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Linux Standard Base (LSB) core specification 3.1 —

Part 2: Specification for IA32 architecture

Spécifications 3.1 relatives au noyau de base normalisé Linux (LSB) —

Partie 2: Spécifications pour l'architecture IA32

Reference number
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Contents

Foreword ..... **vii**
Introduction ..... **viii**
I Introductory Elements **0**
1 Scope 1
1.1 General 1
1.2 Module Specific Scope 1
2 References 2
2.1 Normative References 2
2.2 Informative References/Bibliography 4
3 Requirements 6
3.1 Relevant Libraries 6
3.2 LSB Implementation Conformance 6
3.3 LSB Application Conformance 7
4 Definitions 9
5 Terminology 10
6 Documentation Conventions 12
II Executable and Linking Format (ELF) **13**
7 Introduction 14
8 Low Level System Information 15
8.1 Machine Interface 15
8.2 Function Calling Sequence 16
8.3 Operating System Interface 17
8.4 Process Initialization 18
8.5 Coding Examples 18
8.6 C Stack Frame 19
8.7 Debug Information 20
9 Object Format 21
9.1 Introduction 21
9.2 ELF Header 21
9.3 Special Sections 21
9.4 Symbol Table 22
9.5 Relocation 22
10 Program Loading and Dynamic Linking 23
10.1 Introduction 23
10.2 Program Header 23
10.3 Program Loading 23
10.4 Dynamic Linking 23
III Base Libraries **25**
11 Libraries 26
11.1 Program Interpreter/Dynamic Linker 26
11.2 Interfaces for libc 26
11.3 Data Definitions for libc 40
11.4 Interfaces for libm 53
11.5 Data Definitions for libm 57
11.6 Interface Definitions for libm 59
11.7 Interfaces for libpthread 59
11.8 Data Definitions for libpthread 62
11.9 Interfaces for libgcc_s 62
11.10 Data Definitions for libgcc_s 63
11.11 Interface Definitions for libgcc_s 64
11.12 Interfaces for libdl 70
11.13 Data Definitions for libdl 71
11.14 Interfaces for libcrypt 71

Documents
Document Sharing Hub

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Full document details: ISO_IEC 23360-2_2006

IV Utility Libraries **72**
12 Libraries 73
12.1 Interfaces for libz 73
12.2 Data Definitions for libz 73
12.3 Interfaces for libncurses 73
12.4 Data Definitions for libncurses 74
12.5 Interfaces for libutil 74
V Package Format and Installation **76**
13 Software Installation 77
13.1 Package Dependencies 77
13.2 Package Architecture Considerations 77
A Alphabetical Listing of Interfaces **78**
A.1 libgcc_s 78
A.2 libm 78

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Documents
Document Sharing Hub
Full document details: ISO_IEC 23360-2_2006

List of Tables

2-1 Normative References 2
2-2 Other References 4
3-1 Standard Library Names....6
8-1 Scalar Types 15
9-1 ELF Special Sections 21
9-2 Additional Special Sections 21
11-1 libc Definition 26
11-2 libc - RPC Function Interfaces 26
11-3 libc - System Calls Function Interfaces 27
11-4 libc - Standard I/O Function Interfaces 29
11-5 libc - Standard I/O Data Interfaces 30
11-6 libc - Signal Handling Function Interfaces 30
11-7 libc - Signal Handling Data Interfaces 31
11-8 libc - Localization Functions Function Interfaces 31
11-9 libc - Localization Functions Data Interfaces 31
11-10 libc - Socket Interface Function Interfaces 32
11-11 libc - Wide Characters Function Interfaces....32
11-12 libc - String Functions Function Interfaces 34
11-13 libc - IPC Functions Function Interfaces 35
11-14 libc - Regular Expressions Function Interfaces 35
11-15 libc - Character Type Functions Function Interfaces....35
11-16 libc - Time Manipulation Function Interfaces 36
11-17 libc - Time Manipulation Data Interfaces 36
11-18 libc - Terminal Interface Functions Function Interfaces 36
11-19 libc - System Database Interface Function Interfaces....37
11-20 libc - Language Support Function Interfaces 37
11-21 libc - Large File Support Function Interfaces 38
11-22 libc - Standard Library Function Interfaces....38
11-23 libc - Standard Library Data Interfaces 40
11-24 libm Definition 53
11-25 libm - Math Function Interfaces....54
11-26 libm - Math Data Interfaces 57
11-27 libpthread Definition....59
11-28 libpthread - Realtime Threads Function Interfaces 60
11-29 libpthread - Posix Threads Function Interfaces 60
11-30 libpthread - Thread aware versions of libc interfaces Function Interfaces 62
11-31 libgcc_s Definition 62
11-32 libgcc_s - Unwind Library Function Interfaces....63
11-33 libdl Definition 70
11-34 libdl - Dynamic Loader Function Interfaces....70
11-35 libcrypt Definition....71
11-36 libcrypt - Encryption Function Interfaces 71
12-1 libz Definition....73
12-2 libncurses Definition 74
12-3 libutil Definition....74
12-4 libutil - Utility Functions Function Interfaces 75
A-1 libgcc_s Function Interfaces 78
A-2 libm Function Interfaces 78

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Documents
Document Sharing Hub
Full document details: ISO_IEC 23360-2_2006

Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

International Standard ISO/IEC 23360-2 was prepared by the Free Standards Group and was adopted, under the PAS procedure, by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 22, *Programming languages, their environments and system software interfaces*.

ISO/IEC 23360 consists of the following parts, under the general title *Linux Standard Base (LSB) core specification 3.1*:

— *Part 1: Generic specification*

— *Part 2: Specification for IA32 architecture*

— *Part 3: Specification for IA64 architecture*

— *Part 4: Specification for AMD64 architecture*

— *Part 5: Specification for PPC32 architecture*

— *Part 6: Specification for PPC64 architecture*

— *Part 7: Specification for S390 architecture*

— *Part 8: Specification for S390X architecture*

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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 includes 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 detail. Information referenced in this way is as much a part of this document as is the information explicitly included here.

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

- The first number (`x`) is the major version number. All versions with the same major version number should share binary compatibility. Any addition or deletion of a new library results in a new version number. Interfaces marked as `deprecated` may be removed from the specification at a major version change.
- The second number (`y`) is the minor version number. Individual interfaces may be added if all certified implementations already had that (previously undocumented) interface. Interfaces may be marked as `deprecated` at a minor version change. Other minor changes may be permitted at the discretion of the LSB workgroup.
- The third number (`z`), if present, is the editorial level. Only editorial changes should be included in such versions.

Since this specification is a descriptive Application Binary Interface, and not a source level API specification, it is not possible to make a guarantee of 100% backward compatibility between major releases. However, it is the intent that those parts of the binary interface that are visible in the source level API will remain backward compatible from version to version, except where a feature marked as `deprecated` in one release may be removed from a future release.

Implementors are strongly encouraged to make use of symbol versioning to permit simultaneous support of applications conforming to different releases of this specification.

This is version 3.1 of the Linux Standard Base Core Specification. This specification is part of a family of specifications under the general title "Linux Standard Base (LSB) core specification 3.1". Developers of applications or implementations interested in using the LSB trademark should see the Free Standards Group Certification Policy for details.

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I Introductory Elements

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Linux Standard Base (LSB) core specification 3.1 —

Part 2:
Specification for IA32 architecture

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" or "generic LSB"), ISO/IEC 23360-1, describing those parts of the interface that remain constant across all implementations of the LSB, and an architecture-specific part ("LSB-arch" or "archLSB") describing the parts of the interface that vary by processor architecture. Together, the LSB-generic and the relevant architecture-specific part of ISO/IEC 23360 for a single hardware architecture provide a complete interface specification for compiled application programs on systems that share a common hardware architecture.

ISO/IEC 23360-1, the LSB-generic document, should be used in conjunction with an architecture-specific part. Whenever a section of the LSB-generic specification is supplemented by architecture-specific information, the LSB-generic document includes a reference to the architecture part. Architecture-specific parts of ISO/IEC 23360 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 provides all of the ABIs listed here. The compilation system may replace (e.g. by macro definition) certain APIs with calls to one or more of the underlying binary interfaces, and may insert calls to binary interfaces as needed.

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

1.2 Module Specific Scope

This is the IA32 architecture specific Core part of the Linux Standard Base (LSB). This part supplements the generic LSB Core module with those interfaces that differ between architectures.

Interfaces described in this part of ISO/IEC 23360 are mandatory except where explicitly listed otherwise. Core interfaces may be supplemented by other modules; all modules are built upon the core.

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2 References

2.1 Normative References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

Note: Where copies of a document are available on the World Wide Web, a Uniform Resource Locator (URL) is given for informative purposes only. This may point to a more recent copy of the referenced specification, or may be out of date. Reference copies of specifications at the revision level indicated may be found at the Free Standards Group's Reference Specifications (http://refspecs.freestandards.org) site.

Table 2-1 Normative References

Name	Title	URL
ISO/IEC 23360-1	ISO/IEC 23360-1:2006, *Linux Standard Base (LSB) core specification 3.1 — Part 1: Generic Specification*	http://www.linuxbase.org/spec/
Filesystem Hierarchy Standard	Filesystem Hierarchy Standard (FHS) 2.3	http://www.pathname.com/fhs/
Intel® Architecture Software Developer's Manual Volume 1	The IA-32 Intel® Architecture Software Developer's Manual Volume 1: Basic Architecture	http://developer.intel.com/design/pentium4/manuals/245470.htm
Intel® Architecture Software Developer's Manual Volume 2	The IA-32 Intel® Architecture Software Developer's Manual Volume 2: Instruction Set Reference	http://developer.intel.com/design/pentium4/manuals/245471.htm
Intel® Architecture Software Developer's Manual Volume 3	The IA-32 Intel® Architecture Software Developer's Manual Volume 3: System Programming Guide	http://developer.intel.com/design/pentium4/manuals/245472.htm
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*	http://www.unix.org/version3/

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Name	Title	URL
	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*	
Large File Support	Large File Support	http://www.UNIX-systems.org/version2/whatsnew/lfs20mar.html
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
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 ABI, IA32 Supplement	System V Application Binary Interface - Intel386 Architecture Processor Supplement, Fourth Edition	http://www.caldera.com/developers/devspecs/abi386-4.pdf

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Name	Title	URL
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

2.2 Informative References/Bibliography

In addition, the specifications listed below provide essential background information to implementors of this specification. These references are included for information only.

Table 2-2 Other References

Name	Title	URL
DWARF Debugging Information Format, Revision 2.0.0	DWARF Debugging Information Format, Revision 2.0.0 (July 27, 1993)	http://refspecs.freestandards.org/dwarf/dwarf-2.0.0.pdf
DWARF Debugging Information Format, Revision 3.0.0 (Draft)	DWARF Debugging Information Format, Revision 3.0.0 (Draft)	http://refspecs.freestandards.org/dwarf/
IEC 60559/IEEE 754 Floating Point	IEC 60559:1989, *Binary floating-point arithmetic for microprocessor systems*	http://www.ieee.org/
ISO/IEC TR 14652	ISO/IEC TR 14652:2004, *Information technology — Specification method for cultural conventions*	
ITU-T V.42	International Telecommunication Union Recommendation V.42 (2002): Error-correcting procedures for DCEs using asynchronous-to-synchronous conversion ITUV	http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=T-REC-V.42
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-list/devices.txt

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Name	Title	URL
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 1831/1832 RPC & XDR	IETF RFC 1831 & 1832	http://www.ietf.org/
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 1950: ZLIB Compressed Data Format Specication	IETF RFC 1950: ZLIB Compressed Data Format Specification	http://www.ietf.org/rfc/rfc1950.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
RFC 2821: Simple Mail Transfer Protocol	IETF RFC 2821: Simple Mail Transfer Protocol	http://www.ietf.org/rfc/rfc2821.txt
RFC 2822: Internet Message Format	IETF RFC 2822: Internet Message Format	http://www.ietf.org/rfc/rfc2822.txt
RFC 791: Internet Protocol	IETF RFC 791: Internet Protocol Specification	http://www.ietf.org/rfc/rfc791.txt
RPM Package Format	RPM Package Format V3.0	http://www.rpm.org/max-rpm/s1-rpm-file-format-rpm-file-format.html
SUSv2 Commands 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
zlib Manual	zlib 1.2 Manual	http://www.gzip.org/zlib/

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3 Requirements

3.1 Relevant Libraries

The libraries listed in Table 3-1 shall be available on IA32 Linux Standard Base systems, with the specified runtime names. These names override or supplement the names specified in the generic LSB (ISO/IEC 23360-1) 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
libdl	libdl.so.2
libcrypt	libcrypt.so.1
libz	libz.so.1
libncurses	libncurses.so.5
libutil	libutil.so.1
libc	libc.so.6
libpthread	libpthread.so.0
proginterp	/lib/ld-lsb.so.3
libgcc_s	libgcc_s.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 is necessarily architecture specific, and must provide the interfaces specified by both the generic LSB Core specification (ISO/IEC 23360-1) and the relevant architecture specific part of ISO/IEC 23360.

> **Rationale:** An implementation must provide *at least* the interfaces specified in these specifications. It may also provide additional interfaces.

A conforming implementation shall satisfy the following requirements:

- A processor architecture represents a family of related processors which may not have identical feature sets. The architecture specific parts of ISO/IEC 23360 that supplement this specification for a given target processor architecture describe a minimum acceptable processor. The implementation shall provide all features of this processor, whether in hardware or through emulation transparent to the application.
- 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

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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 is necessarily architecture specific, and must conform to both the generic LSB Core specification (ISO/IEC 23360-1)and the relevant architecture specific part of ISO/IEC 23360.

A conforming application shall satisfy the following requirements:

- Its executable files shall be either shell scripts or object files in the format defined for the Object File Format system interface.
- Its object files shall participate in dynamic linking as defined in the Program Loading and Linking System interface.
- It shall employ 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 shall be stated in the application's documentation.
- It shall 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 shall be in turn an LSB conforming application.

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- The use of that interface or data format, as well as its source, shall be 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 shall 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.

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4 Definitions

For the purposes of this document, the following definitions, as specified in the *ISO/IEC Directives, Part 2, 2004, 5th 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

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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.

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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).

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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) [SUSv3]

refers to the interface named `forkpty()` with symbol version `GLIBC_2.0` that is defined in the `SUSv3` reference.

Note: Symbol versions are defined in the architecture specific parts of ISO/IEC 23360 only.

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II Executable and Linking Format (ELF)

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7 Introduction

Executable and Linking Format (ELF) defines the object format for compiled applications. This specification supplements the information found in System V ABI Update and System V ABI, IA32 Supplement, and is intended to document additions made since the publication of that document.

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8 Low Level System Information

8.1 Machine Interface

8.1.1 Processor Architecture

The IA32 Architecture is specified by the following documents

- Intel® Architecture Software Developer's Manual Volume 1
- Intel® Architecture Software Developer's Manual Volume 2
- Intel® Architecture Software Developer's Manual Volume 3

Only the features of the Intel486 processor instruction set may be assumed to be present. An application should determine if any additional instruction set features are available before using those additional features. If a feature is not present, then a conforming application shall not use it.

Conforming applications may use only instructions which do not require elevated privileges.

Conforming applications shall not invoke the implementations underlying system call interface directly. The interfaces in the implementation base libraries shall be used instead.

> **Rationale:** Implementation-supplied base libraries may use the system call interface but applications must not assume any particular operating system or kernel version is present.

Applications conforming to this specification shall 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.

8.1.2 Data Representation

LSB-conforming applications shall use the data representation as defined in Chapter 3 of the System V ABI, IA32 Supplement.

8.1.2.1 Byte Ordering

LSB-conforming systems and applications shall use the bit and byte ordering rules specified in Section 1.3.1 of the Intel® Architecture Software Developer's Manual Volume 1.

8.1.2.2 Fundamental Types

In addition to the fundamental types specified in Chapter 3 of the System V ABI, IA32 Supplement, a 64 bit data type is defined here.

Table 8-1 Scalar Types

Type	C	`sizeof`	Alignment (bytes)	Intel386 Architecture
Integral	long long	8	4	signed dou-

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Type	C	sizeof	Alignment (bytes)	Intel386 Architecture
				ble word
	signed long long			
	unsigned long long	8	4	unsigned double word

8.1.2.3 Aggregates and Unions

LSB-conforming implementations shall support aggregates and unions with alignment and padding as specified in Chapter 3 of the System V ABI, IA32 Supplement.

8.1.2.4 Bit Fields

LSB-conforming implementations shall support structure and union definitions that include bit-fields as specified in Chapter 3 of the System V ABI, IA32 Supplement.

8.2 Function Calling Sequence

LSB-conforming applications shall use the function calling sequence as defined in Chapter 3 of the System V ABI, IA32 Supplement.

8.2.1 Registers

LSB-conforming applications shall use the general registers provided by the architecture in the manner described in Chapter 3 of the System V ABI, IA32 Supplement.

8.2.2 Floating Point Registers

LSB-conforming applications shall use the floating point registers provided by the architecture in the manner described in Chapter 3 of the System V ABI, IA32 Supplement.

8.2.3 Stack Frame

LSB-conforming applications shall use the stack frame in the manner specified in Chapter 3 of the System V ABI, IA32 Supplement.

8.2.4 Arguments

8.2.4.1 Integral/Pointer

Integral and pointer arguments to functions shall be passed as specified in Chapter 3 of the System V ABI, IA32 Supplement.

8.2.4.2 Floating Point

Floating point arguments to functions shall be passed as specified in Chapter 3 of the System V ABI, IA32 Supplement.

8.2.4.3 Struct and Union Arguments

Structure and union arguments to functions shall be passed as specified in Chapter 3 of the System V ABI, IA32 Supplement.

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8.2.4.4 Variable Arguments

As described in Chapter 3 of the System V ABI, IA32 Supplement, LSB-conforming applications using variable argument lists shall use the facilities defined in the header file `<stdarg.h>` to deal with variable argument lists.

> **Note:** This is a requirement of ISO C (1999) and ISO POSIX (2003) as well as System V ABI, IA32 Supplement.

8.2.5 Return Values

8.2.5.1 Void

As described in chapter 3 of System V ABI, IA32 Supplement, functions returning no value need not set any register to any particular value.

8.2.5.2 Integral/Pointer

Functions return scalar values (integer or pointer), shall do so as specified in Chapter 3 of the System V ABI, IA32 Supplement.

8.2.5.3 Floating Point

Functions return floating point values shall do so as specified in Chapter 3 of the System V ABI, IA32 Supplement.

8.2.5.4 Struct and Union

Functions that return a structure or union shall do so as specified in Chapter 3 of the System V ABI, IA32 Supplement.

8.3 Operating System Interface

LSB-conforming applications shall use the following aspects of the Operating System Interfaces as defined in Chapter 3 of the System V ABI, IA32 Supplement.

8.3.1 Virtual Address Space

LSB-conforming implementations shall support the virtual address space described in Chapter 3 of the System V ABI, IA32 Supplement.

8.3.1.1 Page Size

LSB-conforming applications should call `sysconf()` to determine the current page size. See also Chapter 3 of the System V ABI, IA32 Supplement.

8.3.1.2 Virtual Address Assignments

LSB-conforming systems shall provide the virtual address space configuration as described in Chapter 3 of the System V ABI, IA32 Supplement (Virtual Address Assignments).

8.3.1.3 Managing the Process Stack

LSB-conforming systems shall manage the process stack as specified in Chapter 3 of the System V ABI, IA32 Supplement.

8.3.1.4 Coding Guidlines

LSB-conforming applications should follow the coding guidleines provided in Chapter 3 of the System V ABI, IA32 Supplement.

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