLIBC_2.0) [1]	flock(GLIBC_2.0) [1]	killpg(GLIBC_2.0) [2]	readv(GLIBC_2.0) [2]	sleep(GLIBC_2.0) [2]
access(GLIBC_2.0) [2]	fork(GLIBC_2.0) [2]	lchown(GLIBC_2.0) [2]	rename(GLIBC_2.0) [2]	statvfs(GLIBC_2.1) [2]
acct(GLIBC_2.0) [1]	fstatvfs(GLIBC_2.1) [2]	link(GLIBC_2.0) [2]	rmdir(GLIBC_2.0) [2]	stime(GLIBC_2.0) [1]
alarm(GLIBC_2.0) [2]	fsync(GLIBC_2.0) [2]	lockf(GLIBC_2.0) [2]	sbrk(GLIBC_2.0) [4]	symlink(GLIBC_2.0) [2]
brk(GLIBC_2.0) [4]	ftime(GLIBC_2.0) [2]	lseek(GLIBC_2.0) [2]	sched_get_priority_max(GLIBC_2.0) [2]	sync(GLIBC_2.0) [2]
chdir(GLIBC_2.0) [2]	ftruncate(GLIBC_2.0) [2]	mkdir(GLIBC_2.0) [2]	sched_get_priority_min(GLIBC_2.0) [2]	sysconf(GLIBC_2.0) [2]
chmod(GLIBC_2.0) [2]	getcontext(GLIBC_2.3.3) [2]	mkfifo(GLIBC_2.0) [2]	sched_getparam(GLIBC_2.0) [2]	time(GLIBC_2.0) [2]
chown(GLIBC_2.1) [2]	getegid(GLIBC_2.0) [2]	mlock(GLIBC_2.0) [2]	sched_getscheduler(GLIBC_2.0) [2]	times(GLIBC_2.0) [2]
chroot(GLIBC_2.0) [4]	geteuid(GLIBC_2.0) [2]	mlockall(GLIBC_2.0) [2]	sched_rr_get_interval(GLIBC_2.0) [2]	truncate(GLIBC_2.0) [2]
clock(GLIBC_2.0) [2]	getgid(GLIBC_2.0) [2]	mmap(GLIBC_2.0) [2]	sched_setparam(GLIBC_2.0) [2]	ulimit(GLIBC_2.0) [2]
close(GLIBC_2.0) [2]	getgroups(GLIBC_2.0) [2]	mprotect(GLIBC_2.0) [2]	sched_setscheduler(GLIBC_2.0) [2]	umask(GLIBC_2.0) [2]
closedir(GLIBC_2.0) [2]	getitimer(GLIBC_2.0) [2]	msync(GLIBC_2.0) [2]	sched_yield(GLIBC_2.0) [2]	uname(GLIBC_2.0) [2]
creat(GLIBC_2.0) [1]	getloadavg(GLIBC_2.2) [1]	munlock(GLIBC_2.0) [2]	select(GLIBC_2.0) [2]	unlink(GLIBC_2.0) [1]
dup(GLIBC_2.0) [2]	getpagesize(GLIBC_2.0) [4]	munlockall(GLIBC_2.0) [2]	setcontext(GLIBC_2.3.3) [2]	utime(GLIBC_2.0) [2]
dup2(GLIBC_2.0) [2]	getpgid(GLIBC_2.0) [2]	munmap(GLIBC_2.0) [2]	setegid(GLIBC_2.0) [2]	utimes(GLIBC_2.0) [2]
execl(GLIBC_2.0) [2]	getpgrp(GLIBC_2.0) [2]	nanosleep(GLIBC_2.0) [2]	seteuid(GLIBC_2.0) [2]	vfork(GLIBC_2.0) [2]
execle(GLIBC_2.0) [2]	getpid(GLIBC_2.0) [2]	nice(GLIBC_2.0) [2]	setgid(GLIBC_2.0) [2]	wait(GLIBC_2.0) [2]
execlp(GLIBC_2.0) [2]	getppid(GLIBC_2.0) [2]	open(GLIBC_2.0) [1]	setitimer(GLIBC_2.0) [2]	wait3(GLIBC_2.0) [1]

execv(GLIBC_2.0) [2]	getpriority(GLIBC_2.0) [2]	opendir(GLIBC_2.0) [2]	setpgid(GLIBC_2.0) [2]	wait4(GLIBC_2.0) [1]
execve(GLIBC_2.0) [2]	getrlimit(GLIBC_2.2) [2]	pathconf(GLIBC_2.0) [2]	setpgrp(GLIBC_2.0) [2]	waitpid(GLIBC_2.0) [1]
execvp(GLIBC_2.0) [2]	getrusage(GLIBC_2.0) [2]	pause(GLIBC_2.0) [2]	setpriority(GLIBC_2.0) [2]	write(GLIBC_2.0) [2]
exit(GLIBC_2.0) [2]	getsid(GLIBC_2.0) [2]	pipe(GLIBC_2.0) [2]	setregid(GLIBC_2.0) [2]	writev(GLIBC_2.0) [2]
fchdir(GLIBC_2.0) [2]	getuid(GLIBC_2.0) [2]	poll(GLIBC_2.0) [2]	setreuid(GLIBC_2.0) [2]	

Referenced Specification(s)

[1]. this specification

[2]. ISO POSIX (2003)

[3]. Large File Support

[4]. SUSv2

1.2.3. Standard I/O

1.2.3.1. Interfaces for Standard I/O

An LSB conforming implementation shall provide the architecture specific functions for Standard I/O specified in Table 1-4, with the full functionality as described in the referenced underlying specification.

Table 1-4. libc - Standard I/O Function Interfaces

_IO_feof(GLIBC_2.0) [1]	fgetpos(GLIBC_2.2) [2]	fsetpos(GLIBC_2.2) [2]	putchar(GLIBC_2.0) [2]	sscanf(GLIBC_2.0) [2]
_IO_getc(GLIBC_2.0) [1]	fgets(GLIBC_2.0) [2]	ftell(GLIBC_2.0) [2]	putchar_unlocked(GLIBC_2.0) [2]	telldir(GLIBC_2.0) [2]
_IO_putc(GLIBC_2.0) [1]	fgetwc_unlocked(GLIBC_2.2) [1]	ftello(GLIBC_2.1) [2]	puts(GLIBC_2.0) [2]	tempnam(GLIBC_2.0) [2]
_IO_puts(GLIBC_2.0) [1]	fileno(GLIBC_2.0) [2]	fwrite(GLIBC_2.0) [2]	putw(GLIBC_2.0) [3]	ungetc(GLIBC_2.0) [2]
asprintf(GLIBC_2.0) [1]	flockfile(GLIBC_2.0) [2]	getc(GLIBC_2.0) [2]	remove(GLIBC_2.0) [2]	vasprintf(GLIBC_2.0) [1]
clearerr(GLIBC_2.0) [2]	fopen(GLIBC_2.1) [1]	getc_unlocked(GLIBC_2.0) [2]	rewind(GLIBC_2.0) [2]	vdprintf(GLIBC_2.0) [1]
ctermid(GLIBC_2.0) [2]	fprintf(GLIBC_2.0) [2]	getchar(GLIBC_2.0) [2]	rewinddir(GLIBC_2.0) [2]	vfprintf(GLIBC_2.0) [2]

fclose(GLIBC_2.1) [2]	fputc(GLIBC_2.0) [2]	getchar_unlocked(GLIBC_2.0) [2]	scanf(GLIBC_2.0) [2]	vprintf(GLIBC_2.0) [2]
fdopen(GLIBC_2.1) [2]	fputs(GLIBC_2.0) [2]	getw(GLIBC_2.0) [3]	seekdir(GLIBC_2.0) [2]	vsnprintf(GLIBC_2.0) [2]
feof(GLIBC_2.0) [2]	fread(GLIBC_2.0) [2]	pclose(GLIBC_2.1) [2]	setbuf(GLIBC_2.0) [2]	vsprintf(GLIBC_2.0) [2]
ferror(GLIBC_2.0) [2]	freopen(GLIBC_2.0) [1]	popen(GLIBC_2.1) [2]	setbuffer(GLIBC_2.0) [1]	
fflush(GLIBC_2.0) [2]	fscanf(GLIBC_2.0) [2]	printf(GLIBC_2.0) [2]	setvbuf(GLIBC_2.0) [2]	
fflush_unlocked(GLIBC_2.0) [1]	fseek(GLIBC_2.0) [2]	putc(GLIBC_2.0) [2]	snprintf(GLIBC_2.0) [2]	
fgetc(GLIBC_2.0) [2]	fseeko(GLIBC_2.1) [2]	putc_unlocked(GLIBC_2.0) [2]	sprintf(GLIBC_2.0) [2]	

Referenced Specification(s)

[1]. this specification

[2]. ISO POSIX (2003)

[3]. SUSv2

An LSB conforming implementation shall provide the architecture specific data interfaces for Standard I/O specified in Table 1-5, with the full functionality as described in the referenced underlying specification.

Table 1-5. libc - Standard I/O Data Interfaces

stderr(GLIBC_2.0) [1]	stdin(GLIBC_2.0) [1]	stdout(GLIBC_2.0) [1]		

Referenced Specification(s)

[1]. ISO POSIX (2003)

1.2.4. Signal Handling

1.2.4.1. Interfaces for Signal Handling

An LSB conforming implementation shall provide the architecture specific functions for Signal Handling specified in Table 1-6, with the full functionality as described in the referenced underlying specification.

Table 1-6. libc - Signal Handling Function Interfaces

__libc_current_sigrtmax(GLIBC_2.1) [1]	sigaddset(GLIBC_2.0) [2]	sighold(GLIBC_2.1) [2]	sigpause(GLIBC_2.0) [2]	sigsuspend(GLIBC_2.0) [2]
__libc_current_sigrt	sigaltstack(GLIBC_	sigignore(GLIBC_2	sigpending(GLIBC_	sigtimedwait(GLIB

min(GLIBC_2.1) [1]	2.0) [2]	.1) [2]	2.0) [2]	C_2.1) [2]
__sigsetjmp(GLIBC_2.0) [1]	sigandset(GLIBC_2.0) [1]	siginterrupt(GLIBC_2.0) [2]	sigprocmask(GLIBC_2.0) [2]	sigwait(GLIBC_2.0) [2]
__sysv_signal(GLIBC_2.0) [1]	sigblock(GLIBC_2.0) [1]	sigisemptyset(GLIBC_2.0) [1]	sigqueue(GLIBC_2.1) [2]	sigwaitinfo(GLIBC_2.1) [2]
bsd_signal(GLIBC_2.0) [2]	sigdelset(GLIBC_2.0) [2]	sigismember(GLIBC_2.0) [2]	sigrelse(GLIBC_2.1) [2]	
psignal(GLIBC_2.0) [1]	sigemptyset(GLIBC_2.0) [2]	siglongjmp(GLIBC_2.0) [2]	sigreturn(GLIBC_2.0) [1]	
raise(GLIBC_2.0) [2]	sigfillset(GLIBC_2.0) [2]	signal(GLIBC_2.0) [2]	sigset(GLIBC_2.1) [2]	
sigaction(GLIBC_2.0) [2]	siggetmask(GLIBC_2.0) [1]	sigorset(GLIBC_2.0) [1]	sigstack(GLIBC_2.0) [3]	

Referenced Specification(s)

[1]. this specification

[2]. ISO POSIX (2003)

[3]. SUSv2

An LSB conforming implementation shall provide the architecture specific data interfaces for Signal Handling specified in Table 1-7, with the full functionality as described in the referenced underlying specification.

Table 1-7. libc - Signal Handling Data Interfaces

_sys_siglist(GLIBC_2.1) [1]				

Referenced Specification(s)

[1]. this specification

1.2.5. Localization Functions

1.2.5.1. Interfaces for Localization Functions

An LSB conforming implementation shall provide the architecture specific functions for Localization Functions specified in Table 1-8, with the full functionality as described in the referenced underlying specification.

Table 1-8. libc - Localization Functions Function Interfaces

bind_textdomain_codeset(GLIBC_2.2) [1]	catopen(GLIBC_2.0) [2]	dngettext(GLIBC_2.2) [1]	iconv_open(GLIBC_2.1) [2]	setlocale(GLIBC_2.0) [2]
bindtextdomain(GL	dcgettext(GLIBC_2.	gettext(GLIBC_2.0)	localeconv(GLIBC_	textdomain(GLIBC

IBC_2.0) [1]	0) [1]	[1]	2.2) [2]	_2.0) [1]
catclose(GLIBC_2.0) [2]	dcngettext(GLIBC_2.2) [1]	iconv(GLIBC_2.1) [2]	ngettext(GLIBC_2.2) [1]	
catgets(GLIBC_2.0) [2]	dgettext(GLIBC_2.0) [1]	iconv_close(GLIBC_2.1) [2]	nl_langinfo(GLIBC_2.0) [2]	

Referenced Specification(s)

[1]. this specification

[2]. ISO POSIX (2003)

An LSB conforming implementation shall provide the architecture specific data interfaces for Localization Functions specified in Table 1-9, with the full functionality as described in the referenced underlying specification.

Table 1-9. libc - Localization Functions Data Interfaces

_nl_msg_cat_cntr(GLIBC_2.0) [1]				

Referenced Specification(s)

[1]. this specification

1.2.6. Socket Interface

1.2.6.1. Interfaces for Socket Interface

An LSB conforming implementation shall provide the architecture specific functions for Socket Interface specified in Table 1-10, with the full functionality as described in the referenced underlying specification.

Table 1-10. libc - Socket Interface Function Interfaces

__h_errno_location(GLIBC_2.0) [1]	gethostid(GLIBC_2.0) [2]	listen(GLIBC_2.0) [2]	sendmsg(GLIBC_2.0) [2]	socketpair(GLIBC_2.0) [2]
accept(GLIBC_2.0) [2]	gethostname(GLIBC_2.0) [2]	recv(GLIBC_2.0) [2]	sendto(GLIBC_2.0) [2]	
bind(GLIBC_2.0) [2]	getpeername(GLIBC_2.0) [2]	recvfrom(GLIBC_2.0) [2]	setsockopt(GLIBC_2.0) [1]	
bindresvport(GLIBC_2.0) [1]	getsockname(GLIBC_2.0) [2]	recvmsg(GLIBC_2.0) [2]	shutdown(GLIBC_2.0) [2]	
connect(GLIBC_2.0) [2]	getsockopt(GLIBC_2.0) [2]	send(GLIBC_2.0) [2]	socket(GLIBC_2.0) [2]	

Referenced Specification(s)

[1]. this specification

[2]. ISO POSIX (2003)

An LSB conforming implementation shall provide the architecture specific deprecated functions for Socket Interface specified in Table 1-11, with the full functionality as described in the referenced underlying specification.

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

Table 1-11. libc - Socket Interface Deprecated Function Interfaces

gethostbyname_r(GLIBC_2.1.2) [1]				

Referenced Specification(s)

[1]. this specification

1.2.7. Wide Characters

1.2.7.1. Interfaces for Wide Characters

An LSB conforming implementation shall provide the architecture specific functions for Wide Characters specified in Table 1-12, with the full functionality as described in the referenced underlying specification.

Table 1-12. libc - Wide Characters Function Interfaces

__wcstod_internal(GLIBC_2.0) [1]	mbsinit(GLIBC_2.0) [2]	vwscanf(GLIBC_2.2) [2]	wcsnlen(GLIBC_2.1) [1]	wcstoumax(GLIBC_2.1) [2]
__wcstof_internal(GLIBC_2.0) [1]	mbsnrtowcs(GLIBC_2.0) [1]	wcpcpy(GLIBC_2.0) [1]	wcsnrtombs(GLIBC_2.0) [1]	wcstouq(GLIBC_2.0) [1]
__wcstol_internal(GLIBC_2.0) [1]	mbsrtowcs(GLIBC_2.0) [2]	wcpncpy(GLIBC_2.0) [1]	wcspbrk(GLIBC_2.0) [2]	wcswcs(GLIBC_2.1) [2]
__wcstold_internal(GLIBC_2.0) [1]	mbstowcs(GLIBC_2.0) [2]	wcrtomb(GLIBC_2.0) [2]	wcsrchr(GLIBC_2.0) [2]	wcswidth(GLIBC_2.0) [2]
__wcstoul_internal(GLIBC_2.0) [1]	mbtowc(GLIBC_2.0) [2]	wcscasecmp(GLIBC_2.1) [1]	wcsrtombs(GLIBC_2.0) [2]	wcsxfrm(GLIBC_2.0) [2]
btowc(GLIBC_2.0) [2]	putwc(GLIBC_2.2) [2]	wcscat(GLIBC_2.0) [2]	wcsspn(GLIBC_2.0) [2]	wctob(GLIBC_2.0) [2]
fgetwc(GLIBC_2.2) [2]	putwchar(GLIBC_2.2) [2]	wcschr(GLIBC_2.0) [2]	wcsstr(GLIBC_2.0) [2]	wctomb(GLIBC_2.0) [2]
fgetws(GLIBC_2.2) [2]	swprintf(GLIBC_2.2) [2]	wcscmp(GLIBC_2.0) [2]	wcstod(GLIBC_2.0) [2]	wctrans(GLIBC_2.0) [2]
fputwc(GLIBC_2.2) [2]	swscanf(GLIBC_2.2) [2]	wcscoll(GLIBC_2.0) [2]	wcstof(GLIBC_2.0) [2]	wctype(GLIBC_2.0) [2]
fputws(GLIBC_2.2) [2]	towctrans(GLIBC_2.0) [2]	wcscpy(GLIBC_2.0) [2]	wcstoimax(GLIBC_2.1) [2]	wcwidth(GLIBC_2.0) [2]

fwide(GLIBC_2.2) [2]	towlower(GLIBC_2.0) [2]	wcscspn(GLIBC_2.0) [2]	wcstok(GLIBC_2.0) [2]	wmemchr(GLIBC_2.0) [2]
fwprintf(GLIBC_2.2) [2]	towupper(GLIBC_2.0) [2]	wcsdup(GLIBC_2.0) [1]	wcstol(GLIBC_2.0) [2]	wmemcmp(GLIBC_2.0) [2]
fwscanf(GLIBC_2.2) [2]	ungetwc(GLIBC_2.2) [2]	wcsftime(GLIBC_2.2) [2]	wcstold(GLIBC_2.0) [2]	wmemcpy(GLIBC_2.0) [2]
getwc(GLIBC_2.2) [2]	vfwprintf(GLIBC_2.2) [2]	wcslen(GLIBC_2.0) [2]	wcstoll(GLIBC_2.1) [2]	wmemmove(GLIBC_2.0) [2]
getwchar(GLIBC_2.2) [2]	vfwscanf(GLIBC_2.2) [2]	wcsncasecmp(GLIBC_2.1) [1]	wcstombs(GLIBC_2.0) [2]	wmemset(GLIBC_2.0) [2]
mblen(GLIBC_2.0) [2]	vswprintf(GLIBC_2.2) [2]	wcsncat(GLIBC_2.0) [2]	wcstoq(GLIBC_2.0) [1]	wprintf(GLIBC_2.2) [2]
mbrlen(GLIBC_2.0) [2]	vswscanf(GLIBC_2.2) [2]	wcsncmp(GLIBC_2.0) [2]	wcstoul(GLIBC_2.0) [2]	wscanf(GLIBC_2.2) [2]
mbrtowc(GLIBC_2.0) [2]	vwprintf(GLIBC_2.2) [2]	wcsncpy(GLIBC_2.0) [2]	wcstoull(GLIBC_2.1) [2]	

Referenced Specification(s)

[1]. this specification

[2]. ISO POSIX (2003)

1.2.8. String Functions

1.2.8.1. Interfaces for String Functions

An LSB conforming implementation shall provide the architecture specific functions for String Functions specified in Table 1-13, with the full functionality as described in the referenced underlying specification.

Table 1-13. libc - String Functions Function Interfaces

__mempcpy(GLIBC_2.0) [1]	bzero(GLIBC_2.0) [2]	strcasestr(GLIBC_2.1) [1]	strncasecmp(GLIBC_2.0) [2]	strtoimax(GLIBC_2.1) [2]
__rawmemchr(GLIBC_2.1) [1]	ffs(GLIBC_2.0) [2]	strcat(GLIBC_2.0) [2]	strncat(GLIBC_2.0) [2]	strtok(GLIBC_2.0) [2]
__stpcpy(GLIBC_2.0) [1]	index(GLIBC_2.0) [2]	strchr(GLIBC_2.0) [2]	strncmp(GLIBC_2.0) [2]	strtok_r(GLIBC_2.0) [2]
__strdup(GLIBC_2.0) [1]	memccpy(GLIBC_2.0) [2]	strcmp(GLIBC_2.0) [2]	strncpy(GLIBC_2.0) [2]	strtold(GLIBC_2.0) [2]
__strtod_internal(GLIBC_2.0) [1]	memchr(GLIBC_2.0) [2]	strcoll(GLIBC_2.0) [2]	strndup(GLIBC_2.0) [1]	strtoll(GLIBC_2.0) [2]
__strtof_internal(G	memcmp(GLIBC_2	strcpy(GLIBC_2.0)	strnlen(GLIBC_2.0)	strtoq(GLIBC_2.0)

LIBC_2.0) [1]	.0) [2]	[2]	[1]	[1]
__strtok_r(GLIBC_2.0) [1]	memcpy(GLIBC_2.0) [2]	strcspn(GLIBC_2.0) [2]	strpbrk(GLIBC_2.0) [2]	strtoull(GLIBC_2.0) [2]
__strtol_internal(GLIBC_2.0) [1]	memmove(GLIBC_2.0) [2]	strdup(GLIBC_2.0) [2]	strptime(GLIBC_2.0) [1]	strtoumax(GLIBC_2.1) [2]
__strtold_internal(GLIBC_2.0) [1]	memrchr(GLIBC_2.2) [1]	strerror(GLIBC_2.0) [2]	strrchr(GLIBC_2.0) [2]	strtouq(GLIBC_2.0) [1]
__strtoll_internal(GLIBC_2.0) [1]	memset(GLIBC_2.0) [2]	strerror_r(GLIBC_2.0) [1]	strsep(GLIBC_2.0) [1]	strverscmp(GLIBC_2.1) [1]
__strtoul_internal(GLIBC_2.0) [1]	rindex(GLIBC_2.0) [2]	strfmon(GLIBC_2.0) [2]	strsignal(GLIBC_2.0) [1]	strxfrm(GLIBC_2.0) [2]
__strtoull_internal(GLIBC_2.0) [1]	stpcpy(GLIBC_2.0) [1]	strfry(GLIBC_2.0) [1]	strspn(GLIBC_2.0) [2]	swab(GLIBC_2.0) [2]
bcmp(GLIBC_2.0) [2]	stpncpy(GLIBC_2.0) [1]	strftime(GLIBC_2.0) [2]	strstr(GLIBC_2.0) [2]	
bcopy(GLIBC_2.0) [2]	strcasecmp(GLIBC_2.0) [2]	strlen(GLIBC_2.0) [2]	strtof(GLIBC_2.0) [2]	

Referenced Specification(s)

[1]. this specification

[2]. ISO POSIX (2003)

1.2.9. IPC Functions

1.2.9.1. Interfaces for IPC Functions

An LSB conforming implementation shall provide the architecture specific functions for IPC Functions specified in Table 1-14, with the full functionality as described in the referenced underlying specification.

Table 1-14. libc - IPC Functions Function Interfaces

ftok(GLIBC_2.0) [1]	msgrcv(GLIBC_2.0) [1]	semget(GLIBC_2.0) [1]	shmctl(GLIBC_2.2) [1]	
msgctl(GLIBC_2.2) [1]	msgsnd(GLIBC_2.0) [1]	semop(GLIBC_2.0) [1]	shmdt(GLIBC_2.0) [1]	
msgget(GLIBC_2.0) [1]	semctl(GLIBC_2.2) [1]	shmat(GLIBC_2.0) [1]	shmget(GLIBC_2.0) [1]	

Referenced Specification(s)

[1]. ISO POSIX (2003)

1.2.10. Regular Expressions

1.2.10.1. Interfaces for Regular Expressions

An LSB conforming implementation shall provide the architecture specific functions for Regular Expressions specified in Table 1-15, with the full functionality as described in the referenced underlying specification.

Table 1-15. libc - Regular Expressions Function Interfaces

regcomp(GLIBC_2.0) [1]	regerror(GLIBC_2.0) [1]	regexec(GLIBC_2.0) [1]	regfree(GLIBC_2.0) [1]	

Referenced Specification(s)

[1]. ISO POSIX (2003)

An LSB conforming implementation shall provide the architecture specific deprecated functions for Regular Expressions specified in Table 1-16, with the full functionality as described in the referenced underlying specification.

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

Table 1-16. libc - Regular Expressions Deprecated Function Interfaces

advance(GLIBC_2.0) [1]	re_comp(GLIBC_2.0) [1]	re_exec(GLIBC_2.0) [1]	step(GLIBC_2.0) [1]	

Referenced Specification(s)

[1]. SUSv2

An LSB conforming implementation shall provide the architecture specific deprecated data interfaces for Regular Expressions specified in Table 1-17, with the full functionality as described in the referenced underlying specification.

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

Table 1-17. libc - Regular Expressions Deprecated Data Interfaces

loc1(GLIBC_2.0) [1]	loc2(GLIBC_2.0) [1]	locs(GLIBC_2.0) [1]		

Referenced Specification(s)

[1]. SUSv2

1.2.11. Character Type Functions

1.2.11.1. Interfaces for Character Type Functions

An LSB conforming implementation shall provide the architecture specific functions for Character Type Functions specified in Table 1-18, with the full functionality as described in the referenced underlying specification.

139 **Table 1-18. libc - Character Type Functions Function Interfaces**

__ctype_get_mb_cur_max(GLIBC_2.0) [1]	isdigit(GLIBC_2.0) [2]	iswalnum(GLIBC_2.0) [2]	iswlower(GLIBC_2.0) [2]	toascii(GLIBC_2.0) [2]
_tolower(GLIBC_2.0) [2]	isgraph(GLIBC_2.0) [2]	iswalpha(GLIBC_2.0) [2]	iswprint(GLIBC_2.0) [2]	tolower(GLIBC_2.0) [2]
_toupper(GLIBC_2.0) [2]	islower(GLIBC_2.0) [2]	iswblank(GLIBC_2.1) [2]	iswpunct(GLIBC_2.0) [2]	toupper(GLIBC_2.0) [2]
isalnum(GLIBC_2.0) [2]	isprint(GLIBC_2.0) [2]	iswcntrl(GLIBC_2.0) [2]	iswspace(GLIBC_2.0) [2]	
isalpha(GLIBC_2.0) [2]	ispunct(GLIBC_2.0) [2]	iswctype(GLIBC_2.0) [2]	iswupper(GLIBC_2.0) [2]	
isascii(GLIBC_2.0) [2]	isspace(GLIBC_2.0) [2]	iswdigit(GLIBC_2.0) [2]	iswxdigit(GLIBC_2.0) [2]	
iscntrl(GLIBC_2.0) [2]	isupper(GLIBC_2.0) [2]	iswgraph(GLIBC_2.0) [2]	isxdigit(GLIBC_2.0) [2]	

140

141 *Referenced Specification(s)*

142 **[1].** this specification

143 **[2].** ISO POSIX (2003)

1.2.12. Time Manipulation

144 ### 1.2.12.1. Interfaces for Time Manipulation

145 An LSB conforming implementation shall provide the architecture specific functions for Time Manipulation specified
146 in Table 1-19, with the full functionality as described in the referenced underlying specification.

147 **Table 1-19. libc - Time Manipulation Function Interfaces**

adjtime(GLIBC_2.0) [1]	ctime(GLIBC_2.0) [2]	gmtime(GLIBC_2.0) [2]	localtime_r(GLIBC_2.0) [2]	ualarm(GLIBC_2.0) [2]
asctime(GLIBC_2.0) [2]	ctime_r(GLIBC_2.0) [2]	gmtime_r(GLIBC_2.0) [2]	mktime(GLIBC_2.0) [2]	
asctime_r(GLIBC_2.0) [2]	difftime(GLIBC_2.0) [2]	localtime(GLIBC_2.0) [2]	tzset(GLIBC_2.0) [2]	

148

149 *Referenced Specification(s)*

150 **[1].** this specification

151 **[2].** ISO POSIX (2003)

An LSB conforming implementation shall provide the architecture specific deprecated functions for Time Manipulation specified in Table 1-20, with the full functionality as described in the referenced underlying specification.

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

Table 1-20. libc - Time Manipulation Deprecated Function Interfaces

adjtimex(GLIBC_2.0) [1]				

Referenced Specification(s)

[1]. this specification

An LSB conforming implementation shall provide the architecture specific data interfaces for Time Manipulation specified in Table 1-21, with the full functionality as described in the referenced underlying specification.

Table 1-21. libc - Time Manipulation Data Interfaces

__daylight(GLIBC_2.0) [1]	__tzname(GLIBC_2.0) [1]	timezone(GLIBC_2.0) [2]		
__timezone(GLIBC_2.0) [1]	daylight(GLIBC_2.0) [2]	tzname(GLIBC_2.0) [2]		

Referenced Specification(s)

[1]. this specification

[2]. ISO POSIX (2003)

1.2.13. Terminal Interface Functions

1.2.13.1. Interfaces for Terminal Interface Functions

An LSB conforming implementation shall provide the architecture specific functions for Terminal Interface Functions specified in Table 1-22, with the full functionality as described in the referenced underlying specification.

Table 1-22. libc - Terminal Interface Functions Function Interfaces

cfgetispeed(GLIBC_2.0) [1]	cfsetispeed(GLIBC_2.0) [1]	tcdrain(GLIBC_2.0) [1]	tcgetattr(GLIBC_2.0) [1]	tcsendbreak(GLIBC_2.0) [1]
cfgetospeed(GLIBC_2.0) [1]	cfsetospeed(GLIBC_2.0) [1]	tcflow(GLIBC_2.0) [1]	tcgetpgrp(GLIBC_2.0) [1]	tcsetattr(GLIBC_2.0) [1]
cfmakeraw(GLIBC_2.0) [2]	cfsetspeed(GLIBC_2.0) [2]	tcflush(GLIBC_2.0) [1]	tcgetsid(GLIBC_2.1) [1]	tcsetpgrp(GLIBC_2.0) [1]

Referenced Specification(s)

[1]. ISO POSIX (2003)

175 **[2].** this specification

1.2.14. System Database Interface

176 1.2.14.1. Interfaces for System Database Interface

177 An LSB conforming implementation shall provide the architecture specific functions for System Database Interface
178 specified in Table 1-23, with the full functionality as described in the referenced underlying specification.

179 **Table 1-23. libc - System Database Interface Function Interfaces**

endgrent(GLIBC_2.0) [1]	getgrgid(GLIBC_2.0) [1]	getprotobynumber(GLIBC_2.0) [1]	getservbyport(GLIBC_2.0) [1]	setgrent(GLIBC_2.0) [1]
endnetent(GLIBC_2.0) [1]	getgrgid_r(GLIBC_2.0) [1]	getprotoent(GLIBC_2.0) [1]	getservent(GLIBC_2.0) [1]	setgroups(GLIBC_2.0) [2]
endprotoent(GLIBC_2.0) [1]	getgrnam(GLIBC_2.0) [1]	getpwent(GLIBC_2.0) [1]	getutent(GLIBC_2.0) [2]	setnetent(GLIBC_2.0) [1]
endpwent(GLIBC_2.0) [1]	getgrnam_r(GLIBC_2.0) [1]	getpwnam(GLIBC_2.0) [1]	getutent_r(GLIBC_2.0) [2]	setprotoent(GLIBC_2.0) [1]
endservent(GLIBC_2.0) [1]	gethostbyaddr(GLIBC_2.0) [1]	getpwnam_r(GLIBC_2.0) [1]	getutxent(GLIBC_2.1) [1]	setpwent(GLIBC_2.0) [1]
endutent(GLIBC_2.0) [3]	gethostbyname(GLIBC_2.0) [1]	getpwuid(GLIBC_2.0) [1]	getutxid(GLIBC_2.1) [1]	setservent(GLIBC_2.0) [1]
endutxent(GLIBC_2.1) [1]	getnetbyaddr(GLIBC_2.0) [1]	getpwuid_r(GLIBC_2.1.2) [1]	getutxline(GLIBC_2.1) [1]	setutent(GLIBC_2.0) [2]
getgrent(GLIBC_2.0) [1]	getprotobyname(GLIBC_2.0) [1]	getservbyname(GLIBC_2.0) [1]	pututxline(GLIBC_2.1) [1]	setutxent(GLIBC_2.1) [1]

180

181 *Referenced Specification(s)*

182 **[1].** ISO POSIX (2003)

183 **[2].** this specification

184 **[3].** SUSv2

1.2.15. Language Support

185 1.2.15.1. Interfaces for Language Support

186 An LSB conforming implementation shall provide the architecture specific functions for Language Support specified
187 in Table 1-24, with the full functionality as described in the referenced underlying specification.

188 **Table 1-24. libc - Language Support Function Interfaces**

__libc_start_main(GLIBC_2.0) [1]	_obstack_begin(GLIBC_2.0) [1]	_obstack_newchunk(GLIBC_2.0) [1]	obstack_free(GLIBC_2.0) [1]	

189

Referenced Specification(s)

[1]. this specification

1.2.16. Large File Support

1.2.16.1. Interfaces for Large File Support

An LSB conforming implementation shall provide the architecture specific functions for Large File Support specified in Table 1-25, with the full functionality as described in the referenced underlying specification.

Table 1-25. libc - Large File Support Function Interfaces

__fxstat64(GLIBC_2.2) [1]	fopen64(GLIBC_2.1) [2]	ftello64(GLIBC_2.1) [2]	lseek64(GLIBC_2.1) [2]	readdir64(GLIBC_2.2) [2]
__lxstat64(GLIBC_2.2) [1]	freopen64(GLIBC_2.1) [2]	ftruncate64(GLIBC_2.1) [2]	mkstemp64(GLIBC_2.2) [2]	statvfs64(GLIBC_2.1) [2]
__xstat64(GLIBC_2.2) [1]	fseeko64(GLIBC_2.1) [2]	ftw64(GLIBC_2.1) [2]	mmap64(GLIBC_2.1) [2]	tmpfile64(GLIBC_2.1) [2]
creat64(GLIBC_2.1) [2]	fsetpos64(GLIBC_2.2) [2]	getrlimit64(GLIBC_2.2) [2]	nftw64(GLIBC_2.1) [2]	truncate64(GLIBC_2.1) [2]
fgetpos64(GLIBC_2.2) [2]	fstatvfs64(GLIBC_2.1) [2]	lockf64(GLIBC_2.1) [2]	open64(GLIBC_2.1) [2]	

Referenced Specification(s)

[1]. this specification

[2]. Large File Support

1.2.17. Standard Library

1.2.17.1. Interfaces for Standard Library

An LSB conforming implementation shall provide the architecture specific functions for Standard Library specified in Table 1-26, with the full functionality as described in the referenced underlying specification.

Table 1-26. libc - Standard Library Function Interfaces

_Exit(GLIBC_2.1.1) [1]	dirname(GLIBC_2.0) [1]	glob(GLIBC_2.0) [1]	lsearch(GLIBC_2.0) [1]	srand(GLIBC_2.0) [1]
__assert_fail(GLIBC_2.0) [2]	div(GLIBC_2.0) [1]	glob64(GLIBC_2.2) [2]	makecontext(GLIBC_2.3.3) [1]	srand48(GLIBC_2.0) [1]
__cxa_atexit(GLIBC_2.1.3) [2]	drand48(GLIBC_2.0) [1]	globfree(GLIBC_2.0) [1]	malloc(GLIBC_2.0) [1]	srandom(GLIBC_2.0) [1]
__errno_location(GLIBC_2.0) [2]	ecvt(GLIBC_2.0) [1]	globfree64(GLIBC_2.1) [2]	memmem(GLIBC_2.0) [2]	strtod(GLIBC_2.0) [1]

__fpending(GLIBC_2.2) [2]	erand48(GLIBC_2.0) [1]	grantpt(GLIBC_2.1) [1]	mkstemp(GLIBC_2.0) [1]	strtol(GLIBC_2.0) [1]
__getpagesize(GLIBC_2.0) [2]	err(GLIBC_2.0) [2]	hcreate(GLIBC_2.0) [1]	mktemp(GLIBC_2.0) [1]	strtoul(GLIBC_2.0) [1]
__isinf(GLIBC_2.0) [2]	error(GLIBC_2.0) [2]	hdestroy(GLIBC_2.0) [1]	mrand48(GLIBC_2.0) [1]	swapcontext(GLIBC_2.1) [1]
__isinff(GLIBC_2.0) [2]	errx(GLIBC_2.0) [2]	hsearch(GLIBC_2.0) [1]	nftw(GLIBC_2.1) [1]	syslog(GLIBC_2.0) [1]
__isinfl(GLIBC_2.0) [2]	fcvt(GLIBC_2.0) [1]	htonl(GLIBC_2.0) [1]	nrand48(GLIBC_2.0) [1]	system(GLIBC_2.0) [2]
__isnan(GLIBC_2.0) [2]	fmtmsg(GLIBC_2.1) [1]	htons(GLIBC_2.0) [1]	ntohl(GLIBC_2.0) [1]	tdelete(GLIBC_2.0) [1]
__isnanf(GLIBC_2.0) [2]	fnmatch(GLIBC_2.2.3) [1]	imaxabs(GLIBC_2.1.1) [1]	ntohs(GLIBC_2.0) [1]	tfind(GLIBC_2.0) [1]
__isnanl(GLIBC_2.0) [2]	fpathconf(GLIBC_2.0) [1]	imaxdiv(GLIBC_2.1.1) [1]	openlog(GLIBC_2.0) [1]	tmpfile(GLIBC_2.1) [1]
__sysconf(GLIBC_2.2) [2]	free(GLIBC_2.0) [1]	inet_addr(GLIBC_2.0) [1]	perror(GLIBC_2.0) [1]	tmpnam(GLIBC_2.0) [1]
_exit(GLIBC_2.0) [1]	freeaddrinfo(GLIBC_2.0) [1]	inet_ntoa(GLIBC_2.0) [1]	posix_memalign(GLIBC_2.2) [1]	tsearch(GLIBC_2.0) [1]
_longjmp(GLIBC_2.0) [1]	ftrylockfile(GLIBC_2.0) [1]	inet_ntop(GLIBC_2.0) [1]	ptsname(GLIBC_2.1) [1]	ttyname(GLIBC_2.0) [1]
_setjmp(GLIBC_2.0) [1]	ftw(GLIBC_2.0) [1]	inet_pton(GLIBC_2.0) [1]	putenv(GLIBC_2.0) [1]	ttyname_r(GLIBC_2.0) [1]
a64l(GLIBC_2.0) [1]	funlockfile(GLIBC_2.0) [1]	initstate(GLIBC_2.0) [1]	qsort(GLIBC_2.0) [1]	twalk(GLIBC_2.0) [1]
abort(GLIBC_2.0) [1]	gai_strerror(GLIBC_2.1) [1]	insque(GLIBC_2.0) [1]	rand(GLIBC_2.0) [1]	unlockpt(GLIBC_2.1) [1]
abs(GLIBC_2.0) [1]	gcvt(GLIBC_2.0) [1]	isatty(GLIBC_2.0) [1]	rand_r(GLIBC_2.0) [1]	unsetenv(GLIBC_2.0) [1]
atof(GLIBC_2.0) [1]	getaddrinfo(GLIBC_2.0) [1]	isblank(GLIBC_2.0) [1]	random(GLIBC_2.0) [1]	usleep(GLIBC_2.0) [1]
atoi(GLIBC_2.0) [1]	getcwd(GLIBC_2.0) [1]	jrand48(GLIBC_2.0) [1]	random_r(GLIBC_2.0) [2]	verrx(GLIBC_2.0) [2]
atol(GLIBC_2.0) [1]	getdate(GLIBC_2.1) [1]	l64a(GLIBC_2.0) [1]	realloc(GLIBC_2.0) [1]	vfscanf(GLIBC_2.0) [1]
atoll(GLIBC_2.0)	getenv(GLIBC_2.0)	labs(GLIBC_2.0)	realpath(GLIBC_2.	vscanf(GLIBC_2.0)

[1]	[1]	[1]	3) [1]	[1]
basename(GLIBC_2.0) [1]	getlogin(GLIBC_2.0) [1]	lcong48(GLIBC_2.0) [1]	remque(GLIBC_2.0) [1]	vsscanf(GLIBC_2.0) [1]
bsearch(GLIBC_2.0) [1]	getnameinfo(GLIBC_2.1) [1]	ldiv(GLIBC_2.0) [1]	seed48(GLIBC_2.0) [1]	vsyslog(GLIBC_2.0) [2]
calloc(GLIBC_2.0) [1]	getopt(GLIBC_2.0) [2]	lfind(GLIBC_2.0) [1]	setenv(GLIBC_2.0) [1]	warn(GLIBC_2.0) [2]
closelog(GLIBC_2.0) [1]	getopt_long(GLIBC_2.0) [2]	llabs(GLIBC_2.0) [1]	sethostid(GLIBC_2.0) [2]	warnx(GLIBC_2.0) [2]
confstr(GLIBC_2.0) [1]	getopt_long_only(GLIBC_2.0) [2]	lldiv(GLIBC_2.0) [1]	sethostname(GLIBC_2.0) [2]	wordexp(GLIBC_2.1) [1]
cuserid(GLIBC_2.0) [3]	getsubopt(GLIBC_2.0) [1]	longjmp(GLIBC_2.0) [1]	setlogmask(GLIBC_2.0) [1]	wordfree(GLIBC_2.1) [1]
daemon(GLIBC_2.0) [2]	gettimeofday(GLIBC_2.0) [1]	lrand48(GLIBC_2.0) [1]	setstate(GLIBC_2.0) [1]	

Referenced Specification(s)

[1]. ISO POSIX (2003)

[2]. this specification

[3]. SUSv2

An LSB conforming implementation shall provide the architecture specific data interfaces for Standard Library specified in Table 1-27, with the full functionality as described in the referenced underlying specification.

Table 1-27. libc - Standard Library Data Interfaces

__environ(GLIBC_2.0) [1]	_sys_errlist(GLIBC_2.1) [1]	getdate_err(GLIBC_2.1) [2]	opterr(GLIBC_2.0) [1]	optopt(GLIBC_2.0) [1]
_environ(GLIBC_2.0) [1]	environ(GLIBC_2.0) [2]	optarg(GLIBC_2.0) [2]	optind(GLIBC_2.0) [1]	

Referenced Specification(s)

[1]. this specification

[2]. ISO POSIX (2003)

1.3. Data Definitions for libc

This section defines global identifiers and their values that are associated with interfaces contained in libc. 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.

These definitions are intended to supplement those provided in the referenced underlying specifications.

This specification uses ISO/IEC 9899 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.

1.3.1. errno.h

```
#define EDEADLOCK       58
```

1.3.2. inttypes.h

```
typedef unsigned long long uintmax_t;
typedef long long intmax_t;
typedef unsigned int uintptr_t;
typedef unsigned long long uint64_t;
```

1.3.3. limits.h

```
#define ULONG_MAX       0xFFFFFFFFUL
#define LONG_MAX        2147483647L

#define CHAR_MIN        0
#define CHAR_MAX        255
```

1.3.4. setjmp.h

```
typedef int __jmp_buf[58];
```

1.3.5. signal.h

```
struct sigaction
{
  union
  {
    sighandler_t _sa_handler;
    void (*_sa_sigaction) (int, siginfo_t *, void *);
  }
  __sigaction_handler;
  sigset_t sa_mask;
  unsigned long sa_flags;
  void (*sa_restorer) (void);
}
 ;
#define MINSIGSTKSZ     2048
#define SIGSTKSZ        8192

struct sigcontext
```

```
{
  long _unused[4];
  int signal;
  unsigned long handler;
  unsigned long oldmask;
  struct pt_regs *regs;
}
 ;
```

1.3.6. stddef.h

```

typedef unsigned int size_t;
typedef int ptrdiff_t;
```

1.3.7. sys/ioctl.h

```

#define TIOCNOTTY       0x5422
#define FIONREAD        1074030207
```

1.3.8. sys/ipc.h

```

struct ipc_perm
{
  key_t __key;
  uid_t uid;
  gid_t gid;
  uid_t cuid;
  uid_t cgid;
  mode_t mode;
  long __seq;
  int __pad1;
  unsigned long long __unused1;
  unsigned long long __unused2;
}
 ;
```

1.3.9. sys/mman.h

```

#define MCL_FUTURE      16384
#define MCL_CURRENT     8192
```

1.3.10. sys/msg.h

```

typedef unsigned long msglen_t;
typedef unsigned long msgqnum_t;

```

```
struct msqid_ds
{
  struct ipc_perm msg_perm;
  unsigned int __unused1;
  time_t msg_stime;
  unsigned int __unused2;
  time_t msg_rtime;
  unsigned int __unused3;
  time_t msg_ctime;
  unsigned long __msg_cbytes;
  msgqnum_t msg_qnum;
  msglen_t msg_qbytes;
  pid_t msg_lspid;
  pid_t msg_lrpid;
  unsigned long __unused4;
  unsigned long __unused5;
}
 ;
```

1.3.11. sys/sem.h

```

struct semid_ds
{
  struct ipc_perm sem_perm;
  unsigned int __unused1;
  time_t sem_otime;
  unsigned int __unused2;
  time_t sem_ctime;
  unsigned long sem_nsems;
  unsigned long __unused3;
  unsigned long __unused4;
}
 ;
```

1.3.12. sys/shm.h

```

#define SHMLBA  (__getpagesize())

typedef unsigned long shmatt_t;

struct shmid_ds
{
  struct ipc_perm shm_perm;
  unsigned int __unused1;
  time_t shm_atime;
  unsigned int __unused2;
  time_t shm_dtime;
  unsigned int __unused3;
  time_t shm_ctime;
  unsigned int __unused4;
```

```
338     size_t shm_segsz;
339     pid_t shm_cpid;
340     pid_t shm_lpid;
341     shmatt_t shm_nattch;
342     unsigned long __unused5;
343     unsigned long __unused6;
344   }
345    ;
```

1.3.13. sys/socket.h

```
346
347   typedef uint32_t __ss_aligntype;
```

1.3.14. sys/stat.h

```
348
349   #define _STAT_VER       3
350
351   struct stat64
352   {
353     dev_t st_dev;
354     ino64_t st_ino;
355     mode_t st_mode;
356     nlink_t st_nlink;
357     uid_t st_uid;
358     gid_t st_gid;
359     dev_t st_rdev;
360     unsigned short __pad2;
361     off64_t st_size;
362     blksize_t st_blksize;
363     blkcnt64_t st_blocks;
364     struct timespec st_atim;
365     struct timespec st_mtim;
366     struct timespec st_ctim;
367     unsigned long __unused4;
368     unsigned long __unused5;
369   }
370    ;
371   struct stat
372   {
373     dev_t st_dev;
374     unsigned short __pad1;
375     ino_t st_ino;
376     mode_t st_mode;
377     nlink_t st_nlink;
378     uid_t st_uid;
379     gid_t st_gid;
380     dev_t st_rdev;
381     unsigned short __pad2;
382     off_t st_size;
383     blksize_t st_blksize;
```

```
  blkcnt_t st_blocks;
  struct timespec st_atim;
  struct timespec st_mtim;
  struct timespec st_ctim;
  unsigned long __unused4;
  unsigned long __unused5;
}
 ;
```

1.3.15. sys/statvfs.h

```

struct statvfs
{
  unsigned long f_bsize;
  unsigned long f_frsize;
  fsblkcnt_t f_blocks;
  fsblkcnt_t f_bfree;
  fsblkcnt_t f_bavail;
  fsfilcnt_t f_files;
  fsfilcnt_t f_ffree;
  fsfilcnt_t f_favail;
  unsigned long f_fsid;
  int __f_unused;
  unsigned long f_flag;
  unsigned long f_namemax;
  int __f_spare[6];
}
 ;
struct statvfs64
{
  unsigned long f_bsize;
  unsigned long f_frsize;
  fsblkcnt64_t f_blocks;
  fsblkcnt64_t f_bfree;
  fsblkcnt64_t f_bavail;
  fsfilcnt64_t f_files;
  fsfilcnt64_t f_ffree;
  fsfilcnt64_t f_favail;
  unsigned long f_fsid;
  int __f_unused;
  unsigned long f_flag;
  unsigned long f_namemax;
  int __f_spare[6];
}
 ;
```

1.3.16. sys/types.h

```

typedef long long int64_t;

```

```
typedef int32_t ssize_t;
```

1.3.17. termios.h

```

#define TAB1    1024
#define CR3     12288
#define CRDLY   12288
#define FF1     16384
#define FFDLY   16384
#define XCASE   16384
#define ONLCR   2
#define TAB2    2048
#define TAB3    3072
#define TABDLY  3072
#define BS1     32768
#define BSDLY   32768
#define OLCUC   4
#define CR1     4096
#define IUCLC   4096
#define VT1     65536
#define VTDLY   65536
#define NLDLY   768
#define CR2     8192

#define VWERASE 10
#define VREPRINT        11
#define VSUSP   12
#define VSTART  13
#define VSTOP   14
#define VDISCARD        16
#define VMIN    5
#define VEOL    6
#define VEOL2   8
#define VSWTC   9

#define IXOFF   1024
#define IXON    512

#define CSTOPB  1024
#define HUPCL   16384
#define CREAD   2048
#define CS6     256
#define CLOCAL  32768
#define PARENB  4096
#define CS7     512
#define VTIME   7
#define CS8     768
#define CSIZE   768
#define PARODD  8192

#define NOFLSH  0x80000000
```

```
#define ECHOKE  1
#define IEXTEN  1024
#define ISIG    128
#define ECHONL  16
#define ECHOE   2
#define ICANON  256
#define ECHOPRT 32
#define ECHOK   4
#define TOSTOP  4194304
#define PENDIN  536870912
#define ECHOCTL 64
#define FLUSHO  8388608
```

1.3.18. ucontext.h

```

struct pt_regs
{
  unsigned long gpr[32];
  unsigned long nip;
  unsigned long msr;
  unsigned long orig_gpr3;
  unsigned long ctr;
  unsigned long link;
  unsigned long xer;
  unsigned long ccr;
  unsigned long mq;
  unsigned long trap;
  unsigned long dar;
  unsigned long dsisr;
  unsigned long result;
}
 ;
typedef struct _libc_vrstate
{
  unsigned int vrregs[128];
  unsigned int vscr;
  unsigned int vrsave;
  unsigned int _pad[2];
}
vrregset_t __attribute__ ((__aligned__ (16)));

#define NGREG   48

typedef unsigned long gregset_t[48];

typedef struct _libc_fpstate
{
  double fpregs[32];
  double fpscr;
  int _pad[2];
}
```

```
fpregset_t;

typedef struct
{
  gregset_t gregs;
  fpregset_t fpregs;
  vrregset_t vrregs;
}
mcontext_t;

union uc_regs_ptr
{
  struct pt_regs *regs;
  mcontext_t *uc_regs;
}
 ;

typedef struct ucontext
{
  unsigned long uc_flags;
  struct ucontext *uc_link;
  stack_t uc_stack;
  int uc_pad[7];
  union uc_regs_ptr uc_mcontext;
  sigset_t uc_sigmask;
  char uc_reg_space[sizeof (mcontext_t) + 12];
}
ucontext_t;
```

1.3.19. unistd.h

```

typedef int intptr_t;
```

1.3.20. utmp.h

```

struct lastlog
{
  time_t ll_time;
  char ll_line[UT_LINESIZE];
  char ll_host[UT_HOSTSIZE];
}
 ;

struct utmp
{
  short ut_type;
  pid_t ut_pid;
  char ut_line[UT_LINESIZE];
  char ut_id[4];
  char ut_user[UT_NAMESIZE];
```

```
  char ut_host[UT_HOSTSIZE];
  struct exit_status ut_exit;
  long ut_session;
  struct timeval ut_tv;
  int32_t ut_addr_v6[4];
  char __unused[20];
}
 ;
```

1.3.21. utmpx.h

```

struct utmpx
{
  short ut_type;
  pid_t ut_pid;
  char ut_line[UT_LINESIZE];
  char ut_id[4];
  char ut_user[UT_NAMESIZE];
  char ut_host[UT_HOSTSIZE];
  struct exit_status ut_exit;
  long ut_session;
  struct timeval ut_tv;
  int32_t ut_addr_v6[4];
  char __unused[20];
}
 ;
```

1.4. Interfaces for libm

Table 1-28 defines the library name and shared object name for the libm library

Table 1-28. libm Definition

Library:	libm
SONAME:	libm.so.6

The behavior of the interfaces in this library is specified by the following specifications:

ISO C (1999)
SUSv2
ISO POSIX (2003)

1.4.1. Math

1.4.1.1. Interfaces for Math

An LSB conforming implementation shall provide the architecture specific functions for Math specified in Table 1-29, with the full functionality as described in the referenced underlying specification.

606 **Table 1-29. libm - Math Function Interfaces**

acos(GLIBC_2.0) [1]	cexp(GLIBC_2.1) [1]	expf(GLIBC_2.0) [1]	jnf(GLIBC_2.0) [2]	remquof(GLIBC_2.1) [1]
acosf(GLIBC_2.0) [1]	cexpf(GLIBC_2.1) [1]	expl(GLIBC_2.0) [1]	jnl(GLIBC_2.0) [2]	remquol(GLIBC_2.1) [1]
acosh(GLIBC_2.0) [1]	cexpl(GLIBC_2.1) [1]	expm1(GLIBC_2.0) [1]	ldexp(GLIBC_2.0) [1]	rint(GLIBC_2.0) [1]
acoshf(GLIBC_2.0) [1]	cimag(GLIBC_2.1) [1]	fabs(GLIBC_2.0) [1]	ldexpf(GLIBC_2.0) [1]	rintf(GLIBC_2.0) [1]
acoshl(GLIBC_2.0) [1]	cimagf(GLIBC_2.1) [1]	fabsf(GLIBC_2.0) [1]	ldexpl(GLIBC_2.0) [1]	rintl(GLIBC_2.0) [1]
acosl(GLIBC_2.0) [1]	cimagl(GLIBC_2.1) [1]	fabsl(GLIBC_2.0) [1]	lgamma(GLIBC_2.0) [1]	round(GLIBC_2.1) [1]
asin(GLIBC_2.0) [1]	clog(GLIBC_2.1) [1]	fdim(GLIBC_2.1) [1]	lgamma_r(GLIBC_2.0) [2]	roundf(GLIBC_2.1) [1]
asinf(GLIBC_2.0) [1]	clog10(GLIBC_2.1) [2]	fdimf(GLIBC_2.1) [1]	lgammaf(GLIBC_2.0) [1]	roundl(GLIBC_2.1) [1]
asinh(GLIBC_2.0) [1]	clog10f(GLIBC_2.1) [2]	fdiml(GLIBC_2.1) [1]	lgammaf_r(GLIBC_2.0) [2]	scalb(GLIBC_2.0) [1]
asinhf(GLIBC_2.0) [1]	clog10l(GLIBC_2.1) [2]	feclearexcept(GLIBC_2.2) [1]	lgammal(GLIBC_2.0) [1]	scalbf(GLIBC_2.0) [2]
asinhl(GLIBC_2.0) [1]	clogf(GLIBC_2.1) [1]	fegetenv(GLIBC_2.2) [1]	lgammal_r(GLIBC_2.0) [2]	scalbl(GLIBC_2.0) [2]
asinl(GLIBC_2.0) [1]	clogl(GLIBC_2.1) [1]	fegetexceptflag(GLIBC_2.2) [1]	llrint(GLIBC_2.1) [1]	scalbln(GLIBC_2.1) [1]
atan(GLIBC_2.0) [1]	conj(GLIBC_2.1) [1]	fegetround(GLIBC_2.1) [1]	llrintf(GLIBC_2.1) [1]	scalblnf(GLIBC_2.1) [1]
atan2(GLIBC_2.0) [1]	conjf(GLIBC_2.1) [1]	feholdexcept(GLIBC_2.1) [1]	llrintl(GLIBC_2.1) [1]	scalblnl(GLIBC_2.1) [1]
atan2f(GLIBC_2.0) [1]	conjl(GLIBC_2.1) [1]	feraiseexcept(GLIBC_2.2) [1]	llround(GLIBC_2.1) [1]	scalbn(GLIBC_2.0) [1]
atan2l(GLIBC_2.0) [1]	copysign(GLIBC_2.0) [1]	fesetenv(GLIBC_2.2) [1]	llroundf(GLIBC_2.1) [1]	scalbnf(GLIBC_2.0) [1]
atanf(GLIBC_2.0) [1]	copysignf(GLIBC_2.0) [1]	fesetexceptflag(GLIBC_2.2) [1]	llroundl(GLIBC_2.1) [1]	scalbnl(GLIBC_2.0) [1]
atanh(GLIBC_2.0) [1]	copysignl(GLIBC_2.0) [1]	fesetround(GLIBC_2.1) [1]	log(GLIBC_2.0) [1]	significand(GLIBC_2.0) [2]

atanhf(GLIBC_2.0) [1]	cos(GLIBC_2.0) [1]	fetestexcept(GLIBC_2.1) [1]	log10(GLIBC_2.0) [1]	significandf(GLIBC_2.0) [2]
atanhl(GLIBC_2.0) [1]	cosf(GLIBC_2.0) [1]	feupdateenv(GLIBC_2.2) [1]	log10f(GLIBC_2.0) [1]	significandl(GLIBC_2.0) [2]
atanl(GLIBC_2.0) [1]	cosh(GLIBC_2.0) [1]	finite(GLIBC_2.0) [3]	log10l(GLIBC_2.0) [1]	sin(GLIBC_2.0) [1]
cabs(GLIBC_2.1) [1]	coshf(GLIBC_2.0) [1]	finitef(GLIBC_2.0) [2]	log1p(GLIBC_2.0) [1]	sincos(GLIBC_2.1) [2]
cabsf(GLIBC_2.1) [1]	coshl(GLIBC_2.0) [1]	finitel(GLIBC_2.0) [2]	logb(GLIBC_2.0) [1]	sincosf(GLIBC_2.1) [2]
cabsl(GLIBC_2.1) [1]	cosl(GLIBC_2.0) [1]	floor(GLIBC_2.0) [1]	logf(GLIBC_2.0) [1]	sincosl(GLIBC_2.1) [2]
cacos(GLIBC_2.1) [1]	cpow(GLIBC_2.1) [1]	floorf(GLIBC_2.0) [1]	logl(GLIBC_2.0) [1]	sinf(GLIBC_2.0) [1]
cacosf(GLIBC_2.1) [1]	cpowf(GLIBC_2.1) [1]	floorl(GLIBC_2.0) [1]	lrint(GLIBC_2.1) [1]	sinh(GLIBC_2.0) [1]
cacosh(GLIBC_2.1) [1]	cpowl(GLIBC_2.1) [1]	fma(GLIBC_2.1) [1]	lrintf(GLIBC_2.1) [1]	sinhf(GLIBC_2.0) [1]
cacoshf(GLIBC_2.1) [1]	cproj(GLIBC_2.1) [1]	fmaf(GLIBC_2.1) [1]	lrintl(GLIBC_2.1) [1]	sinhl(GLIBC_2.0) [1]
cacoshl(GLIBC_2.1) [1]	cprojf(GLIBC_2.1) [1]	fmal(GLIBC_2.1) [1]	lround(GLIBC_2.1) [1]	sinl(GLIBC_2.0) [1]
cacosl(GLIBC_2.1) [1]	cprojl(GLIBC_2.1) [1]	fmax(GLIBC_2.1) [1]	lroundf(GLIBC_2.1) [1]	sqrt(GLIBC_2.0) [1]
carg(GLIBC_2.1) [1]	creal(GLIBC_2.1) [1]	fmaxf(GLIBC_2.1) [1]	lroundl(GLIBC_2.1) [1]	sqrtf(GLIBC_2.0) [1]
cargf(GLIBC_2.1) [1]	crealf(GLIBC_2.1) [1]	fmaxl(GLIBC_2.1) [1]	matherr(GLIBC_2.0) [2]	sqrtl(GLIBC_2.0) [1]
cargl(GLIBC_2.1) [1]	creall(GLIBC_2.1) [1]	fmin(GLIBC_2.1) [1]	modf(GLIBC_2.0) [1]	tan(GLIBC_2.0) [1]
casin(GLIBC_2.1) [1]	csin(GLIBC_2.1) [1]	fminf(GLIBC_2.1) [1]	modff(GLIBC_2.0) [1]	tanf(GLIBC_2.0) [1]
casinf(GLIBC_2.1) [1]	csinf(GLIBC_2.1) [1]	fminl(GLIBC_2.1) [1]	modfl(GLIBC_2.0) [1]	tanh(GLIBC_2.0) [1]
casinh(GLIBC_2.1) [1]	csinh(GLIBC_2.1) [1]	fmod(GLIBC_2.0) [1]	nan(GLIBC_2.1) [1]	tanhf(GLIBC_2.0) [1]
casinhf(GLIBC_2.1	csinhf(GLIBC_2.1)	fmodf(GLIBC_2.0)	nanf(GLIBC_2.1)	tanhl(GLIBC_2.0)

) [1]	[1]	[1]	[1]	[1]
casinhl(GLIBC_2.1) [1]	csinhl(GLIBC_2.1) [1]	fmodl(GLIBC_2.0) [1]	nanl(GLIBC_2.1) [1]	tanl(GLIBC_2.0) [1]
casinl(GLIBC_2.1) [1]	csinl(GLIBC_2.1) [1]	frexp(GLIBC_2.0) [1]	nearbyint(GLIBC_2.1) [1]	tgamma(GLIBC_2.1) [1]
catan(GLIBC_2.1) [1]	csqrt(GLIBC_2.1) [1]	frexpf(GLIBC_2.0) [1]	nearbyintf(GLIBC_2.1) [1]	tgammaf(GLIBC_2.1) [1]
catanf(GLIBC_2.1) [1]	csqrtf(GLIBC_2.1) [1]	frexpl(GLIBC_2.0) [1]	nearbyintl(GLIBC_2.1) [1]	tgammal(GLIBC_2.1) [1]
catanh(GLIBC_2.1) [1]	csqrtl(GLIBC_2.1) [1]	gamma(GLIBC_2.0) [3]	nextafter(GLIBC_2.0) [1]	trunc(GLIBC_2.1) [1]
catanhf(GLIBC_2.1) [1]	ctan(GLIBC_2.1) [1]	gammaf(GLIBC_2.0) [2]	nextafterf(GLIBC_2.0) [1]	truncf(GLIBC_2.1) [1]
catanhl(GLIBC_2.1) [1]	ctanf(GLIBC_2.1) [1]	gammal(GLIBC_2.0) [2]	nextafterl(GLIBC_2.0) [1]	truncl(GLIBC_2.1) [1]
catanl(GLIBC_2.1) [1]	ctanh(GLIBC_2.1) [1]	hypot(GLIBC_2.0) [1]	nexttoward(GLIBC_2.1) [1]	y0(GLIBC_2.0) [1]
cbrt(GLIBC_2.0) [1]	ctanhf(GLIBC_2.1) [1]	hypotf(GLIBC_2.0) [1]	nexttowardf(GLIBC_2.1) [1]	y0f(GLIBC_2.0) [2]
cbrtf(GLIBC_2.0) [1]	ctanhl(GLIBC_2.1) [1]	hypotl(GLIBC_2.0) [1]	nexttowardl(GLIBC_2.1) [1]	y0l(GLIBC_2.0) [2]
cbrtl(GLIBC_2.0) [1]	ctanl(GLIBC_2.1) [1]	ilogb(GLIBC_2.0) [1]	pow(GLIBC_2.0) [1]	y1(GLIBC_2.0) [1]
ccos(GLIBC_2.1) [1]	dremf(GLIBC_2.0) [2]	ilogbf(GLIBC_2.0) [1]	pow10(GLIBC_2.1) [2]	y1f(GLIBC_2.0) [2]
ccosf(GLIBC_2.1) [1]	dreml(GLIBC_2.0) [2]	ilogbl(GLIBC_2.0) [1]	pow10f(GLIBC_2.1) [2]	y1l(GLIBC_2.0) [2]
ccosh(GLIBC_2.1) [1]	erf(GLIBC_2.0) [1]	j0(GLIBC_2.0) [1]	pow10l(GLIBC_2.1) [2]	yn(GLIBC_2.0) [1]
ccoshf(GLIBC_2.1) [1]	erfc(GLIBC_2.0) [1]	j0f(GLIBC_2.0) [2]	powf(GLIBC_2.0) [1]	ynf(GLIBC_2.0) [2]
ccoshl(GLIBC_2.1) [1]	erfcf(GLIBC_2.0) [1]	j0l(GLIBC_2.0) [2]	powl(GLIBC_2.0) [1]	ynl(GLIBC_2.0) [2]
ccosl(GLIBC_2.1) [1]	erfcl(GLIBC_2.0) [1]	j1(GLIBC_2.0) [1]	remainder(GLIBC_2.0) [1]	
ceil(GLIBC_2.0) [1]	erff(GLIBC_2.0) [1]	j1f(GLIBC_2.0) [2]	remainderf(GLIBC_2.0) [1]	

ceilf(GLIBC_2.0) [1]	erfl(GLIBC_2.0) [1]	j1l(GLIBC_2.0) [2]	remainderl(GLIBC_2.0) [1]	
ceill(GLIBC_2.0) [1]	exp(GLIBC_2.0) [1]	jn(GLIBC_2.0) [1]	remquo(GLIBC_2.1) [1]	

Referenced Specification(s)

[1]. ISO POSIX (2003)

[2]. ISO C (1999)

[3]. SUSv2

An LSB conforming implementation shall provide the architecture specific data interfaces for Math specified in Table 1-30, with the full functionality as described in the referenced underlying specification.

Table 1-30. libm - Math Data Interfaces

signgam(GLIBC_2.0) [1]				

Referenced Specification(s)

[1]. ISO POSIX (2003)

1.5. Interfaces for libpthread

Table 1-31 defines the library name and shared object name for the libpthread library

Table 1-31. libpthread Definition

Library:	libpthread
SONAME:	libpthread.so.0

The behavior of the interfaces in this library is specified by the following specifications:

Large File Support
this specification
ISO POSIX (2003)

1.5.1. Realtime Threads

1.5.1.1. Interfaces for Realtime Threads

No external functions are defined for libpthread - Realtime Threads

1.5.2. Advanced Realtime Threads

1.5.2.1. Interfaces for Advanced Realtime Threads

No external functions are defined for libpthread - Advanced Realtime Threads

1.5.3. Posix Threads

1.5.3.1. Interfaces for Posix Threads

An LSB conforming implementation shall provide the architecture specific functions for Posix Threads specified in Table 1-32, with the full functionality as described in the referenced underlying specification.

Table 1-32. libpthread - Posix Threads Function Interfaces

_pthread_cleanup_pop(GLIBC_2.0) [1]	pthread_cancel(GLIBC_2.0) [2]	pthread_join(GLIBC_2.0) [2]	pthread_rwlock_destroy(GLIBC_2.1) [2]	pthread_setconcurrency(GLIBC_2.1) [2]
_pthread_cleanup_push(GLIBC_2.0) [1]	pthread_cond_broadcast(GLIBC_2.3.2) [2]	pthread_key_create(GLIBC_2.0) [2]	pthread_rwlock_init(GLIBC_2.1) [2]	pthread_setspecific(GLIBC_2.0) [2]
pread(GLIBC_2.2) [2]	pthread_cond_destroy(GLIBC_2.3.2) [2]	pthread_key_delete(GLIBC_2.0) [2]	pthread_rwlock_rdlock(GLIBC_2.1) [2]	pthread_sigmask(GLIBC_2.0) [2]
pread64(GLIBC_2.2) [3]	pthread_cond_init(GLIBC_2.3.2) [2]	pthread_kill(GLIBC_2.0) [2]	pthread_rwlock_timedrdlock(GLIBC_2.2) [2]	pthread_testcancel(GLIBC_2.0) [2]
pthread_attr_destroy(GLIBC_2.0) [2]	pthread_cond_signal(GLIBC_2.3.2) [2]	pthread_mutex_destroy(GLIBC_2.0) [2]	pthread_rwlock_timedwrlock(GLIBC_2.2) [2]	pwrite(GLIBC_2.2) [2]
pthread_attr_getdetachstate(GLIBC_2.0) [2]	pthread_cond_timedwait(GLIBC_2.3.2) [2]	pthread_mutex_init(GLIBC_2.0) [2]	pthread_rwlock_tryrdlock(GLIBC_2.1) [2]	pwrite64(GLIBC_2.2) [3]
pthread_attr_getguardsize(GLIBC_2.1) [2]	pthread_cond_wait(GLIBC_2.3.2) [2]	pthread_mutex_lock(GLIBC_2.0) [2]	pthread_rwlock_trywrlock(GLIBC_2.1) [2]	sem_close(GLIBC_2.1.1) [2]
pthread_attr_getschedparam(GLIBC_2.0) [2]	pthread_condattr_destroy(GLIBC_2.0) [2]	pthread_mutex_trylock(GLIBC_2.0) [2]	pthread_rwlock_unlock(GLIBC_2.1) [2]	sem_destroy(GLIBC_2.1) [2]
pthread_attr_getstackaddr(GLIBC_2.1) [2]	pthread_condattr_getpshared(GLIBC_2.2) [2]	pthread_mutex_unlock(GLIBC_2.0) [2]	pthread_rwlock_wrlock(GLIBC_2.1) [2]	sem_getvalue(GLIBC_2.1) [2]
pthread_attr_getstacksize(GLIBC_2.1) [2]	pthread_condattr_init(GLIBC_2.0) [2]	pthread_mutexattr_destroy(GLIBC_2.0) [2]	pthread_rwlockattr_destroy(GLIBC_2.1) [2]	sem_init(GLIBC_2.1) [2]
pthread_attr_init(GLIBC_2.1) [2]	pthread_condattr_setpshared(GLIBC_2.2) [2]	pthread_mutexattr_getpshared(GLIBC_2.2) [2]	pthread_rwlockattr_getpshared(GLIBC_2.1) [2]	sem_open(GLIBC_2.1.1) [2]

pthread_attr_setdetachstate(GLIBC_2.0) [2]	pthread_create(GLIBC_2.1) [2]	pthread_mutexattr_gettype(GLIBC_2.1) [2]	pthread_rwlockattr_init(GLIBC_2.1) [2]	sem_post(GLIBC_2.1) [2]
pthread_attr_setguardsize(GLIBC_2.1) [2]	pthread_detach(GLIBC_2.0) [2]	pthread_mutexattr_init(GLIBC_2.0) [2]	pthread_rwlockattr_setpshared(GLIBC_2.1) [2]	sem_timedwait(GLIBC_2.2) [2]
pthread_attr_setschedparam(GLIBC_2.0) [2]	pthread_equal(GLIBC_2.0) [2]	pthread_mutexattr_setpshared(GLIBC_2.2) [2]	pthread_self(GLIBC_2.0) [2]	sem_trywait(GLIBC_2.1) [2]
pthread_attr_setstackaddr(GLIBC_2.1) [2]	pthread_exit(GLIBC_2.0) [2]	pthread_mutexattr_settype(GLIBC_2.1) [2]	pthread_setcancelstate(GLIBC_2.0) [2]	sem_unlink(GLIBC_2.1.1) [2]
pthread_attr_setstacksize(GLIBC_2.1) [2]	pthread_getspecific(GLIBC_2.0) [2]	pthread_once(GLIBC_2.0) [2]	pthread_setcanceltype(GLIBC_2.0) [2]	sem_wait(GLIBC_2.1) [2]

Referenced Specification(s)

[1]. this specification

[2]. ISO POSIX (2003)

[3]. Large File Support

1.6. Interfaces for libgcc_s

Table 1-33 defines the library name and shared object name for the libgcc_s library

Table 1-33. libgcc_s Definition

Library:	libgcc_s
SONAME:	libgcc_s.so.1

The behavior of the interfaces in this library is specified by the following specifications:

this specification

1.6.1. Unwind Library

1.6.1.1. Interfaces for Unwind Library

An LSB conforming implementation shall provide the architecture specific functions for Unwind Library specified in Table 1-34, with the full functionality as described in the referenced underlying specification.

Table 1-34. libgcc_s - Unwind Library Function Interfaces

_Unwind_DeleteException(GCC_3.0)	_Unwind_GetDataRelBase(GCC_3.0)	_Unwind_GetLanguageSpecificData(G	_Unwind_RaiseException(GCC_3.0)	_Unwind_SetIP(GC

[1]	[1]	CC_3.0) [1]	[1]	C_3.0) [1]
_Unwind_Find_FDE(GCC_3.0) [1]	_Unwind_GetGR(GCC_3.0) [1]	_Unwind_GetRegionStart(GCC_3.0) [1]	_Unwind_Resume(GCC_3.0) [1]	
_Unwind_ForcedUnwind(GCC_3.0) [1]	_Unwind_GetIP(GCC_3.0) [1]	_Unwind_GetTextRelBase(GCC_3.0) [1]	_Unwind_SetGR(GCC_3.0) [1]	

Referenced Specification(s)

[1]. this specification

1.7. Interface Definitions for libgcc_s

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

Other interfaces listed above for libgcc_s shall behave as described in the referenced base document.

_Unwind_DeleteException

Name

`_Unwind_DeleteException` — private C++ error handling method

Synopsis

```
void _Unwind_DeleteException((struct _Unwind_Exception *object));
```

Description

`_Unwind_DeleteException` deletes the given exception *`object`*. If a given runtime resumes normal execution after catching a foreign exception, it will not know how to delete that exception. Such an exception shall be deleted by calling `_Unwind_DeleteException`. This is a convenience function that calls the function pointed to by the *exception_cleanup* field of the exception header.

_Unwind_Find_FDE

Name

_Unwind_Find_FDE — private C++ error handling method

Synopsis

```
fde * _Unwind_Find_FDE(void *pc, (struct dwarf_eh_bases *bases));
```

Description

_Unwind_Find_FDE looks for the object containing *pc*, then inserts into *bases*.

_Unwind_ForcedUnwind

Name

_Unwind_ForcedUnwind — private C++ error handling method

Synopsis

```
_Unwind_Reason_Code _Unwind_ForcedUnwind((struct _Unwind_Exception *object),
_Unwind_Stop_Fn stop, void *stop_parameter);
```

Description

_Unwind_ForcedUnwind raises an exception for forced unwinding, passing along the given exception *object*, which should have its *exception_class* and *exception_cleanup* fields set. The exception *object* has been allocated by the language-specific runtime, and has a language-specific format, except that it shall contain an _Unwind_Exception struct.

Forced unwinding is a single-phase process. *stop* and *stop_parameter* control the termination of the unwind process instead of the usual personality routine query. *stop* is called for each unwind frame, with the parameteres described for the usual personality routine below, plus an additional *stop_parameter*.

Return Value

When *stop* identifies the destination frame, it transfers control to the user code as appropriate without returning, normally after calling _Unwind_DeleteException. If not, then it should return an _Unwind_Reason_Code value.

If *stop* returns any reason code other than _URC_NO_REASON, then the stack state is indeterminate from the point of view of the caller of _Unwind_ForcedUnwind. Rather than attempt to return, therefore, the unwind library should use the *exception_cleanup* entry in the exception, and then call abort.

_URC_NO_REASON

: This is not the destination from. The unwind runtime will call frame's personality routine with the _UA_FORCE_UNWIND and _UA_CLEANUP_PHASE flag set in *actions*, and then unwind to the next frame and call the stop function again.

_URC_END_OF_STACK

: In order to allow _Unwind_ForcedUnwind to perform special processing when it reaches the end of the stack, the unwind runtime will call it after the last frame is rejected, with a NULL stack pointer in the context, and the stop function shall catch this condition. It may return this code if it cannot handle end-of-stack.

_URC_FATAL_PHASE2_ERROR

: The stop function may return this code for other fatal conditions like stack corruption.

_Unwind_GetDataRelBase

Name

_Unwind_GetDataRelBase — private IA64 C++ error handling method

Synopsis

```
_Unwind_Ptr _Unwind_GetDataRelBase((struct _Unwind_Context *context));
```

Description

_Unwind_GetDataRelBase returns the global pointer in register one for *context*.

_Unwind_GetGR

Name

_Unwind_GetGR — private C++ error handling method

Synopsis

```
_Unwind_Word _Unwind_GetGR((struct _Unwind_Context *context), int index);
```

Description

_Unwind_GetGR returns data at *index* found in *context*. The register is identified by its index: 0 to 31 are for the fixed registers, and 32 to 127 are for the stacked registers.

During the two phases of unwinding, only GR1 has a guaranteed value, which is the global pointer of the frame referenced by the unwind *context*. If the register has its NAT bit set, the behavior is unspecified.

_Unwind_GetIP

Name

_Unwind_GetIP — private C++ error handling method

Synopsis

```
_Unwind_Ptr _Unwind_GetIP((struct _Unwind_Context *context));
```

Description

_Unwind_GetIP returns the instruction pointer value for the routine identified by the unwind *context*.

_Unwind_GetLanguageSpecificData

Name

_Unwind_GetLanguageSpecificData — private C++ error handling method

Synopsis

```
_Unwind_Ptr _Unwind_GetLanguageSpecificData((struct _Unwind_Context *context), uint
value);
```

Description

_Unwind_GetLanguageSpecificData returns the address of the language specific data area for the current stack frame.

_Unwind_GetRegionStart

Name

_Unwind_GetRegionStart — private C++ error handling method

Synopsis

```
_Unwind_Ptr _Unwind_GetRegionStart((struct _Unwind_Context *context));
```

Description

_Unwind_GetRegionStart routine returns the address (i.e., 0) of the beginning of the procedure or code fragment described by the current unwind descriptor block.

_Unwind_GetTextRelBase

Name

_Unwind_GetTextRelBase — private IA64 C++ error handling method

Synopsis

```
_Unwind_Ptr _Unwind_GetTextRelBase((struct _Unwind_Context *context));
```

Description

_Unwind_GetTextRelBase calls the abort method, then returns.

_Unwind_RaiseException

Name

_Unwind_RaiseException — private C++ error handling method

Synopsis

```
_Unwind_Reason_Code _Unwind_RaiseException((struct _Unwind_Exception *object));
```

Description

_Unwind_RaiseException raises an exception, passing along the given exception *object*, which should have its *exception_class* and *exception_cleanup* fields set. The exception object has been allocated by the language-specific runtime, and has a language-specific format, exception that it shall contain an _Unwind_Exception.

Return Value

_Unwind_RaiseException does not return unless an error condition is found. If an error condition occurs, an _Unwind_Reason_Code is returnd:

_URC_END_OF_STACK

: The unwinder encountered the end of the stack during phase one without finding a handler. The unwind runtime will not have modified the stack. The C++ runtime will normally call uncaught_exception in this case.

_URC_FATAL_PHASE1_ERROR

: The unwinder encountered an unexpected error during phase one, because of something like stack corruption. The unwind runtime will not have modified the stack. The C++ runtime will normally call terminate in this case.

_URC_FATAL_PHASE2_ERROR

: The unwinder encountered an unexpected error during phase two. This is usually a *throw*, which will call terminate.

_Unwind_Resume

Name

_Unwind_Resume — private C++ error handling method

Synopsis

```
void _Unwind_Resume((struct _Unwind_Exception *object));
```

Description

_Unwind_Resume resumes propagation of an existing exception *object*. A call to this routine is inserted as the end of a landing pad that performs cleanup, but does not resume normal execution. It causes unwinding to proceed further.

_Unwind_SetGR

Name

_Unwind_SetGR — private C++ error handling method

Synopsis

```
void _Unwind_SetGR((struct _Unwind_Context *context), int index, uint value);
```

Description

_Unwind_SetGR sets the *value* of the register *index*ed for the routine identified by the unwind *context*.

_Unwind_SetIP

Name

_Unwind_SetIP — private C++ error handling method

Synopsis

```
void _Unwind_SetIP((struct _Unwind_Context *context), uint value);
```

Description

_Unwind_SetIP sets the *value* of the instruction pointer for the routine identified by the unwind *context*

1.8. Interfaces for libdl

Table 1-35 defines the library name and shared object name for the libdl library

738 **Table 1-35. libdl Definition**

Library:	libdl
SONAME:	libdl.so.2

739

740 The behavior of the interfaces in this library is specified by the following specifications:

this specification
741 ISO POSIX (2003)

1.8.1. Dynamic Loader

742 1.8.1.1. Interfaces for Dynamic Loader

743 An LSB conforming implementation shall provide the architecture specific functions for Dynamic Loader specified in
744 Table 1-36, with the full functionality as described in the referenced underlying specification.

745 **Table 1-36. libdl - Dynamic Loader Function Interfaces**

dladdr(GLIBC_2.0) [1]	dlclose(GLIBC_2.0) [2]	dlerror(GLIBC_2.0) [2]	dlopen(GLIBC_2.1) [1]	dlsym(GLIBC_2.0) [1]

746

747 *Referenced Specification(s)*

748 **[1].** this specification

749 **[2].** ISO POSIX (2003)

1.9. Interfaces for libcrypt

750 Table 1-37 defines the library name and shared object name for the libcrypt library

751 **Table 1-37. libcrypt Definition**

Library:	libcrypt
SONAME:	libcrypt.so.1

752

753 The behavior of the interfaces in this library is specified by the following specifications:

754 ISO POSIX (2003)

1.9.1. Encryption

755 1.9.1.1. Interfaces for Encryption

756 An LSB conforming implementation shall provide the architecture specific functions for Encryption specified in Table
757 1-38, with the full functionality as described in the referenced underlying specification.

758 **Table 1-38. libcrypt - Encryption Function Interfaces**

crypt(GLIBC_2.0)	encrypt(GLIBC_2.0	setkey(GLIBC_2.0)		

[1]	) [1]	[1]		

Referenced Specification(s)

[1]. ISO POSIX (2003)

II. Utility Libraries

Chapter 2. Libraries

The Utility libraries are those that are commonly used, but not part of the Single Unix Specification.

2.1. Interfaces for libz

Table 2-1. libz Definition

Library:	libz
SONAME:	libz.so.1

2.1.1. Compression Library

2.1.1.1. Interfaces for Compression Library

2.2. Data Definitions for libz

This section contains standard data definitions that describe system data. 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.

ISO C serves as the LSB reference programming language, and data definitions are specified in ISO C . 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.

2.3. Interfaces for libncurses

Table 2-2. libncurses Definition

Library:	libncurses
SONAME:	libncurses.so.5

2.3.1. Curses

2.3.1.1. Interfaces for Curses

2.4. Data Definitions for libncurses

This section contains standard data definitions that describe system data. 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.

ISO C serves as the LSB reference programming language, and data definitions are specified in ISO C . 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.

2.4.1. curses.h

```
typedef int bool;
```

2.5. Interfaces for libutil

Table 2-3. libutil Definition

Library:	libutil
SONAME:	libutil.so.1

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

Linux Standard Base[1]

2.5.1. Utility Functions

2.5.1.1. Interfaces for Utility Functions

Table 2-4. libutil - Utility Functions Function Interfaces

forkpty(GLIBC_2.0)[1]	login_tty(GLIBC_2.0)[1]	logwtmp(GLIBC_2.0)[1]		
login(GLIBC_2.0)[1]	logout(GLIBC_2.0)[1]	openpty(GLIBC_2.0)[1]		

Notes

1. Linux Standard Base

Appendix A. Alphabetical Listing of Interfaces

A.1. libgcc_s

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

this specification

Table A-1. libgcc_s Function Interfaces

_Unwind_DeleteException[1]	_Unwind_GetIP[1]	_Unwind_Resume[1]
_Unwind_Find_FDE[1]	_Unwind_GetLanguageSpecificData[1]	_Unwind_SetGR[1]
_Unwind_ForcedUnwind[1]	_Unwind_GetRegionStart[1]	_Unwind_SetIP[1]
_Unwind_GetDataRelBase[1]	_Unwind_GetTextRelBase[1]	
_Unwind_GetGR[1]	_Unwind_RaiseException[1]	

Linux Packaging Specification

Linux Packaging Specification

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I. Package Format and Installation

Chapter 1. Software Installation

1.1. Package Dependencies

The LSB runtime environment shall provde the following dependencies.

lsb-core-ppc32

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

Other LSB modules may add additional dependencies; such dependencies shall have the format `lsb-`*`module`*`-ppc32`.

1.2. Package Architecture Considerations

All packages must specify an architecture of `ppc`. A LSB runtime environment must accept an architecture of `ppc` even if the native architecture is different.

The `archnum` value in the Lead Section shall be 0x0005.

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Appendix A. GNU Free Documentation License

Version 1.1, March 2000

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