Linux Standard Base Core Specification for S390 2.0.1
Specification Introduction
Specification Introduction
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Foreword

This is version 2.0.1 of the Linux Standard Base Core Specification for S390. 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 S390 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>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>DWARF Debugging Information Format</td>
<td>DWARF Debugging Information Format, Revision 2.0.0 (July 27, 1993)</td>
<td><a href="http://www.eagercon.com/dwarf/dwarf-2.0.0.pdf">http://www.eagercon.com/dwarf/dwarf-2.0.0.pdf</a></td>
</tr>
<tr>
<td>Filesystem Hierarchy Standard</td>
<td>Filesystem Hierarchy Standard (FHS) 2.3</td>
<td><a href="http://www.pathname.com/fhs/">http://www.pathname.com/fhs/</a></td>
</tr>
<tr>
<td>Name</td>
<td>Title</td>
<td>URL</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>-----------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>Linux Allocated Device Registry</td>
<td>LINUX ALLOCATED DEVICES</td>
<td><a href="http://www.lanana.org/docs/device-list/devices.txt">http://www.lanana.org/docs/device-list/devices.txt</a></td>
</tr>
<tr>
<td>PAM</td>
<td>Open Software Foundation, Request For Comments: 86.0 , October 1995, V. Samar &amp; R.Schemers (SunSoft)</td>
<td><a href="http://www.opengroup.org/tech/rfc/mirror-rfc/rfc86.0.txt">http://www.opengroup.org/tech/rfc/mirror-rfc/rfc86.0.txt</a></td>
</tr>
<tr>
<td>SVID Issue 4</td>
<td>System V Interface Definition,Fourth Edition</td>
<td></td>
</tr>
</tbody>
</table>
## Chapter 2. Normative References

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>this specification</td>
<td>Linux Standard Base</td>
<td><a href="http://www.linuxbase.org/spec/">http://www.linuxbase.org/spec/</a></td>
</tr>
</tbody>
</table>
Chapter 3. Requirements

3.1. Relevant Libraries

The libraries listed in Table 3-1 shall be available on S390 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

<table>
<thead>
<tr>
<th>Library</th>
<th>Runtime Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>libm</td>
<td>libm.so.6</td>
</tr>
<tr>
<td>libdl</td>
<td>libdl.so.2</td>
</tr>
<tr>
<td>libcrypt</td>
<td>libcrypt.so.1</td>
</tr>
<tr>
<td>libc</td>
<td>libc.so.6</td>
</tr>
<tr>
<td>libpthread</td>
<td>libpthread.so.0</td>
</tr>
<tr>
<td>proginterp</td>
<td>/lib/ld-lsb-s390.so.2</td>
</tr>
<tr>
<td>libgcc_s</td>
<td>libgcc_s.so.1</td>
</tr>
<tr>
<td>libz</td>
<td>libz.so.1</td>
</tr>
<tr>
<td>libncurses</td>
<td>libncurses.so.5</td>
</tr>
<tr>
<td>libutil</td>
<td>libutil.so.1</td>
</tr>
</tbody>
</table>

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.
Chapter 3. Requirements

- 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 possibility 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

class  
the name of a class

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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<td>12.3. Shared Object Dependencies</td>
<td>........................................................................</td>
<td>15</td>
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<tr>
<td>12.4. Function Addresses</td>
<td>........................................................................</td>
<td>15</td>
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I. Low Level System Information
Chapter 1. Machine Interface

1.1. Processor Architecture

The ESA/390 Architecture is specified by the following documents

- LINUX for S/390 ELF Application Binary Interface Supplement
- Enterprise Systems Architecture/390 Principles of Operation

Only the features of ESA/390 processor instruction set and the following optional instructions may be assumed to be present:

- additional floating point facility
- compare and move extended facility
- immediate and relative instruction facility
- string instruction facility
- square-root facility

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.

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

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 instruction set 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 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

1.2.1. Byte Ordering

See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

1.2.2. Fundamental Types

See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

1.2.3. Aggregates and Unions

See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.
1.2.4. Bit Fields

See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.
Chapter 2. Function Calling Sequence

LSB-conforming applications shall use the function calling sequence as defined in Chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

2.1. Registers

See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

2.2. Stack Frame

See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

2.3. Parameter Passing

See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

2.4. Variable Argument Lists

See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

2.5. Return Values

See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.
Chapter 3. Operating System Interface

1 LSB-conforming applications shall use the Operating System Interfaces as defined in Chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

3.1. Virtual Address Space

3 See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

3.1.1. Page Size

4 See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

3.1.2. Virtual Address Assignments

5 See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

3.1.3. Managing the Process Stack

6 See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

3.1.4. Coding Guidelines

7 See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

3.2. Processor Execution Mode

8 See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

3.3. Exception Interface

9 See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.
Chapter 4. Process Initialization

LSB-conforming applications shall use the Process Initialization as defined in Chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

4.1. Registers

See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

4.2. Process Stack

See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.
Chapter 5. Coding Examples

LSB-conforming applications may implement fundamental operations using the Coding Examples as defined in Chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

5.1. Code Model Overview

See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

5.2. Function Prolog and Epilog

See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

5.3. Data Objects

See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

5.4. Function Calls

See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

5.5. Branching

See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.

5.6. Dynamic Stack Space Allocation

See chapter 1 of the LINUX for S/390 ELF Application Binary Interface Supplement.
Chapter 6. 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 ABI, System V ABI Update, LINUX for S/390 ELF Application Binary Interface Supplement and as supplemented by the this specification and this document.
Chapter 7. ELF Header

7.1. Machine Information

1. LSB-conforming applications shall use the Machine Information as defined in Chapter 2 of the LINUX for S/390 ELF Application Binary Interface Supplement.
Chapter 8. Sections

See chapter 2 of the LINUX for S/390 ELF Application Binary Interface Supplement.

8.1. Special Sections

The following sections are defined in the LINUX for S/390 ELF Application Binary Interface Supplement.

Table 8-1. ELF Special Sections

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Attributes</th>
</tr>
</thead>
<tbody>
<tr>
<td>.got</td>
<td>SHT_PROGBITS</td>
<td>SHF_ALLOC+SHF_WRITE</td>
</tr>
<tr>
<td>.plt</td>
<td>SHT_PROGBITS</td>
<td>SHF_ALLOC+SHF_EXECINSTR</td>
</tr>
</tbody>
</table>

.got
This section holds the global offset table

.plt
This section holds the Procedure Linkage Table
Chapter 9. Symbol Table

1 LSB-conforming applications shall use the Symbol Table as defined in Chapter 2 of the LINUX for S/390 ELF Application Binary Interface Supplement.
Chapter 10. Relocation

LSB-conforming applications shall use Relocations as defined in Chapter 2 of the LINUX for S/390 ELF Application Binary Interface Supplement.

10.1. Relocation Types

See chapter 2 of the LINUX for S/390 ELF Application Binary Interface Supplement.
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 LINUX for S/390 ELF Application Binary Interface Supplement and as supplemented by the generic LSB and this document. LSB-conforming implementations need not support tags related functionality. LSB-conforming applications must not rely on tags related functionality.
Chapter 11. Program Loading

1 See chapter 3 of the LINUX for S/390 ELF Application Binary Interface Supplement.
Chapter 12. Dynamic Linking

See chapter 3 of the LINUX for S/390 ELF Application Binary Interface Supplement.

12.1. Dynamic Section

The following dynamic entries are defined in the LINUX for S/390 ELF Application Binary Interface Supplement.

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.

12.2. Global Offset Table

See chapter 3 of the LINUX for S/390 ELF Application Binary Interface Supplement.

12.3. Shared Object Dependencies

See chapter 3 of the LINUX for S/390 ELF Application Binary Interface Supplement.

12.4. Function Addresses

See chapter 3 of the LINUX for S/390 ELF Application Binary Interface Supplement.

12.5. Procedure Linkage Table

See chapter 3 of the LINUX for S/390 ELF Application Binary Interface Supplement.
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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/id-lsb-s390.so.2.

1.2. Interfaces for libc

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

| 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
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>
<thead>
<tr>
<th>authnone_create(GLIBC_2.0) [1]</th>
<th>pmap_unset(GLIBC_2.0) [2]</th>
<th>svcerr_weakauth(GLIBC_2.0) [3]</th>
<th>xdr_float(GLIBC_2.0) [3]</th>
<th>xdr_u_char(GLIBC_2.0) [3]</th>
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<tbody>
<tr>
<td>clnt_create(GLIBC_2.0) [1]</td>
<td>setdomainname(GLIBC_2.0) [2]</td>
<td>svc tcp_create(GLIBC_2.0) [2]</td>
<td>xdr_free(GLIBC_2.0) [3]</td>
<td>xdr_u_int(GLIBC_2.0) [2]</td>
</tr>
<tr>
<td>clnt_pcreateerror(GLIBC_2.0) [1]</td>
<td>svc_getreqset(GLIBC_2.0) [3]</td>
<td>svcudp_create(GLIBC_2.0) [2]</td>
<td>xdr_int(GLIBC_2.0) [3]</td>
<td>xdr_u_long(GLIBC_2.0) [3]</td>
</tr>
</tbody>
</table>
### 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>
<thead>
<tr>
<th>Function</th>
<th>Function</th>
<th>Function</th>
<th>Function</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>__fxstat(GLIBC_2.0)</td>
<td>__getpgid(GLIBC_2.0)</td>
<td>setrlimit(GLIBC_2.0)</td>
<td>setrlimit64(GLIBC_2.1)</td>
<td>setuid(GLIBC_2.0)</td>
</tr>
<tr>
<td>fchmod(GLIBC_2.0)</td>
<td>fchown(GLIBC_2.0)</td>
<td>readdir(GLIBC_2.0)</td>
<td>readdir_r(GLIBC_2.0)</td>
<td>sysfsstat(GLIBC_2.0)</td>
</tr>
<tr>
<td>getwd(GLIBC_2.0)</td>
<td>initgroups(GLIBC_2.0)</td>
<td>readdir(GLIBC_2.0)</td>
<td>setsid(GLIBC_2.0)</td>
<td></td>
</tr>
<tr>
<td>read(GLIBC_2.0)</td>
<td>ioctl(GLIBC_2.0)</td>
<td>readlink(GLIBC_2.0)</td>
<td>setuid64(GLIBC_2.0)</td>
<td></td>
</tr>
<tr>
<td>__lxstat(GLIBC_2.0)</td>
<td>fcntl(GLIBC_2.0)</td>
<td>kill(GLIBC_2.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>fdatasync(GLIBC_2.0)</td>
<td>kill(GLIBC_2.0)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>key_decryptsession(GLIBC_2.1)</td>
<td></td>
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</tr>
<tr>
<td>pmap_getport(GLIBC_2.0)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>pmap_set(GLIBC_2.0)</td>
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Referenced Specification(s)

[1]. SVID Issue 4
[2]. this specification
[3]. SVID Issue 3
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<tr>
<td><code>__xstat(GLIBC_2.0)</code></td>
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<td><code>flock(GLIBC_2.0)</code></td>
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<td><code>killpg(GLIBC_2.0)</code></td>
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<td><code>readv(GLIBC_2.0)</code></td>
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<td><code>sleep(GLIBC_2.0)</code></td>
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<tr>
<td><code>access(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>fork(GLIBC_2.0)</code></td>
<td></td>
<td><code>chown(GLIBC_2.0)</code></td>
<td></td>
<td><code>rename(GLIBC_2.0)</code></td>
<td></td>
<td><code>statvfs(GLIBC_2.1)</code></td>
<td>[2]</td>
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<tr>
<td><code>acct(GLIBC_2.0)</code></td>
<td>[1]</td>
<td><code>fstatvfs(GLIBC_2.1)</code></td>
<td>[2]</td>
<td><code>link(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>rmdir(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>stime(GLIBC_2.0)</code></td>
<td></td>
</tr>
<tr>
<td><code>alarm(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>lockf(GLIBC_2.0)</code></td>
<td></td>
<td><code>statvfs(GLIBC_2.1)</code></td>
<td></td>
<td><code>utime(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>utimes(GLIBC_2.0)</code></td>
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<tr>
<td><code>brk(GLIBC_2.0)</code></td>
<td>[4]</td>
<td><code>ftime(GLIBC_2.0)</code></td>
<td></td>
<td><code>mkdir(GLIBC_2.0)</code></td>
<td></td>
<td><code>utimes(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>utimes(GLIBC_2.0)</code></td>
<td></td>
</tr>
<tr>
<td><code>chdir(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>lseek(GLIBC_2.0)</code></td>
<td></td>
<td><code>mkfifo(GLIBC_2.0)</code></td>
<td></td>
<td><code>sysconf(GLIBC_2.0)</code></td>
<td></td>
<td><code>utimes(GLIBC_2.0)</code></td>
<td>[2]</td>
</tr>
<tr>
<td><code>chmod(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>mkfifo(GLIBC_2.0)</code></td>
<td></td>
<td><code>nice(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>vfork(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>vfork(GLIBC_2.0)</code></td>
<td></td>
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<tr>
<td><code>chown(GLIBC_2.1)</code></td>
<td>[2]</td>
<td><code>getcontext(GLIBC_2.1)</code></td>
<td>[2]</td>
<td><code>nice(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>wait(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>wait(GLIBC_2.0)</code></td>
<td>[2]</td>
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<tr>
<td><code>chown(GLIBC_2.2)</code></td>
<td>[1]</td>
<td><code>getgroups(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>nice(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>wait3(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>wait3(GLIBC_2.0)</code></td>
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<tr>
<td><code>clock(GLIBC_2.0)</code></td>
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<td><code>getloadavg(GLIBC_2.2)</code></td>
<td>[1]</td>
<td><code>nice(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>write(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>write(GLIBC_2.0)</code></td>
<td>[2]</td>
</tr>
<tr>
<td><code>close(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>getloadavg(GLIBC_2.2)</code></td>
<td>[1]</td>
<td><code>nice(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>write(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>write(GLIBC_2.0)</code></td>
<td>[2]</td>
</tr>
<tr>
<td><code>closedir(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>mlock(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>nice(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>write(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>write(GLIBC_2.0)</code></td>
<td>[2]</td>
</tr>
<tr>
<td><code>creat(GLIBC_2.0)</code></td>
<td>[1]</td>
<td><code>mlockall(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>nice(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>write(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>write(GLIBC_2.0)</code></td>
<td>[2]</td>
</tr>
<tr>
<td><code>dup(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>munlock(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>nice(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>write(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>write(GLIBC_2.0)</code></td>
<td>[2]</td>
</tr>
<tr>
<td><code>dup2(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>munlockall(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>nice(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>write(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>write(GLIBC_2.0)</code></td>
<td>[2]</td>
</tr>
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<td><code>exec(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>setcontext(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>nice(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>write(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>write(GLIBC_2.0)</code></td>
<td>[2]</td>
</tr>
<tr>
<td><code>execle(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>setegid(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>nice(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>write(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>write(GLIBC_2.0)</code></td>
<td>[2]</td>
</tr>
<tr>
<td><code>execvp(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>seteuid(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>nice(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>write(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>write(GLIBC_2.0)</code></td>
<td>[2]</td>
</tr>
<tr>
<td><code>execvp(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>setgid(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>nice(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>write(GLIBC_2.0)</code></td>
<td>[2]</td>
<td><code>write(GLIBC_2.0)</code></td>
<td>[2]</td>
</tr>
</tbody>
</table>
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Referenced Specification(s)
[1]. this specification
[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>
<thead>
<tr>
<th>Function</th>
<th>Referenced Specification(s)</th>
</tr>
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<tbody>
<tr>
<td>execv(GLIBC_2.0)</td>
<td>[2]</td>
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<td>getpriority(GLIBC_2.0)</td>
<td></td>
</tr>
<tr>
<td>opendir(GLIBC_2.0)</td>
<td></td>
</tr>
<tr>
<td>setpgid(GLIBC_2.0)</td>
<td></td>
</tr>
<tr>
<td>wait4(GLIBC_2.0)</td>
<td>[1]</td>
</tr>
<tr>
<td>execve(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>getrlimit(GLIBC_2.0)</td>
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<tr>
<td>opendir(GLIBC_2.0)</td>
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<tr>
<td>setpgid(GLIBC_2.0)</td>
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<tr>
<td>waitpid(GLIBC_2.0)</td>
<td>[1]</td>
</tr>
<tr>
<td>exit(GLIBC_2.0)</td>
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<td>getsid(GLIBC_2.0)</td>
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<td>setregid(GLIBC_2.0)</td>
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<tr>
<td>writes(GLIBC_2.0)</td>
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</tr>
<tr>
<td>fchdir(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>getuid(GLIBC_2.0)</td>
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<td>poll(GLIBC_2.0)</td>
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</tr>
<tr>
<td>setreuid(GLIBC_2.0)</td>
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<td>writev(GLIBC_2.0)</td>
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<tr>
<td>_IO_feof(GLIBC_2.0)</td>
<td>[1]</td>
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<td>fgetpos(GLIBC_2.2)</td>
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<td>fsetpos(GLIBC_2.2)</td>
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<tr>
<td>getchar(GLIBC_2.0)</td>
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<td>remove(GLIBC_2.0)</td>
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<tr>
<td>asprintf(GLIBC_2.0)</td>
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<td>flockfile(GLIBC_2.0)</td>
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<td>getc(GLIBC_2.0)</td>
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<tr>
<td>remove(GLIBC_2.0)</td>
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<td>clearerr(GLIBC_2.0)</td>
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<tr>
<td>fopen(GLIBC_2.1)</td>
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<td>getc_unlocked(GLIBC_2.0)</td>
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<td>rewind(GLIBC_2.0)</td>
<td></td>
</tr>
<tr>
<td>vdprintf(GLIBC_2.0)</td>
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</tr>
<tr>
<td>ctermid(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>fprintf(GLIBC_2.0)</td>
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<td>getchar(GLIBC_2.0)</td>
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<tr>
<td>rewinddir(GLIBC_2.0)</td>
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<tr>
<td>vfprintf(GLIBC_2.0)</td>
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<table>
<thead>
<tr>
<th>fclose(GLIBC_2.1)</th>
<th>fputc(GLIBC_2.0)</th>
<th>getchar_unlocked(GLIBC_2.0)</th>
<th>scanf(GLIBC_2.0)</th>
<th>vprintf(GLIBC_2.0)</th>
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</table>

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<tr>
<th>fopen(GLIBC_2.1)</th>
<th>fputs(GLIBC_2.0)</th>
<th>getw(GLIBC_2.0)</th>
<th>seekdir(GLIBC_2.0)</th>
<th>vfprintf(GLIBC_2.0)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>fseek(GLIBC_2.0)</th>
<th>fwrite(GLIBC_2.0)</th>
<th>pclose(GLIBC_2.1)</th>
<th>setbuf(GLIBC_2.0)</th>
<th>vsprintf(GLIBC_2.0)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>fprintf(GLIBC_2.0)</th>
<th>freopen(GLIBC_2.0)</th>
<th>perror(GLIBC_2.0)</th>
<th>setbuffer(GLIBC_2.0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>[1]</td>
<td>[1]</td>
<td>[2]</td>
<td>[2]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>fflush(GLIBC_2.0)</th>
<th>fscanf(GLIBC_2.0)</th>
<th>printf(GLIBC_2.0)</th>
<th>setvbuf(GLIBC_2.0)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>fflush_unlocked(GLIBC_2.0)</th>
<th>fseek(GLIBC_2.0)</th>
<th>putc(GLIBC_2.0)</th>
<th>snprintf(GLIBC_2.0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>[1]</td>
<td>[2]</td>
<td>[2]</td>
<td>[2]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>fgetc(GLIBC_2.0)</th>
<th>fseeko(GLIBC_2.1)</th>
<th>putc_unlocked(GLIBC_2.0)</th>
<th>sprintf(GLIBC_2.0)</th>
</tr>
</thead>
</table>

Referenced Specification(s)

[1]. this specification
[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

<table>
<thead>
<tr>
<th>stderr(GLIBC_2.0)</th>
<th>stdin(GLIBC_2.0)</th>
<th>stdout(GLIBC_2.0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>[1]</td>
<td>[1]</td>
<td>[1]</td>
</tr>
</tbody>
</table>

Referenced Specification(s)


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

<table>
<thead>
<tr>
<th>__libc_current_sigrt_max(GLIBC_2.1)</th>
<th>sigaddset(GLIBC_2.0)</th>
<th>sighold(GLIBC_2.1)</th>
<th>sigpause(GLIBC_2.0)</th>
<th>sigsuspend(GLIBC_2.0)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>__libc_current_sigrt</th>
<th>sigaltstack(GLIBC_)</th>
<th>sigignore(GLIBC_2)</th>
<th>sigpending(GLIBC_)</th>
<th>sigtimedwait(GLIBC_)</th>
</tr>
</thead>
</table>
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Table 1-7. libc - Signal Handling Data Interfaces

Referenced Specification(s)
[1]. this specification
[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.

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

Referenced Specification(s)
[1]. this specification
<table>
<thead>
<tr>
<th>Function</th>
<th>Referenced Specification(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>catclose(GLIBC_2.0)</td>
<td>[1] this specification</td>
</tr>
<tr>
<td>dgettext(GLIBC_2.2)</td>
<td>[1]</td>
</tr>
<tr>
<td>iconv(GLIBC_2.1)</td>
<td>[2]</td>
</tr>
<tr>
<td>ngettext(GLIBC_2.2)</td>
<td>[1]</td>
</tr>
<tr>
<td>catgets(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>dgettext(GLIBC_2.0)</td>
<td>[1]</td>
</tr>
<tr>
<td>iconv_close(GLIBC_2.1)</td>
<td>[2]</td>
</tr>
<tr>
<td>nl_langinfo(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
</tbody>
</table>

**Referenced Specification(s)**

[1] this specification  

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**

<table>
<thead>
<tr>
<th>Function</th>
<th>Referenced Specification(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>__nl_msg_cat_cntr(GLIBC_2.0)</td>
<td>[1]</td>
</tr>
</tbody>
</table>

**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**

<table>
<thead>
<tr>
<th>Function</th>
<th>Referenced Specification(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>__h_errno_location(GLIBC_2.0)</td>
<td>[1]</td>
</tr>
<tr>
<td>gethostid(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>listen(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>sendmsg(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>socketpair(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>accept(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>gethostname(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>recv(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>sendto(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>bind(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>getpeername(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>recvfrom(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>setsockopt(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>bindresvport(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>getsockname(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>recvmmsg(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>shutdown(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>connect(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>getsockopt(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>send(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>socket(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
</tbody>
</table>

**Referenced Specification(s)**

[1] this specification  
Chapter 1. Libraries

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

<table>
<thead>
<tr>
<th>Function</th>
<th>Referenced Specification(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>gethostbyname_r(GLIBC_2.1.2)</td>
<td>[1]</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Function</th>
<th>Referenced Specification(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>__wcstod_internal(GLIBC_2.0)</td>
<td>[1]</td>
</tr>
<tr>
<td>mbsinit(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>vscanf(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>wcslen(GLIBC_2.0)</td>
<td>[1]</td>
</tr>
<tr>
<td>wcstoumax(GLIBC_2.1)</td>
<td>[2]</td>
</tr>
<tr>
<td>__wcstof_internal(GLIBC_2.0)</td>
<td>[1]</td>
</tr>
<tr>
<td>mbsrtowcs(GLIBC_2.0)</td>
<td>[1]</td>
</tr>
<tr>
<td>wcpcpy(GLIBC_2.0)</td>
<td>[1]</td>
</tr>
<tr>
<td>wcsnrtombs(GLIBC_2.0)</td>
<td>[1]</td>
</tr>
<tr>
<td>wcstouq(GLIBC_2.0)</td>
<td>[1]</td>
</tr>
<tr>
<td>__wcstold_internal(GLIBC_2.0)</td>
<td>[1]</td>
</tr>
<tr>
<td>mbstowcs(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>wertomb(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>wcswcs(GLIBC_2.1)</td>
<td>[2]</td>
</tr>
<tr>
<td>__wcstoul_internal(GLIBC_2.0)</td>
<td>[1]</td>
</tr>
<tr>
<td>mbтовc(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>wcscasecmp(GLIBC_2.1)</td>
<td>[1]</td>
</tr>
<tr>
<td>wcsrtombs(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>wcsxfrm(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>btwc(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>putwc(GLIBC_2.2)</td>
<td>[2]</td>
</tr>
<tr>
<td>wcscat(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>wcspsn(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>wcstob(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>fgetwc(GLIBC_2.2)</td>
<td>[2]</td>
</tr>
<tr>
<td>putwchar(GLIBC_2.2)</td>
<td>[2]</td>
</tr>
<tr>
<td>wcscmp(GLIBC_2.2)</td>
<td>[2]</td>
</tr>
<tr>
<td>wcstbrk(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>wcswcs(GLIBC_2.1)</td>
<td>[2]</td>
</tr>
<tr>
<td>fgetws(GLIBC_2.2)</td>
<td>[2]</td>
</tr>
<tr>
<td>swprintf(GLIBC_2.2)</td>
<td>[2]</td>
</tr>
<tr>
<td>wcscmp(GLIBC_2.2)</td>
<td>[2]</td>
</tr>
<tr>
<td>wcstod(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>wcstomax(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>fputwc(GLIBC_2.2)</td>
<td>[2]</td>
</tr>
<tr>
<td>swscanf(GLIBC_2.2)</td>
<td>[2]</td>
</tr>
<tr>
<td>wcscoll(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>wcstol(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>fputws(GLIBC_2.2)</td>
<td>[2]</td>
</tr>
<tr>
<td>towctrans(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>wcscpy(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>wcstomax(GLIBC_2.1)</td>
<td>[2]</td>
</tr>
<tr>
<td>wcswidth(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
</tbody>
</table>
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### 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>
<thead>
<tr>
<th>Function</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>

### Table 1-13. libc - String Functions Function Interfaces

<table>
<thead>
<tr>
<th>Function</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>


## 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>
<thead>
<tr>
<th>Function</th>
<th>Interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>ftok(GLIBC_2.0)</td>
<td>msgrcv(GLIBC_2.0)</td>
</tr>
<tr>
<td>msgctl(GLIBC_2.2)</td>
<td>msqsnd(GLIBC_2.0)</td>
</tr>
<tr>
<td>msgget(GLIBC_2.0)</td>
<td>semctl(GLIBC_2.2)</td>
</tr>
<tr>
<td></td>
<td>shmat(GLIBC_2.0)</td>
</tr>
<tr>
<td></td>
<td>shmem(GLIBC_2.0)</td>
</tr>
</tbody>
</table>

Referenced Specification(s)

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

<table>
<thead>
<tr>
<th>Function</th>
<th>Referenced Specification(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>regcomp(GLIBC_2.0)</td>
<td>[1]. ISO POSIX (2003)</td>
</tr>
<tr>
<td>regerror(GLIBC_2.0)</td>
<td></td>
</tr>
<tr>
<td>regexec(GLIBC_2.0)</td>
<td></td>
</tr>
<tr>
<td>regfree(GLIBC_2.0)</td>
<td></td>
</tr>
</tbody>
</table>

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

1.2.10.2. Interfaces for Regular Expressions

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

<table>
<thead>
<tr>
<th>Function</th>
<th>Referenced Specification(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>advance(GLIBC_2.0)</td>
<td>[1]. SUSv2</td>
</tr>
<tr>
<td>re_comp(GLIBC_2.0)</td>
<td></td>
</tr>
<tr>
<td>re_exec(GLIBC_2.0)</td>
<td></td>
</tr>
<tr>
<td>step(GLIBC_2.0)</td>
<td></td>
</tr>
</tbody>
</table>

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

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.
### Table 1-18. libc - Character Type Functions Function Interfaces

<table>
<thead>
<tr>
<th>Function</th>
<th>Interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>_ctype_get_mb_cur_max(GLIBC_2.0)</td>
<td>[1]</td>
</tr>
<tr>
<td>isdigit(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>iswalnum(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>iswlower(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>toascii(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>_tolower(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>isgraph(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>iswalpha(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>iswprint(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>tolower(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>isalnum(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>isprint(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>iswcntrl(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>iswspace(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>isalpha(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>ispunct(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>iswctype(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>iswupper(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>iscntrl(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>isupper(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>iswgraph(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>isxdigit(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
</tbody>
</table>

Referenced Specification(s)

[1]. this specification


### 1.2.12. Time Manipulation

#### 1.2.12.1. Interfaces for Time Manipulation

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

### Table 1-19. libc - Time Manipulation Function Interfaces

<table>
<thead>
<tr>
<th>Function</th>
<th>Interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>adjtime(GLIBC_2.0)</td>
<td>[1]</td>
</tr>
<tr>
<td>ctime(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>gmtime(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>localtime_r(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>ualarm(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>asctime(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>ctime_r(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>gmtime_r(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>mktime(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>asctime_r(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>difftime(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>localtime(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
<tr>
<td>tzset(GLIBC_2.0)</td>
<td>[2]</td>
</tr>
</tbody>
</table>

Referenced Specification(s)

[1]. this specification

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

<table>
<thead>
<tr>
<th>Function</th>
<th>Referenced Specification(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>adjtimex(GLIBC_2.0) [1]</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Function</th>
<th>Referenced Specification(s)</th>
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</thead>
<tbody>
<tr>
<td>__daylight(GLIBC_2.0) [1]</td>
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<tr>
<td>__timezone(GLIBC_2.0) [2]</td>
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</tr>
<tr>
<td>__tzname(GLIBC_2.0) [1]</td>
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<td>daylight(GLIBC_2.0) [2]</td>
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<td>timezone(GLIBC_2.0) [2]</td>
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Referenced Specification(s)
[1]. this specification

### 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

<table>
<thead>
<tr>
<th>Function</th>
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<tbody>
<tr>
<td>cfgetispeed(GLIBC_2.0) [1]</td>
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<tr>
<td>cfsetispeed(GLIBC_2.0) [1]</td>
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<td>tcdrain(GLIBC_2.0) [1]</td>
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<td>tcgetattr(GLIBC_2.0) [1]</td>
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<td>tcsetattr(GLIBC_2.0) [1]</td>
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<td>tcsendbreak(GLIBC_2.0) [1]</td>
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<td>cfsetospeed(GLIBC_2.0) [1]</td>
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<td>tcsetattr(GLIBC_2.0) [1]</td>
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<td>cfmakeraw(GLIBC_2.0) [2]</td>
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<td>cfsetspeed(GLIBC_2.0) [2]</td>
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<td>tcflush(GLIBC_2.0) [1]</td>
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Referenced Specification(s)
Chapter 1. Libraries

1.2.14. System Database Interface

1.2.14.1. Interfaces for System Database Interface

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

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

<table>
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<td>getgrent(GLIBC_2.0)</td>
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<td>getprotobynumber(GLIBC_2.0)</td>
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<td>setgrent(GLIBC_2.0)</td>
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<td>setutxent(GLIBC_2.1)</td>
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Referenced Specification(s)

[2]. this specification
[3]. SUSv2

1.2.15. Language Support

1.2.15.1. Interfaces for Language Support

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

Table 1-24. libc - Language Support Function Interfaces

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<td>_libc_start_main(GLIBC_2.0)</td>
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<td>_obstack_begin(GLIBC_2.0)</td>
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<td>_obstack_newchunk(GLIBC_2.0)</td>
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<td>obstack_free(GLIBC_2.0)</td>
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</table>
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

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<th>__fxstat64(GLIBC_2.2) [1]</th>
<th>fopen64(GLIBC_2.1) [2]</th>
<th>ftello64(GLIBC_2.1) [2]</th>
<th>lseek64(GLIBC_2.1) [2]</th>
<th>readdir64(GLIBC_2.2) [2]</th>
<th>readdir64(GLIBC_2.2) [2]</th>
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<td>freopen64(GLIBC_2.1) [2]</td>
<td>fttruncate64(GLIBC_2.1) [2]</td>
<td>mkstemp64(GLIBC_2.2) [2]</td>
<td>statvfs64(GLIBC_2.1) [2]</td>
<td>statvfs64(GLIBC_2.1) [2]</td>
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<tr>
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<td>fseek64(GLIBC_2.1) [2]</td>
<td>ftw64(GLIBC_2.1) [2]</td>
<td>mmap64(GLIBC_2.1) [2]</td>
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<td>getrlimit64(GLIBC_2.2) [2]</td>
<td>nftw64(GLIBC_2.1) [2]</td>
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</table>

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

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<th>_Exit(GLIBC_2.1) [1]</th>
<th>dirname(GLIBC_2.0) [1]</th>
<th>glob(GLIBC_2.0) [1]</th>
<th>lsearch(GLIBC_2.0) [1]</th>
<th>srand(GLIBC_2.0) [1]</th>
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<td>__assert_fail(GLIBC_2.0) [2]</td>
<td>div(GLIBC_2.0) [1]</td>
<td>glob4(GLIBC_2.1) [2]</td>
<td>makecontext(GLIBC_2.1) [1]</td>
<td>srand48(GLIBC_2.0) [1]</td>
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<td>__cxa_atexit(GLIBC_2.1) [2]</td>
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<td>globfree(GLIBC_2.1) [1]</td>
<td>malloc(GLIBC_2.0) [1]</td>
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<td>GLIBC 2.0</td>
<td>[1]</td>
<td></td>
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</tr>
<tr>
<td>realloc</td>
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<td>[1]</td>
<td></td>
<td></td>
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<tr>
<td>vsscanf</td>
<td>GLIBC 2.0</td>
<td>[1]</td>
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<td></td>
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<tr>
<td>atoll</td>
<td>GLIBC 2.0</td>
<td>[1]</td>
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<td></td>
</tr>
<tr>
<td>getenv</td>
<td>GLIBC 2.0</td>
<td>[1]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>labs</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>realpath</td>
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</tr>
<tr>
<td>vsclaim</td>
<td>GLIBC 2.0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Chapter 1. Libraries

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

```c
#define EDEADLOCK EDEADLK
```

1.3.2. inttypes.h

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

1.3.3. limits.h

```c
#define ULONG_MAX 0xFFFFFFFFUL
#define LONG_MAX 2147483647
#define CHAR_MIN 0
#define CHAR_MAX 255
```

1.3.4. setjmp.h

```c
typedef int __jmp_buf[14];
```

1.3.5. signal.h

```c
#define __NUM_ACRS 16
#define __NUM_FPRS 16
#define __NUM_GPRS 16
typedef struct {
    unsigned long mask;
    unsigned long addr;
} __attribute__((aligned (8))) _psw_t;
typedef struct {
    _psw_t psw;
    unsigned long gprs[__NUM_GPRS];
    unsigned int acrs[__NUM_ACRS];
} _s390_regs_common;
```
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

typedef struct
{
    unsigned int fpc;
    double fprs[__NUM_FPRS];
} _s390_fp_regs;
typedef struct
{
    _s390_regs_common regs;
    _s390_fp_regs fpregs;
} _sigregs;

struct sigcontext
{
    unsigned long oldmask[2];
    _sigregs *sregs;
};

1.3.6. stddef.h

typedef unsigned long size_t;
typedef int ptrdiff_t;

1.3.7. sys/ioctl.h

#define FIONREAD 0x541B
#define TIOCNOTTY 21538

1.3.8. sys/ipc.h
struct ipc_perm
{
  key_t __key;
  uid_t uid;
  gid_t gid;
  uid_t cuid;
  uid_t cgid;
  unsigned short mode;
  unsigned short __pad1;
  unsigned short __seq;
  unsigned short __pad2;
  unsigned long __unused1;
  unsigned long __unused2;
};

1.3.9. sys/mman.h

#define MCL_CURRENT 1
#define MCL_FUTURE 2

1.3.10. sys/msg.h

typedef unsigned long msglen_t;
typedef unsigned long msgqnum_t;

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

1.3.11. sys/sem.h

struct semid_ds
{
  struct ipc_perm sem_perm;
  time_t sem_stime;
  unsigned long __unused1;
  time_t sem_time;
  unsigned long __unused2;
  time_t sem_ctime;
  unsigned long __unused3;
  unsigned long __msg_cbytes;
  msgqnum_t msg_qnum;
  msglen_t msg_qbytes;
  pid_t msg_lspid;
  pid_t msg_lmid;
  unsigned long __unused4;
  unsigned long __unused5;
};
struct ipc_perm sem_perm;
  time_t sem_octime;
  unsigned long __unused1;
  time_t sem_ctime;
  unsigned long __unused2;
  unsigned long sem_nsems;
  unsigned long __unused3;
  unsigned long __unused4;
};

1.3.12. sys/shm.h

#define SHMLBA (__getpagesize())
typedef unsigned long shmat_t;

struct shmid_ds
{
  struct ipc_perm shm_perm;
  size_t shm_segsz;
  time_t shm_atime;
  unsigned long __unused1;
  time_t shm_dtime;
  unsigned long __unused2;
  time_t shm_ctime;
  unsigned long __unused3;
  pid_t shm_cpid;
  pid_t shm_lpid;
  shmat_t shm_nattch;
  unsigned long __unused4;
  unsigned long __unused5;
};

1.3.13. sys/socket.h

typedef uint32_t __ss_align

1.3.14. sys/stat.h

#define _STAT_VER 3

struct stat
{
  dev_t st_dev;
  unsigned int __pad1;
  ino_t st_ino;
  mode_t st_mode;


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1.3.15. sys/statvfs.h

```
struct statvfs
{
    unsigned long f_bsize;
    unsigned long f_frsize;
    fsblkcnt_t f_blocks;
    fsblkcnt_t f_bfree;
    fsblckcnt_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;
};
```
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1.3.16. sys/types.h

typedef long long int64_t;
typedef int32_t ssize_t;

1.3.17. termios.h

#define OLCUC 0000002
#define ONLCR 0000004
#define XCASE 0000004
#define NLDLY 0000400
#define CR1 0001000
#define IUCLC 0001000
#define CR2 0002000
#define CR3 0003000
#define CRDLY 0003000
#define TAB1 0004000
#define TAB2 0010000
#define TAB3 0014000
#define TABDLY 0014000
#define BS1 0020000
#define BSDLY 0020000
#define VT1 0040000
#define VTDLY 0040000
#define FF1 0100000
#define FFDLY 0100000
#define VSUSP   10
#define VEOL    11
#define VREPRINT  12
#define VDISCARD 13
#define VWERASE 14
#define VEOL2   16
#define VMIN    6
#define VSWTC   7
#define VSTART  8
#define VSTOP   9
#define IXON    0002000
#define IXOFF   0010000
#define CS6     0000020
#define CS7     0000040
#define CS8     0000060
#define CSIZE   0000060
#define CSTOPB  0000100
#define CREAD   0000200
#define PARENB  0000400
#define PARODD  0001000
#define HUPCL   0002000
#define CLOCAL  0004000
#define VTIME   5
#define ISIG    0000001
#define ICANON  0000002
#define ECHOE   0000020
#define ECHOK   0000040
#define ECHONL  0000100
#define NOFLSH  0000200
#define TOSTOP  0000400
#define ECHOCTL 0001000
#define ECHOPRT 0002000
#define ECHOKE  0004000
#define FLUSHO  0010000
#define PENDIN  0040000
#define IEXTEN  0100000

1.3.18. ucontext.h

#define NGREG   36

typedef union
{
    double d;
    float f;
}
fpreg_t;
typedef struct {
    unsigned int fpc;
    fpreg_t fprs[16];
} fpregset_t;

typedef struct {
    _psw_t psw;
    unsigned long gregs[16];
    unsigned int aregs[16];
    fpregset_t fpregs;
} mcontext_t;

typedef struct ucontext {
    unsigned long uc_flags;
    struct ucontext *uc_link;
    stack_t uc_stack;
    mcontext_t uc_mcontext;
    sigset_t uc_sigmask;
} 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

<table>
<thead>
<tr>
<th>Library:</th>
<th>libm</th>
</tr>
</thead>
<tbody>
<tr>
<td>SONAME:</td>
<td>libm.so.6</td>
</tr>
</tbody>
</table>

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

ISO C (1999)
SUSv2

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.

Table 1-29. libm - Math Function Interfaces

<p>| acos(GLIBC_2.0) | cexp(GLIBC_2.1) | expf(GLIBC_2.0) | jnf(GLIBC_2.0) [2] | remquo(GLIBC_2.0) |
|-------------------|---------------|-------------------|---------------|-------------------|---------------|-------------------|---------------|-------------------|---------------|
| 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             | cexp(GLIBC_2.1)   | 1             | expm1(GLIBC_2.0)  | 1             | ldexp(GLIBC_2.0)  | 1             | rint(GLIBC_2.0)   | 1            |
| acoshf(GLIBC_2.0) | 1             | cimagf(GLIBC_2.1) | 1             | fabs(GLIBC_2.0)   | 1             | ldexpf(GLIBC_2.0) | 1            | rintf(GLIBC_2.0)  | 1            |
| acosl(GLIBC_2.0)  | 1             | cimagf(GLIBC_2.1) | 1             | fabsf(GLIBC_2.0)  | 1             | ldexpl(GLIBC_2.0) | 1            | rintl(GLIBC_2.0)  | 1            |
| asinf(GLIBC_2.0)  | 1             | clogf(GLIBC_2.1)  | 1             | fdimf(GLIBC_2.1)  | 1             | lgammaf(GLIBC_2.0)| 1           | roundf(GLIBC_2.1) | 1            |
| asinhf(GLIBC_2.0) | 1             | clogf(GLIBC_2.1)  | 1             | fehalfexcept(GLIBC_2.1) | 1        | lgammal_r(GLIBC_2.0) | 2     | scalbf(GLIBC_2.0) | 2            |
| asinh(GLIBC_2.0)  | 1             | clogf(GLIBC_2.1)  | 1             | fegetenv(GLIBC_2.1) | 1      | lgammal_r(GLIBC_2.0) | 2     | scalbl(GLIBC_2.0) | 2            |
| asinhf(GLIBC_2.0) | 1             | clogf(GLIBC_2.1)  | 1             | fegetexceptflag(GLIBC_2.1) | 1     | llrint(GLIBC_2.1)  | 1            | scalbln(GLIBC_2.1) | 1           |
| atan(GLIBC_2.0)   | 1             | conjf(GLIBC_2.1)  | 1             | fegetround(GLIBC_2.1) | 1   | lrintf(GLIBC_2.1)  | 1            | scalblninf(GLIBC_2.1)| 1          |
| atan2(GLIBC_2.0)  | 1             | conjf(GLIBC_2.1)  | 1             | feholdexcept(GLIBC_2.1) | 1    | lrintl(GLIBC_2.1)  | 1            | scalbnf(GLIBC_2.0) | 1          |
| atan2f(GLIBC_2.0) | 1             | conjf(GLIBC_2.1)  | 1             | feraiseexcept(GLIBC_2.1) | 1     | lroundf(GLIBC_2.1)| 1            | scalbnf(GLIBC_2.0) | 1          |
| atan2l(GLIBC_2.0) | 1             | copysignedf(GLIBC_2.0) | 1 | fesetenv(GLIBC_2.1) | 1      | lroundl(GLIBC_2.1)| 1           | scalbnf(GLIBC_2.0) | 1         |
| atanf(GLIBC_2.0)  | 1             | copysignedf(GLIBC_2.0) | 1 | fesetexceptflag(GLIBC_2.1) | 1   | lroundf(GLIBC_2.1)| 1          | scalbnf(GLIBC_2.0) | 1        |
| atanh(GLIBC_2.0)  | 1             | copysignedf(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             | fetestexpectf(GLIBC_2.1) | 1   | log10(GLIBC_2.0)  | 1            | significandf(GLIBC_2.0) | 2          |</p>
<table>
<thead>
<tr>
<th>atanl(GLIBC_2.0)</th>
<th>cosf(GLIBC_2.0)</th>
<th>feupdateenv(GLIBC_2.1)</th>
<th>log10f(GLIBC_2.0)</th>
<th>significandl(GLIBC_2.0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>atanl(GLIBC_2.0)</td>
<td>cosh(GLIBC_2.0)</td>
<td>finite(GLIBC_2.0)</td>
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<td>sin(GLIBC_2.0)</td>
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<td>sincos(GLIBC_2.1)</td>
</tr>
<tr>
<td>cabsf(GLIBC_2.1)</td>
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<td>finite(GLIBC_2.0)</td>
<td>logbf(GLIBC_2.0)</td>
<td>sincosf(GLIBC_2.1)</td>
</tr>
<tr>
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<td>cos(GLIBC_2.0)</td>
<td>floorf(GLIBC_2.0)</td>
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<td>sincosf(GLIBC_2.1)</td>
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<tr>
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<td>cpowf(GLIBC_2.1)</td>
<td>foori(GLIBC_2.0)</td>
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<td>sincf(GLIBC_2.0)</td>
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<td>cpow(GLIBC_2.1)</td>
<td>floori(GLIBC_2.0)</td>
<td>lrint(GLIBC_2.1)</td>
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</tr>
<tr>
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<td>cpowf(GLIBC_2.1)</td>
<td>fma(GLIBC_2.1)</td>
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<td>pow10f(GLIBC_2.1)</td>
<td>y1l(GLIBC_2.0)</td>
</tr>
<tr>
<td>ccatanhf(GLIBC_2.1)</td>
<td>cctanhf(GLIBC_2.1)</td>
<td>remainderf(GLIBC_2.0)</td>
<td>pow10f(GLIBC_2.1)</td>
<td>y1l(GLIBC_2.0)</td>
</tr>
<tr>
<td>ccatanhf(GLIBC_2.1)</td>
<td>cctanhl(GLIBC_2.1)</td>
<td>remainderf(GLIBC_2.0)</td>
<td>pow10f(GLIBC_2.1)</td>
<td>y1l(GLIBC_2.0)</td>
</tr>
<tr>
<td>ccatanf(GLIBC_2.1)</td>
<td>cctanl(GLIBC_2.1)</td>
<td>remainderf(GLIBC_2.0)</td>
<td>pow10f(GLIBC_2.1)</td>
<td>y1l(GLIBC_2.0)</td>
</tr>
<tr>
<td>ccatanf(GLIBC_2.1)</td>
<td>cctanf(GLIBC_2.1)</td>
<td>remainderf(GLIBC_2.0)</td>
<td>pow10f(GLIBC_2.1)</td>
<td>y1l(GLIBC_2.0)</td>
</tr>
<tr>
<td>ccatanhf(GLIBC_2.1)</td>
<td>cctanhl(GLIBC_2.1)</td>
<td>remainderf(GLIBC_2.0)</td>
<td>pow10f(GLIBC_2.1)</td>
<td>y1l(GLIBC_2.0)</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Function</th>
<th>Referenced Specification(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ceil(GLIBC_2.0)</td>
<td>[1]. ISO POSIX (2003)</td>
</tr>
<tr>
<td>exp(GLIBC_2.0)</td>
<td>[1]. ISO C (1999)</td>
</tr>
<tr>
<td>jn(GLIBC_2.0)</td>
<td>[3]. SUSv2</td>
</tr>
<tr>
<td>remquo(GLIBC_2.1)</td>
<td></td>
</tr>
</tbody>
</table>

#### 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

<table>
<thead>
<tr>
<th>Library:</th>
<th>libpthread</th>
</tr>
</thead>
<tbody>
<tr>
<td>SONAME:</td>
<td>libpthread.so.0</td>
</tr>
</tbody>
</table>

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

- Large File Support
- this specification

#### 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

<table>
<thead>
<tr>
<th>_pthread_cleanup_pop(GLIBC_2.0) [1]</th>
<th>pthread_cancel(GLIBC_2.0) [2]</th>
<th>pthread_join(GLIBC_2.0) [2]</th>
<th>pthread_rwlock_destroy(GLIBC_2.1) [2]</th>
<th>pthread_setconcurrency(GLIBC_2.1) [2]</th>
</tr>
</thead>
<tbody>
<tr>
<td>_pthread_cleanup_push(GLIBC_2.0) [1]</td>
<td>pthread_cond_broadcast(GLIBC_2.3.2) [2]</td>
<td>pthread_key_create(GLIBC_2.0) [2]</td>
<td>pthread_rwlock_init(GLIBC_2.1) [2]</td>
<td>pthread_setspecific(GLIBC_2.0) [2]</td>
</tr>
<tr>
<td>pread(GLIBC_2.2) [2]</td>
<td>pthread_cond_destroy(GLIBC_2.3.2) [2]</td>
<td>pthread_key_delete(GLIBC_2.0) [2]</td>
<td>pthread_rwlock_rdlock(GLIBC_2.1) [2]</td>
<td>pthread_sighand(GLIBC_2.0) [2]</td>
</tr>
<tr>
<td>pthread_attr_destory(GLIBC_2.0) [2]</td>
<td>pthread_attr_init(GLIBC_2.3.2) [2]</td>
<td>pthread_kill(GLIBC_2.0) [2]</td>
<td>pthread_rwlock_timedrdlock(GLIBC_2.2) [2]</td>
<td>pthread_testcancel(GLIBC_2.0) [2]</td>
</tr>
<tr>
<td>pthread_attr_destroy(GLIBC_2.0) [2]</td>
<td>pthread_attr_getstate(GLIBC_2.0) [2]</td>
<td>pthread_mutex_destroy(GLIBC_2.0) [2]</td>
<td>pthread_rwlock_timedwrlock(GLIBC_2.2) [2]</td>
<td>pwrites(GLIBC_2.2) [2]</td>
</tr>
<tr>
<td>pthread_attr_getdetachstate(GLIBC_2.0) [2]</td>
<td>pthread_cond_timedwait(GLIBC_2.3.2) [2]</td>
<td>pthread_mutex_init(GLIBC_2.0) [2]</td>
<td>pthread_rwlock_tryrdlock(GLIBC_2.1) [2]</td>
<td>pwrites64(GLIBC_2.2) [3]</td>
</tr>
<tr>
<td>pthread_attr_getguardsize(GLIBC_2.1) [2]</td>
<td>pthread_cond_wait(GLIBC_2.3.2) [2]</td>
<td>pthread_mutex_lock(GLIBC_2.0) [2]</td>
<td>pthread_rwlock_trywrlock(GLIBC_2.1) [2]</td>
<td>sem_close(GLIBC_2.1.1) [2]</td>
</tr>
<tr>
<td>pthread_attr_getschedparam(GLIBC_2.0) [2]</td>
<td>pthread_condattr_destroy(GLIBC_2.0) [2]</td>
<td>pthread_mutexattr_getpshared(GLIBC_2.0) [2]</td>
<td>pthread_rwlock_unlock(GLIBC_2.1) [2]</td>
<td>sem_destroy(GLIBC_2.1) [2]</td>
</tr>
<tr>
<td>pthread_attr_getstackaddr(GLIBC_2.1) [2]</td>
<td>pthread_condattr_init(GLIBC_2.0) [2]</td>
<td>pthread_mutexattr_getpshared(GLIBC_2.0) [2]</td>
<td>pthread_rwlock_unlock(GLIBC_2.1) [2]</td>
<td>sem_getvalue(GLIBC_2.1) [2]</td>
</tr>
<tr>
<td>pthread_attr_getstacksize(GLIBC_2.1) [2]</td>
<td>pthread_condattr_setpshared(GLIBC_2.2) [2]</td>
<td>pthread_mutexattr_destroy(GLIBC_2.0) [2]</td>
<td>pthread_rwlockattr_destroy(GLIBC_2.1) [2]</td>
<td>sem_init(GLIBC_2.1) [2]</td>
</tr>
<tr>
<td>pthread_attr_init(GLIBC_2.1) [2]</td>
<td>pthread_condattr_setpshared(GLIBC_2.2) [2]</td>
<td>pthread_mutexattr_getpshared(GLIBC_2.1) [2]</td>
<td>pthread_rwlockattr_destroy(GLIBC_2.1) [2]</td>
<td>sem_open(GLIBC_2.1.1) [2]</td>
</tr>
</tbody>
</table>
1.6. Interfaces for libgcc_s

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

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

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
Chapter 1. Libraries

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>_Unwind_DeleteException  — private C++ error handling method</td>
<td>_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.</td>
</tr>
</tbody>
</table>

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_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.
Chapter 1. Libraries

_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 parameters
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.

_U 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.

_U 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.
Chapter 1. Libraries

_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 returned:

_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.
Chapter 1. Libraries

_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 indexed 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
Table 1-35. libdl Definition

| Library: | libdl |
| SONAME:  | libdl.so.2 |

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

### 1.8.1. Dynamic Loader

#### 1.8.1.1. Interfaces for Dynamic Loader

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

Table 1-36. libdl - Dynamic Loader Function Interfaces

<table>
<thead>
<tr>
<th>dladdr(GLIBC_2.0)</th>
<th>dlclose(GLIBC_2.0)</th>
<th>dlerror(GLIBC_2.0)</th>
<th>dlopen(GLIBC_2.1)</th>
<th>dsym(GLIBC_2.0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>[1]</td>
<td>[2]</td>
<td>[2]</td>
<td>[1]</td>
<td>[1]</td>
</tr>
</tbody>
</table>

Referenced Specification(s)

- [1]. this specification

### 1.9. Interfaces for libcrypt

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

Table 1-37. libcrypt Definition

| Library: | libcrypt |
| SONAME:  | libcrypt.so.1 |

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

### 1.9.1. Encryption

#### 1.9.1.1. Interfaces for Encryption

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

Table 1-38. libcrypt - Encryption Function Interfaces

<table>
<thead>
<tr>
<th>crypt(GLIBC_2.0)</th>
<th>encrypt(GLIBC_2.0)</th>
<th>setkey(GLIBC_2.0)</th>
</tr>
</thead>
</table>
Referenced Specification(s)

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

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

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

<table>
<thead>
<tr>
<th>Library:</th>
<th>libncurses</th>
</tr>
</thead>
<tbody>
<tr>
<td>SONAME:</td>
<td>libncurses.so.5</td>
</tr>
</tbody>
</table>

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

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

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

Linux Standard Base

2.5.1. Utility Functions

2.5.1.1. Interfaces for Utility Functions

Table 2-4. libutil - Utility Functions Function Interfaces

<table>
<thead>
<tr>
<th>forkpty(GLIBC_2.0)</th>
<th>login_tty(GLIBC_2.0)</th>
<th>logwtmp(GLIBC_2.0)</th>
<th>logout(GLIBC_2.0)</th>
<th>openpty(GLIBC_2.0)</th>
</tr>
</thead>
</table>

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.

Table A-1. libgcc_s Function Interfaces

<table>
<thead>
<tr>
<th>Function</th>
<th>Function</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>_Unwind_GetDataRelBase[1]</td>
<td>_Unwind_GetTextRelBase[1]</td>
<td></td>
</tr>
</tbody>
</table>
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Linux Packaging Specification
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      1.2. Package Architecture Considerations ........................................................................................................ 1
I. Package Format and Installation
Chapter 1. Software Installation

1.1. Package Dependencies

The LSB runtime environment shall provide the following dependencies.

- lsb-core-s390
  
  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-s390.

1.2. Package Architecture Considerations

All packages must specify an architecture of s390. A LSB runtime environment must accept an architecture of s390 even if the native architecture is different.

The archnum value in the Lead Section shall be 0x000E.
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