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TECHNICAL CORRIGENDUM 1

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Information technology — Portable Operating System Interface (POSIX®) Base Specifications, Issue 7

TECHNICAL CORRIGENDUM 1

Technologies de l'information — Spécifications de base de l'interface pour la portabilité des systèmes (POSIX®), Issue 7

RECTIFICATIF TECHNIQUE 1

Technical Corrigendum 1 to ISO/IEC 9945:2009 was prepared by The Open Group and the Portable Applications Standards Committee of the Computer Society of the IEEE (as IEEE Std 1003.1-2008/Cor 1-2013). It was adopted by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 22, *Programming languages, their environments and system software interfaces*, in parallel with its approval by the ISO/IEC national bodies, under the “fast-track procedure” defined in the Partner Standards Development Organization cooperation agreement between ISO and IEEE.

IEEE Standard for Information Technology—Portable Operating System Interface (POSIX®)

Base Specifications, Issue 7— Technical Corrigendum 1

Sponsor

Portable Applications Standards Committee
of the
IEEE Computer Society

and
The Open Group

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The Open Group

Abstract: This Technical Corrigendum addresses problems discovered since the approval of IEEE Std 1003.1™ -2008.

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Introduction

This introduction is not part of IEEE Std 1003.1™-2008/Cor1-2013 IEEE Standard for Information Technology—Portable Operating System Interface (POSIX®) Base Specifications, Issue 7—Technical Corrigendum 1.

This Technical Corrigendum addresses issues raised in defect reports and interpretation requests submitted up to 17 May 2011 that meet all of the following criteria: (a) They are in the scope of the approved standard. (b) They contain no new APIs (functions/utilities); however, they may add enumeration symbols, non-function #defines, and reserve additional namespaces. (c) They address contradictions between different parts of the standard, or add consistency between the standard and overriding standards, or address security-related problems.

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IEEE Standard for Information Technology—Portable Operating System Interface (POSIX[®])

Base Specifications, Issue 7— Technical Corrigendum 1

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NOTE: The editing instructions contained in this corrigendum define how to merge the material contained therein into the existing base standard to form the comprehensive standard.

1. Changes to Base Definitions

This section contains the set of changes to the text of the Base Definitions.

[Note to reviewers: References to defect reports are provided to aid reviewers.]

Change Number: Frontmatter/TC1/D5/0001 [246]

On Page: ix Line: 0 Section: Typographical Conventions

In the table of conventions, first column, change from:

Filename

to:

Filename, Pathname

Rationale: Austin Group Defect Report(s) applied: 246.
See <http://austingroupbugs.net/view.php?id=246>

Change Number: Frontmatter/TC1/D5/0002 [341]

On Page: ix Line: none Section: Typographical Conventions

Change:

'\'

in Note 2 to:

'\''

Rationale: Austin Group Defect Report(s) applied: 341.
See <http://austingroupbugs.net/view.php?id=341>

Change Number: XBD/TC1/D5/0001 [68]

On Page: 9 Line: 247 Section: 1.7.1 Codes

Change from:

[MX]IEC 60559 Floating-Point

The functionality described is optional. The functionality described is also an extension to the ISO C standard.

Where applicable, functions are marked with the MX margin legend in the SYNOPSIS section. Where additional semantics apply to a function, the material is identified by use of the MX margin legend.[/MX]

to:

[MX]IEC 60559 Floating-Point

The functionality described is optional. The functionality described is mandated by the ISO C standard only for implementations that define __STDC_IEC_559__.[/MX]

[MXX]IEC 60559 Floating-Point Extension
 The functionality described is part of the IEC 60559 Floating-Point
 option, but is an extension to the ISO C standard. [/MXX]

Rationale: Austin Group Defect Report(s) applied: 68.
 See <http://austingroupbugs.net/view.php?id=68>

Change Number: XBD/TC1/D5/0002 [291]

On Page: 21 Line: 730 Section: 2.1.5.1 Subprofiling Considerations

Change from:

filename argument

to:

pathname argument

Rationale: Austin Group Defect Report(s) applied: 291.
 See <http://austingroupbugs.net/view.php?id=291>

Change Number: XBD/TC1/D5/0003 [82]

On Page: 24 Line: 830,839 Section: 2.1.5.2 XSI Option Groups

Add to the list of options (in alphabetical order):

_POSIX_THREAD_ROBUST_PRIO_INHERIT

_POSIX_THREAD_ROBUST_PRIO_PROTECT

Rationale: Austin Group Defect Report(s) applied: 82.
 See <http://austingroupbugs.net/view.php?id=82>

Change Number: XBD/TC1/D5/0004 [291]

On Page: 54 Line: 1647 Section: 3.136 Dot

Change from:

In the context of naming files, the filename consisting of a single dot
 character ('.').

to:

In the context of naming files, the filename consisting of a single
 <period> character ('.').

Rationale: Austin Group Defect Report(s) applied: 291.
 See <http://austingroupbugs.net/view.php?id=291>

Change Number: XBD/TC1/D5/0005 [291]

On Page: 55 Line: 1650 Section: 3.137 Dot-Dot

Change from:

The filename consisting solely of two dot characters ("..").

to:

The filename consisting solely of two <period> characters ("..").

Rationale: Austin Group Defect Report(s) applied: 291.

See <http://austingroupbugs.net/view.php?id=291>

Change Number: XBD/TC1/D5/0006 [371,425]

On Page: 60 Line: 1763 Section: 3.166 File Descriptor

Change from:

The value of a file descriptor is from zero to {OPEN_MAX}. A process can have no more than {OPEN_MAX} file descriptors open simultaneously.

to:

The value of a newly-created file descriptor is from zero to {OPEN_MAX}-1. A file descriptor can have a value greater than or equal to {OPEN_MAX} if the value of {OPEN_MAX} has decreased (see sysconf()) since the file descriptor was opened.

Rationale: Austin Group Defect Report(s) applied: 371,425.

See <http://austingroupbugs.net/view.php?id=371>

See <http://austingroupbugs.net/view.php?id=425>

Change Number: XBD/TC1/D5/0007 [291]

On Page: 60 Line: 1782 Section: 3.170 Filename

Change from:

A name consisting of 1 to {NAME_MAX} bytes used to name a file. The characters composing the name may be selected from the set of all character values excluding the <slash> character and the null byte. The filenames dot and dot-dot have special meaning. A filename is sometimes referred to as a "pathname component".

to:

A sequence of bytes consisting of 1 to {NAME_MAX} bytes used to name a file. The bytes composing the name shall not contain the <NUL> or <slash> characters. In the context of a pathname, each filename shall be followed by a <slash> or a <NUL> character; elsewhere, a filename followed by a <NUL> character forms a string (but not necessarily a character string). The filenames dot and dot-dot have special meaning. A filename is sometimes referred to as a "pathname component". See also XBD Section 3.266 Pathname.

Rationale: Austin Group Defect Report(s) applied: 291.

See <http://austingroupbugs.net/view.php?id=291>

Change Number: XBD/TC1/D5/0008 [291]

On Page: 60 Line: 1786 Section: 3.170

After Section 3.170, add a new section and then renumber existing sections:

3.1xx Filename String

A string consisting of a filename followed by a <NUL> character.

Rationale: Austin Group Defect Report(s) applied: 291.
 See <http://austingroupbugs.net/view.php?id=291>

Change Number: XBD/TC1/D5/0009 [291]

On Page: 75 Line: 2145 Section: 3.266 Pathname

Change from:

A character string that is used to identify a file. In the context of POSIX.1-2008, a pathname may be limited to {PATH_MAX} bytes, including the terminating null byte. It has an optional beginning <slash>, followed by zero or more filenames separated by <slash> characters. A pathname may optionally contain one or more trailing <slash> characters. Multiple successive <slash> characters are considered to be the same as one <slash>, except for the case of exactly two leading <slash> characters.

to:

A string that is used to identify a file. In the context of <current version>, a pathname may be limited to {PATH_MAX} bytes, including the terminating null byte. It has optional beginning <slash> characters, followed by zero or more filenames separated by <slash> characters. A pathname can optionally contain one or more trailing <slash> characters. Multiple successive <slash> characters are considered to be the same as one <slash>, except for the case of exactly two leading <slash> characters.

Note: If a pathname consists of only bytes corresponding to characters from the portable filename character set (see XBD Section 3.276), <slash> characters, and a single terminating <NUL> character, the pathname will be usable as a character string in all supported locales; otherwise, the pathname might only be a string (rather than a character string). Additionally, since the single-byte encoding of the <slash> character is required to be the same across all locales and to not occur within a multi-byte character, references to a <slash> character within a pathname are well-defined even when the pathname is not a character string. However, this property does not necessarily hold for the remaining characters within the portable filename character set.

Rationale: Austin Group Defect Report(s) applied: 291.
 See <http://austingroupbugs.net/view.php?id=291>

Change Number: XBD/TC1/D5/0010 [291]

On Page: 77 Line: 2193 Section: 3.275

After Section 3.275, add a new section and then renumber existing

sections:

3.2xx Portable Filename

A filename consisting only of characters from the portable filename character set.

Note: Applications should avoid using filenames that have the <hyphen> character as the first character since this may cause problems when filenames are passed as command line arguments.

Rationale: Austin Group Defect Report(s) applied: 291.
See <http://austingroupbugs.net/view.php?id=291>

Change Number: XBD/TC1/D5/0011 [291]

On Page: 77 Line: 2199 Section: 3.276 Portable Filename Character Set

Add a sentence at the end of the section:

See also XBD Section 3.266 Pathname.

Rationale: Austin Group Defect Report(s) applied: 291.
See <http://austingroupbugs.net/view.php?id=291>

Change Number: XBD/TC1/D5/0012 [181]

On Page: 97 Line: 2670 Section: 3.396 Thread

Change from:

Each thread has its own thread ID, scheduling priority and policy, errno value, thread-specific key/value bindings, and the required system resources to support a flow of control.

to:

Each thread has its own thread ID, scheduling priority and policy, errno value, floating point environment, thread-specific key/value bindings, and the required system resources to support a flow of control.

Rationale: Austin Group Defect Report(s) applied: 181.
See <http://austingroupbugs.net/view.php?id=181>

Change Number: XBD/TC1/D5/0013 [186]

On Page: 98 Line: 2685 Section: 3.399 Thread-Safe

Change from:

A function that may be safely invoked concurrently by multiple threads.

to:

A thread-safe function can be safely invoked concurrently with other calls to the same function, or with calls to any other thread-safe functions, by multiple threads.

Rationale: Austin Group Defect Report(s) applied: 186.
See <http://austingroupbugs.net/view.php?id=186>

Change Number: XBD/TC1/D5/0014 [135]

On Page: 108 Line: 2900 Section: 4.4 File Access Permissions

Delete the last paragraph in the section:

POSIX.1-2008 does not provide a way to open a directory for searching. It is unspecified whether directory search permission is granted based on the file access modes of the directory's file descriptor or on the mode of the directory at the time the directory is searched.

Rationale: Austin Group Defect Report(s) applied: 135.
See <http://austingroupbugs.net/view.php?id=135>
Text is removed that predated the addition of the `O_SEARCH` flag.

Change Number: XBD/TC1/D5/0015 [291]

On Page: 109 Line: 2915 Section: 4.7 Filename Portability

Change from:

Portable filenames shall not have the <hyphen> character as the first character since this may cause problems when filenames are passed as command line arguments.

to:

Note: Applications should avoid using filenames that have the <hyphen> character as the first character since this may cause problems when filenames are passed as command line arguments.

Rationale: Austin Group Defect Report(s) applied: 291.
See <http://austingroupbugs.net/view.php?id=291>

Change Number: XBD/TC1/D5/0016 [83]

On Page: 112 Line: 3040 Section: 4.12 Pathname Resolution

Change from:

A pathname that begins with two successive <slash> characters may be interpreted in an implementation-defined manner, although ...

to:

If a pathname begins with two successive <slash> characters, the first component following the leading <slash> characters may be interpreted in an implementation-defined manner, although ...

Rationale: Austin Group Defect Report(s) applied: 83.
See <http://austingroupbugs.net/view.php?id=83>

Change Number: XBD/TC1/D5/0017 [340]

On Page: 121 Line: 3303 Section: 5 File Format Notation

Change from:

Escape Sequences represent non-graphic characters.

to:

Escape Sequences represent non-graphic characters and the escape character (<backslash>).

Rationale: Austin Group Defect Report(s) applied: 340.

See <http://austingroupbugs.net/view.php?id=340>

Change Number: XBD/TC1/D5/0018 [302]

On Page: 127 Line: 3583 Section: 6.1 Portable Character Set

Change from:

... if an application accesses any pair of locales where the character encodings differ, or accesses data from an application running in a locale which has different encodings from the application's current locale, the results are unspecified.

to:

... if an application uses any pair of locales where the character encodings differ, or accesses data from an application using a locale which has different encodings from the locales used by the application, the results are unspecified.

Rationale: Austin Group Defect Report(s) applied: 302.

See <http://austingroupbugs.net/view.php?id=302>

Change Number: XBD/TC1/D5/0019 [291]

On Page: 128 Line: 3589 Section: 6.1 Portable Character Set

After L3589 insert a new bullet:

* The encoded values associated with <slash> and <period> shall be invariant across all locales supported by the implementation.

Rationale: Austin Group Defect Report(s) applied: 291.

See <http://austingroupbugs.net/view.php?id=291>

Change Number: XBD/TC1/D5/0020 [216]

On Page: 128 Line: 3596 Section: 6.2 Character Encoding

Change from:

The POSIX locale contains the characters in Table 6-1 (on page 125), ...

to:

The POSIX locale contains the characters in Table 6-1 (on page 125)
and Table 6-2 (on page 130), ...

Rationale: Austin Group Defect Report(s) applied: 216.
See <http://austingroupbugs.net/view.php?id=216>

Change Number: XBD/TC1/D5/0021 [291]

On Page: 128 Line: 3619 Section: 6.2 Character Encoding

Add a sentence:

Likewise, the byte values used to encode <period> and <slash> shall not
occur as part of any other character in any locale.

Rationale: Austin Group Defect Report(s) applied: 291.
See <http://austingroupbugs.net/view.php?id=291>

Change Number: XBD/TC1/D5/0022 [216]

On Page: 129 Line: 3661 Section: 6.4 Character Set Description File

Change from:

... the symbolic names and their corresponding encoding values shall be
included in the file.

to:

... the symbolic names and their corresponding encoding values shall be
included in the file. The encoding values shall each be represented in
a single byte.

Rationale: Austin Group Defect Report(s) applied: 216.
See <http://austingroupbugs.net/view.php?id=216>

Change Number: XBD/TC1/D5/0023 [302]

On Page: 135 Line: 3820-3822 Section: 7.1 General

Change from:

The behavior of some of the C-language functions defined in the System
Interfaces volume of POSIX.1-2008 shall also be modified based on the
current locale, as defined by the last call to `setlocale()`.

to:

The behavior of some of the C-language functions defined in the System
Interfaces volume of POSIX.1-2008 shall also be modified based on a locale
selection. The locale to be used by these functions can be selected in
the following ways:

1. For functions such as `isalnum_l()` that take a locale object as an argument, a locale object can be obtained from `newlocale()` or `duplocale()` and passed to the function.

2. For functions that do not take a locale object as an argument, the current locale for the thread can be set by calling `uselocale()` or the global locale for the process can be set by calling `setlocale()`. Such functions shall use the current locale of the calling thread if one has been set for that thread; otherwise, they shall use the global locale.

Rationale: Austin Group Defect Report(s) applied: 302.
See <http://austingroupbugs.net/view.php?id=302>
These changes were overlooked during the revision when per-thread locales were added.

Change Number: XBD/TC1/D5/0024 [302]

On Page: 135 Line: 3839 Section: 7.1 General

Change from:

Applications can select the desired locale by invoking the `setlocale()` function (or equivalent) with the appropriate value. If the function is invoked with an empty string, such as:

```
setlocale(LC_ALL, "");
```

the value of the corresponding environment variable is used.

to:

Applications can select the desired locale by calling the `newlocale()` or `setlocale()` function with the appropriate value. If the function is invoked with an empty string, such as:

```
newlocale(LC_ALL_MASK, "", (locale_t)0);
```

or:

```
setlocale(LC_ALL, "");
```

the value of the corresponding environment variable is used.

Rationale: Austin Group Defect Report(s) applied: 302.
See <http://austingroupbugs.net/view.php?id=302>
These changes were overlooked during the revision when per-thread locales were added.

Change Number: XBD/TC1/D5/0025 [22,427]

On Page: 164 Line: 5141-5146 Section: 7.3.6 LC_MESSAGES

On L5142 in the description of the `yesexpr` keyword, change from:

... the acceptable affirmative response ...

to:

... acceptable affirmative responses ...

On L5144-5145 in the description of the noexpr keyword, change from:

... the acceptable negative response ...

to:

... acceptable negative responses ...

Rationale: Austin Group Defect Report(s) applied: 22,427.

See <http://austingroupbugs.net/view.php?id=22>

See <http://austingroupbugs.net/view.php?id=427>

Change Number: XBD/TC1/D5/0026 [167]

On Page: 173 Line: 5476 Section: 8.1 Environment Variable Definition

Change from:

... manipulating the environ variable ...

to:

... assigning a new value to the environ variable ...

Rationale: Austin Group Defect Report(s) applied: 167.

See <http://austingroupbugs.net/view.php?id=167>

Change Number: XBD/TC1/D5/0027 [167]

On Page: 173 Line: 5478 Section: 8.1 Environment Variable Definition

Add a new paragraph after L5478:

If the application modifies the pointers to which environ points, the behavior of all interfaces described in the System Interfaces volume of POSIX.1-2008 is undefined.

Rationale: Austin Group Defect Report(s) applied: 167.

See <http://austingroupbugs.net/view.php?id=167>

Change Number: XBD/TC1/D5/0028 [291]

On Page: 175 Line: 5566 Section: 8.2 Internationalization Variables

In the description of NLSPATH, change from:

filename

to:

pathname

Rationale: Austin Group Defect Report(s) applied: 291.

See <http://austingroupbugs.net/view.php?id=291>

Change Number: XBD/TC1/D5/0029 [302]

On Page: 177 Line: 5636 Section: 8.2 Internationalization Variables

Change from:

At runtime, these values are bound to the locale of a process by calling the `setlocale()` function.

to:

These environment variables are used by the `newlocale()` and `setlocale()` functions, and by the standard utilities.

Rationale: Austin Group Defect Report(s) applied: 302.

See <http://austingroupbugs.net/view.php?id=302>

Change Number: XBD/TC1/D5/0030 [139]

On Page: 178 Line: 5674 Section: 8.3 Other Environment Variables

In the description of the `PATH` variable, change from:

When a non-zero-length prefix is applied to this filename, a `<slash>` shall be inserted between the prefix and the filename.

to:

When a non-zero-length prefix is applied to this filename, a `<slash>` shall be inserted between the prefix and the filename if the prefix did not end in `<slash>`.

Rationale: Austin Group Defect Report(s) applied: 139.

See <http://austingroupbugs.net/view.php?id=139>

This change is for consistency with the previous change to `CDPATH` made in Interpretation 1003.1-2001 #199

Change Number: XBD/TC1/D5/0031 [84]

On Page: 178 Line: 5687 Section: 8.3 Other Environment Variables

At the end of the `PATH` variable, add a new paragraph:

Since colon is a separator in this context, directory names that might be used in `PATH` should not include a colon character.

Rationale: Austin Group Defect Report(s) applied: 84.

See <http://austingroupbugs.net/view.php?id=84>

Change Number: XBD/TC1/D5/0032 [305,427]

On Page: 186 Line: 5995 Section: 9.3.5 RE Bracket Expression

At L5995, add a new paragraph:

8. If a bracket expression contains at least three list elements, where

the first and last list element are the same single-character element of <period>, <equals-sign>, or <colon>, then it is unspecified whether the bracket expression will be treated as a collating symbol, equivalence class, or character class, respectively; treated as a matching list expression; or rejected as an error.

Rationale: Austin Group Defect Report(s) applied: 305,427.
 See <http://austingroupbugs.net/view.php?id=305>
 See <http://austingroupbugs.net/view.php?id=427>

Change Number: XBD/TC1/D5/0033 [134]

On Page: 197 Line: 6402 Section: 10.1 Directory Structure and Files

Change from:

/dev/null An infinite data source and data sink. ...

to:

/dev/null An empty data source and infinite data sink. ...

Rationale: Austin Group Defect Report(s) applied: 134.
 See <http://austingroupbugs.net/view.php?id=134>
 Improve the description of /dev/null.

Change Number: XBD/TC1/D5/0034 [79]

On Page: 201 Line: 6531-6542 Section: 11.1.4 Terminal Access Control

On L6531 change from:

... if the reading process is ignoring or blocking the SIGTTIN signal, ...

to:

... if the reading process is ignoring the SIGTTIN signal or the reading thread is blocking the SIGTTIN signal, ...

On L6539 change from:

... and the process is ignoring or blocking the SIGTTOU signal, ...

to:

... and the process is ignoring the SIGTTOU signal or the writing thread is blocking the SIGTTOU signal, ...

On L6540 change from:

If TOSTOP is set, and the process group of the writing process is orphaned, and the writing process is not ignoring or blocking the SIGTTOU signal, ...

to:

If TOSTOP is set, the process group of the writing process is orphaned, the writing process is not ignoring the SIGTTOU signal, and the writing thread is not blocking the SIGTTOU signal, ...

Rationale: Austin Group Defect Report(s) applied: 79.
See <http://austingroupbugs.net/view.php?id=79>

Change Number: XBD/TC1/D5/0035 [271]

On Page: 205 Line: 6710 Section: 11.1.11 Closing A Terminal Device File

Change from:

The last process to close a terminal device file shall cause any output to be sent to the device and any input to be discarded.

to:

The last process to close a terminal device file shall cause any output to be sent to the device and shall cause any input to be discarded.

Rationale: Austin Group Defect Report(s) applied: 271.
See <http://austingroupbugs.net/view.php?id=271>

The text can mean two things:

1. "any output to be sent" and "any input" shall be discarded.
2. "any output" will be sent and "any input" shall be discarded.

Change Number: XBD/TC1/D5/0036 [79]

On Page: 211 Line: 6962 Section: 11.2.5 Local Modes

Change from:

Processes that are blocking or ignoring SIGTTOU signals are excepted and allowed to produce output, and the SIGTTOU signal shall not be sent.

to:

If the writing process is ignoring the SIGTTOU signal or the writing thread is blocking the SIGTTOU signal, the process is allowed to produce output, and the SIGTTOU signal shall not be sent.

Rationale: Austin Group Defect Report(s) applied: 79.
See <http://austingroupbugs.net/view.php?id=79>

Change Number: XBD/TC1/D5/0037 [171]

On Page: 216 Line: 7120 Section: 12.2 Utility Syntax Guidelines

In Guideline 5 change from:

Options without option-arguments should be accepted when grouped behind one '-' delimiter.

to:

One or more options without option-arguments, followed by at most one option that takes an option-argument, should be accepted when grouped behind one '-' delimiter.

Rationale: Austin Group Defect Report(s) applied: 171.
 See <http://austingroupbugs.net/view.php?id=171>

Change Number: XBD/TC1/D5/0038 [98]

On Page: 220 Line: 7234 Section: <aio.h>

In the DESCRIPTION section, add FSC|SIO shading to the declaration
 of aio_fsync().

Rationale: Austin Group Defect Report(s) applied: 98.
 See <http://austingroupbugs.net/view.php?id=98>

Change Number: XBD/TC1/D5/0039 [291]

On Page: 231 Line: 7575 Section: <dirent.h>

In the DESCRIPTION section, change from:

d_name[] Name of entry.

to:

d_name[] Filename string of entry.

Rationale: Austin Group Defect Report(s) applied: 291.
 See <http://austingroupbugs.net/view.php?id=291>

Change Number: XBD/TC1/D5/0040 [291]

On Page: 231 Line: 7577 Section: <dirent.h>

In the DESCRIPTION section, change from:

The character array d_name is of unspecified size, but the number of
 bytes preceding the terminating null byte shall not exceed {NAME_MAX}.

to:

The array d_name is of unspecified size, but shall contain a filename
 of at most {NAME_MAX} bytes followed by a terminating null byte.

Rationale: Austin Group Defect Report(s) applied: 291.
 See <http://austingroupbugs.net/view.php?id=291>

Change Number: XBD/TC1/D5/0041 [291]

On Page: 232 Line: 7612 Section: <dirent.h>

In the RATIONALE section, change from:

... number of characters provided matches (or only slightly exceeds)
 the length of the filename.

to:

... number of bytes provided matches (or only slightly exceeds) the length of the filename string.

Rationale: Austin Group Defect Report(s) applied: 291.
See <http://austingroupbugs.net/view.php?id=291>

Change Number: XBD/TC1/D5/0042 [206]

On Page: 232 Line: 7629 Section: <dirent.h>

In the CHANGE HISTORY section, change from:

... fopendir() ...

to:

... fdopendir() ...

Rationale: Austin Group Defect Report(s) applied: 206.
See <http://austingroupbugs.net/view.php?id=206>

Change Number: XBD/TC1/D5/0043 [324]

On Page: 236 Line: 7739 Section: <errno.h>

In the DESCRIPTION section, change from:

[ENOTDIR] Not a directory.

to:

[ENOTDIR] Not a directory or a symbolic link to a directory.

Rationale: Austin Group Defect Report(s) applied: 324.
See <http://austingroupbugs.net/view.php?id=324>

Change Number: XBD/TC1/D5/0044 [274]

On Page: 239 Line: 7848 Section: <fcntl.h>

In the DESCRIPTION section, after:

The <fcntl.h> header shall define the following symbolic constants for use as the file access modes for open(), openat(), and fcntl().

add:

The values shall be unique, except that O_EXEC and O_SEARCH may have equal values.

Rationale: Austin Group Defect Report(s) applied: 274.
See <http://austingroupbugs.net/view.php?id=274>

Change Number: XBD/TC1/D5/0045 [78,432]

On Page: 240 Line: 7874-7879 Section: <fcntl.h>

In the DESCRIPTION section, delete L7874 to L7875.

The <fcntl.h> header shall define the following symbolic constants as values for the flag used by open() and openat():

In the DESCRIPTION section, move L7876 to L7879:

O_CLOEXEC The FD_CLOEXEC flag associated with the new descriptor shall be set to close the file descriptor upon execution of an exec family function.

O_DIRECTORY Fail if not a directory.

O_NOFOLLOW Do not follow symbolic links.

into the section at L7829 to L7834, so that it reads:

The <fcntl.h> header shall define the following symbolic constants as file creation flags for use in the oflag value to open() and openat(). The values shall be bitwise-distinct and shall be suitable for use in #if preprocessing directives.

O_CLOEXEC The FD_CLOEXEC flag associated with the new descriptor shall be set to close the file descriptor upon execution of an exec family function.

O_CREAT Create file if it does not exist.

O_DIRECTORY Fail if not a directory.

O_EXCL Exclusive use flag.

O_NOCTTY Do not assign controlling terminal.

O_NOFOLLOW Do not follow symbolic links.

O_TRUNC Truncate flag.

Rationale: Austin Group Defect Report(s) applied: 78,432.

See <http://austingroupbugs.net/view.php?id=78>

See <http://austingroupbugs.net/view.php?id=432>

Change Number: XBD/TC1/D5/0046 [346]

On Page: 249 Line: 8198 Section: <float.h>

In the DESCRIPTION section, add a paragraph within the *_MAX_EXP bullet:

[CX]Additionally, FLT_MAX_EXP shall be at least as large as FLT_MANT_DIG, DBL_MAX_EXP shall be at least as large as DBL_MANT_DIG, and LDBL_MAX_EXP shall be at least as large as LDBL_MANT_DIG; which has the effect that FLT_MAX, DBL_MAX, and LDBL_MAX are integral.[/CX]

Rationale: Austin Group Defect Report(s) applied: 346.

See <http://austingroupbugs.net/view.php?id=346>

Change Number: XBD/TC1/D5/0047 [346]

1030
1031 On Page: 250 Line: 8224 Section: <float.h>
1032
1033 In the RATIONALE section, change from:
1034
1035 None.
1036
1037 to:
1038
1039 All known hardware floating-point formats satisfy the property that
1040 the exponent range is larger than the number of mantissa digits. The
1041 ISO C standard permits a floating-point format where this property is
1042 not true, such that the largest finite value would not be integral;
1043 however, it is unlikely that there will ever be hardware support for
1044 such a floating-point format, and it introduces boundary cases that
1045 portable programs should not have to be concerned with (for example,
1046 a non-integral DBL_MAX means that ceil() would have to worry about
1047 overflow). Therefore, this standard imposes an additional requirement
1048 that the largest representable finite value is integral.
1049
1050 *Rationale:* Austin Group Defect Report(s) applied: 346.
1051 See <http://austingroupbugs.net/view.php?id=346>
1052
1053
1054 **Change Number: XBD/TC1/D5/0048 [403]**
1055
1056
1057 On Page: 254 Line: 8333 Section: <ftw.h>
1058
1059 In the DESCRIPTION section, change from:
1060
1061 FTW_F File.
1062
1063 to:
1064
1065 FTW_F Non-directory file.
1066
1067 *Rationale:* Austin Group Defect Report(s) applied: 403.
1068 See <http://austingroupbugs.net/view.php?id=403>
1069
1070
1071 **Change Number: XBD/TC1/D5/0049 [24]**
1072
1073
1074 On Page: 258 Line: 8441-8442 Section: <grp.h>
1075
1076 In the DESCRIPTION, add XSI shading to endgrent() and getgrent().
1077
1078 *Rationale:* Austin Group Defect Report(s) applied: 24.
1079 See <http://austingroupbugs.net/view.php?id=24>
1080
1081
1082 **Change Number: XBD/TC1/D5/0050 [211]**
1083
1084
1085 On Page: 261 Line: 8510- Section: <inttypes.h>
1086
1087 In the DESCRIPTION section change from:
1088
1089 The <inttypes.h> header shall define at least the following type:
1090
1091 imaxdiv_t Structure type that is the type of the value returned by the
1092 imaxdiv() function.

1093
 1094 to:
 1095
 1096 The <inttypes.h> header shall define at least the following types:
 1097
 1098 imaxdiv_t Structure type that is the type of the value returned by the
 1099 imaxdiv() function.
 1100
 1101 [CX]wchar_t As described in <stddef.h>.[/CX]
 1102
 1103 *Rationale:* Austin Group Defect Report(s) applied: 211.
 1104 See <http://austingroupbugs.net/view.php?id=211>
 1105
 1106 **Change Number: XBD/TC1/D5/0051 [107]**
 1107
 1108 On Page: 264 Line: 8623 Section: <langinfo.h>
 1109
 1110 In the DESCRIPTION section, replace <nl/types.h> with <nl_types.h>.
 1111
 1112 *Rationale:* Austin Group Defect Report(s) applied: 107.
 1113 See <http://austingroupbugs.net/view.php?id=107>
 1114 Corrected an editorial error in referencing <nl_types.h>.
 1115
 1116 **Change Number: XBD/TC1/D5/0052 [108]**
 1117
 1118 On Page: 268 Line: 8756 Section: <limits.h>
 1119
 1120 In the DESCRIPTION section, change from:
 1121
 1122 Many of the symbols listed here are not defined by the ISO/IEC 9899:
 1123 1999 standard. Such symbols are not shown as CX shaded.
 1124
 1125 to:
 1126
 1127 (Shading block as follows on L8756-8757)
 1128
 1129 Many of the symbols listed here are not defined by the ISO/IEC 9899:
 1130 1999 standard. Such symbols are not shown as CX shaded, except under
 1131 the heading "Numerical Limits".
 1132
 1133 *Rationale:* Austin Group Defect Report(s) applied: 108.
 1134 See <http://austingroupbugs.net/view.php?id=108>
 1135
 1136 **Change Number: XBD/TC1/D5/0053 [291]**
 1137
 1138 On Page: 272 Line: 8933 Section: <limits.h>
 1139
 1140 In the DESCRIPTION (<limits.h> {NAME_MAX}) change from:
 1141
 1142 ... bytes in a filename (not including the terminating null).
 1143
 1144 to:
 1145
 1146 ... bytes in a filename (not including the terminating null of a filename
 1147 string).
 1148
 1149 *Rationale:* Austin Group Defect Report(s) applied: 291.

1156 See <http://austingroupbugs.net/view.php?id=291>

1157

1158

1159 **Change Number: XBD/TC1/D5/0054** [182,427]

1160

1161

1162 On Page: 274 Line: 9020 Section: <limits.h>

1163

1164 In the DESCRIPTION section, Minimum Values, change from:

1165

1166 A conforming implementation shall provide values at least this large.

1167

1168 to:

1169

1170 For each of these limits, a conforming implementation shall provide a
1171 value at least this large or shall have no limit.

1172

1173 *Rationale:* Austin Group Defect Report(s) applied: 182,427.

1174 See <http://austingroupbugs.net/view.php?id=182>

1175 See <http://austingroupbugs.net/view.php?id=427>

1176

1177

1178 **Change Number: XBD/TC1/D5/0055** [291]

1179

1180

1181 On Page: 275 Line: 9060 Section: <limits.h>

1182

1183 In the DESCRIPTION ({_POSIX_NAME_MAX}), change from:

1184

1185 ... bytes in a filename (not including the terminating null).

1186

1187 to:

1188

1189 ... bytes in a filename (not including the terminating null of a filename
1190 string).

1191

1192 *Rationale:* Austin Group Defect Report(s) applied: 291.

1193 See <http://austingroupbugs.net/view.php?id=291>

1194

1195

1196 **Change Number: XBD/TC1/D5/0056** [371]

1197

1198

1199 On Page: 275 Line: 9066 Section: <limits.h>

1200

1201 In the DESCRIPTION section, change from:

1202

1203 Maximum number of files that one process can have open at any one time.

1204

1205 to:

1206

1207 A value one greater than the maximum value that the system may assign
1208 to a newly-created file descriptor.

1209

1210 *Rationale:* Austin Group Defect Report(s) applied: 371.

1211 See <http://austingroupbugs.net/view.php?id=371>

1212

1213

1214 **Change Number: XBD/TC1/D5/0057** [291]

1215

1216

1217 On Page: 277 Line: 9182 Section: <limits.h>

1218

1219 In the DESCRIPTION ({_XOPEN_NAME_MAX}), change from:
 1220
 1221 ... bytes in a filename (not including the terminating null).
 1222
 1223 to:
 1224
 1225 ... bytes in a filename (not including the terminating null of a filename
 1226 string).
 1227
 1228 *Rationale:* Austin Group Defect Report(s) applied: 291.
 1229 See <http://austingroupbugs.net/view.php?id=291>
 1230
 1231
 1232 **Change Number: XBD/TC1/D5/0058 [108]**
 1233
 1234
 1235 On Page: 278 Line: 9218 Section: <limits.h>
 1236
 1237 In the DESCRIPTION section, add CX shading to:
 1238
 1239 LONG_BIT (P278 L9218-9220)
 1240 WORD_BIT (P279 L9260-9262)
 1241 SSIZE_MAX (P279 L9242-9244)
 1242
 1243 *Rationale:* Austin Group Defect Report(s) applied: 108.
 1244 See <http://austingroupbugs.net/view.php?id=108>
 1245
 1246
 1247 **Change Number: XBD/TC1/D5/0059 [291]**
 1248
 1249
 1250 On Page: 280 Line: 9311 Section: <limits.h>
 1251
 1252 In the RATIONALE section, change "filenames" to "pathnames".
 1253
 1254 *Rationale:* Austin Group Defect Report(s) applied: 291.
 1255 See <http://austingroupbugs.net/view.php?id=291>
 1256
 1257
 1258 **Change Number: XBD/TC1/D5/0060 [301,427]**
 1259
 1260
 1261 On Page: 284 Line: 9450 Section: <locale.h>
 1262
 1263 In the DESCRIPTION section change from:
 1264
 1265 ... a special object descriptor used by the uselocale() function.
 1266
 1267 to:
 1268
 1269 ... a special object descriptor used by the duplocale() and uselocale()
 1270 functions.
 1271
 1272 *Rationale:* Austin Group Defect Report(s) applied: 301,427.
 1273 See <http://austingroupbugs.net/view.php?id=301>
 1274 See <http://austingroupbugs.net/view.php?id=427>
 1275
 1276
 1277 **Change Number: XBD/TC1/D5/0061 [355]**
 1278
 1279
 1280 On Page: 303 Line: 10141 Section: <netinet/in.h>
 1281

1282 In the DESCRIPTION section, change from:
1283
1284 Values of this type shall be cast by applications to struct sockaddr
1285 for use with socket functions.
1286
1287 to:
1288
1289 Pointers to this type shall be cast by applications to struct sockaddr *
1290 for use with socket functions.
1291
1292 *Rationale:* Austin Group Defect Report(s) applied: 355.
1293 See <http://austingroupbugs.net/view.php?id=355>
1294
1295
1296 **Change Number: XBD/TC1/D5/0062 [208]**
1297
1298
1299 On Page: 328 Line: 10963 Section: <signal.h>
1300
1301 In the DESCRIPTION section, change the margin marker notation for the
1302 SIG_HOLD macro from:
1303
1304 OB CX
1305
1306 to:
1307
1308 OB XSI
1309
1310 *Rationale:* Austin Group Defect Report(s) applied: 208.
1311 See <http://austingroupbugs.net/view.php?id=208>
1312 SIG_HOLD shading and margin marker notation is updated from
1313 OB CX to OB XSI as it is used with the sigset function which is an
1314 XSI function.
1315
1316
1317 **Change Number: XBD/TC1/D5/0063 [80]**
1318
1319
1320 On Page: 330 Line: 11032 Section: <signal.h>
1321
1322 In the DESCRIPTION section, in the table of signals, change the shading
1323 on SIGPROF from OB XSR to OB XSI.
1324
1325 *Rationale:* Austin Group Defect Report(s) applied: 80.
1326 See <http://austingroupbugs.net/view.php?id=80>
1327
1328
1329 **Change Number: XBD/TC1/D5/0064 [157]**
1330
1331
1332 On Page: 331 Line: 11055 Section: <signal.h>
1333
1334 In the DESCRIPTION section, change the shading margin marker from XSI
1335 to CX on the following text:
1336
1337 The storage occupied by sa_handler and sa_sigaction may overlap, and a
1338 conforming application shall not use both simultaneously.
1339
1340 *Rationale:* Austin Group Defect Report(s) applied: 157.
1341 See <http://austingroupbugs.net/view.php?id=157>
1342
1343
1344 **Change Number: XBD/TC1/D5/0065 [291,427]**

1345
 1346
 1347 On Page: 351 Line: 11796 Section: <stdio.h>
 1348
 1349 In the DESCRIPTION section, at P351 L11796 (XBD <stdio.h> FILENAME_MAX),
 1350 change from "filename string" to "pathname".
 1351
 1352 *Rationale:* Austin Group Defect Report(s) applied: 291,427.
 1353 See <http://austingroupbugs.net/view.php?id=291>
 1354 See <http://austingroupbugs.net/view.php?id=427>
 1355
 1356
 1357 **Change Number: XBD/TC1/D5/0066 [197]**
 1358
 1359
 1360 On Page: 356 Line: 11992 Section: <stdlib.h>
 1361
 1362 In the DESCRIPTION section, add the CX margin marker and shading to the
 1363 getsubopt() function prototype.
 1364
 1365 *Rationale:* Austin Group Defect Report(s) applied: 197.
 1366 See <http://austingroupbugs.net/view.php?id=197>
 1367 The getsubopt() function is an extension to the ISO C standard.
 1368
 1369
 1370 **Change Number: XBD/TC1/D5/0067 [355]**
 1371
 1372
 1373 On Page: 382 Line: 12813-12817 Section: <sys/socket.h>
 1374
 1375 In the DESCRIPTION section, change from:
 1376
 1377 When a sockaddr_storage structure is cast as a sockaddr structure,
 1378 the ss_family field of the sockaddr_storage structure shall map onto
 1379 the sa_family field of the sockaddr structure. When a sockaddr_storage
 1380 structure is cast as a protocol-specific address structure, the ss_family
 1381 field shall map onto a field of that structure that is of type sa_family_t
 1382 and that identifies the protocol's address family.
 1383
 1384 to:
 1385
 1386 When a pointer to a sockaddr_storage structure is cast as a pointer to a
 1387 sockaddr structure, the ss_family field of the sockaddr_storage structure
 1388 shall map onto the sa_family field of the sockaddr structure. When
 1389 a pointer to a sockaddr_storage structure is cast as a pointer to a
 1390 protocol-specific address structure, the ss_family field shall map onto
 1391 a field of that structure that is of type sa_family_t and that identifies
 1392 the protocol's address family.
 1393
 1394 *Rationale:* Austin Group Defect Report(s) applied: 355.
 1395 See <http://austingroupbugs.net/view.php?id=355>
 1396
 1397
 1398 **Change Number: XBD/TC1/D5/0068 [207]**
 1399
 1400
 1401 On Page: 388 Line: 13042 Section: <sys/stat.h>
 1402
 1403 In the DESCRIPTION section, add the XSI margin marker, and shade blkcnt_t
 1404 and blksize_t.
 1405
 1406 *Rationale:* Austin Group Defect Report(s) applied: 207.
 1407 See <http://austingroupbugs.net/view.php?id=207>

1408 Add notation to show that blkcnt_t and blksize_t are XSI
1409 extensions.
1410
1411
1412 **Change Number: XBD/TC1/D5/0069 [210]**
1413
1414
1415 On Page: 398 Line: 13360f Section: <sys/types.h>
1416
1417 In the DESCRIPTION section, remove the XSI margin marker and shading
1418 from fsblkcnt_t and fsfilcnt_t.
1419
1420 *Rationale:* Austin Group Defect Report(s) applied: 210.
1421 See <http://austingroupbugs.net/view.php?id=210>
1422 The statvfs structure, where fsblkcnt_t and fsfilcnt_t are
1423 used, is now in base.
1424
1425
1426 **Change Number: XBD/TC1/D5/0070 [28]**
1427
1428
1429 On Page: 399 Line: 13389 Section: <sys/types.h>
1430
1431 In the DESCRIPTION section, change from:
1432
1433 <blank name> Also used to identify a trace stream attributes object
1434
1435 to:
1436
1437 trace_attr_t Used to identify a trace stream attributes object
1438
1439 (The existing OB TRC shading should apply to the whole line.)
1440
1441 *Rationale:* Austin Group Defect Report(s) applied: 28.
1442 See <http://austingroupbugs.net/view.php?id=28>
1443
1444
1445 **Change Number: XBD/TC1/D5/0071 [376]**
1446
1447
1448 On Page: 399 Line: 13415 Section: <sys/types.h>
1449
1450 In the DESCRIPTION section, between L13415 and 13416, add a bullet:
1451
1452 * dev_t shall be an integer type.
1453
1454 *Rationale:* Austin Group Defect Report(s) applied: 376.
1455 See <http://austingroupbugs.net/view.php?id=376>
1456
1457
1458 **Change Number: XBD/TC1/D5/0072 [210]**
1459
1460
1461 On Page: 399 Line: 13417 Section: <sys/types.h>
1462
1463 In the DESCRIPTION section, remove the XSI margin marker and shading
1464 from fsblkcnt_t and fsfilcnt_t.
1465
1466 *Rationale:* Austin Group Defect Report(s) applied: 210.
1467 See <http://austingroupbugs.net/view.php?id=210>
1468 The statvfs structure, where fsblkcnt_t and fsfilcnt_t are
1469 used, is now in base.
1470

Change Number: XBD/TC1/D5/0073 [327]

On Page: 399 Line: 13420 Section: <sys/types.h>

In the DESCRIPTION section, change from:

time_t and clock_t shall be integer or real-floating types.

to:

clock_t shall be an integer or real-floating type. [CX]time_t shall be an integer type.[/CX]

Rationale: Austin Group Defect Report(s) applied: 327.
See <http://austingroupbugs.net/view.php?id=327>

Change Number: XBD/TC1/D5/0074 [355]

On Page: 403 Line: 13517 Section: <sys/un.h>

In the DESCRIPTION section, change from:

Values of this type shall be cast by applications to struct sockaddr for use with socket functions.

to:

Pointers to this type shall be cast by applications to struct sockaddr * for use with socket functions.

Rationale: Austin Group Defect Report(s) applied: 355.
See <http://austingroupbugs.net/view.php?id=355>

Change Number: XBD/TC1/D5/0075 [357,427]

On Page: 418 Line: 13996 Section: <tgmath.h>

In the DESCRIPTION section, in the table at L13996-13997, scalbln() should sort before scalbn().

Rationale: Austin Group Defect Report(s) applied: 357,427.
See <http://austingroupbugs.net/view.php?id=357>
See <http://austingroupbugs.net/view.php?id=427>

Change Number: XBD/TC1/D5/0076 [212]

On Page: 422 Line: 14153 Section: <time.h>

In the DESCRIPTION section, add the CX margin marker notation and shading to L14153-14155. (The <time.h> header.... TIMER_ABSTIME ...)

Rationale: Austin Group Defect Report(s) applied: 212.
See <http://austingroupbugs.net/view.php?id=212>

Change Number: XBD/TC1/D5/0077 [212]

On Page: 422 Line: 14159 Section: <time.h>

In the DESCRIPTION section, change from:

... a progrm defines ...

to:

... a program defines ...

Rationale: Austin Group Defect Report(s) applied: 212.See <http://austingroupbugs.net/view.php?id=212>

This is an editorial correction.

Change Number: XBD/TC1/D5/0078 [311]

On Page: 430 Line: 14446 Section: <unistd.h>

In the DESCRIPTION section, after:

For implementations conforming to POSIX.1-2008, the value shall be 200809L.

add (to the same paragraph):

For profile implementations that define _POSIX_SUBPROFILE (see Section 2.1.5.1) in <unistd.h>, _POSIX2_VERSION may be left undefined or be defined with the value -1 to indicate that the Shell and Utilities volume is not supported. In this case a call to sysconf(_SC_2_VERSION) shall return either 200809L or -1 indicating that the Shell and Utilities volume is or is not, respectively, supported at runtime.

At L14455 after:

The following symbolic constants, if defined in <unistd.h>, shall have a value of -1, 0, or greater, unless otherwise specified below.

add:

For profile implementations that define _POSIX_SUBPROFILE (see Section 2.1.5.1) in <unistd.h>, constants described below as always having a value greater than zero need not be defined and, if defined, may have a value of -1, 0, or greater.

Rationale: Austin Group Defect Report(s) applied: 311.See <http://austingroupbugs.net/view.php?id=311>**Change Number: XBD/TC1/D5/0079 [209]**

On Page: 439-440 Line: 14870-14875 Section: <unistd.h>

In the DESCRIPTION section, add the XSI margin marker and shading for L14870 to 14875 (symbolic constants F_LOCK ... F_ULOCK).

Rationale: Austin Group Defect Report(s) applied: 209.See <http://austingroupbugs.net/view.php?id=209>

Change Number: XBD/TC1/D5/0080 [360]

On Page: 443 Line: 15048 Section: <unistd.h>

In the DESCRIPTION section, delete L15048 (ctermid() declaration in XBD <unistd.h>).

At L15124 (<unistd.h>), add a sentence:

Implementations may also include the ctermid() prototype as defined in <stdio.h>.

Tag the entire paragraph starting on L15124 including the above new sentence with the OB margin marking.

Rationale: Austin Group Defect Report(s) applied: 360.

See <http://austingroupbugs.net/view.php?id=360>

Some implementations have had a declaration for ctermid() and this should still be allowed in Issue 7. Having ctermid() and pthread_atfork() prototypes in <unistd.h>, however, are namespace pollution issues that should be corrected in the next revision.

Change Number: XBD/TC1/D5/0081 [380]

On Page: 455 Line: 15531-15532 Section: <wchar.h>

In the DESCRIPTION section, in the wpcpy() and wcpncpy() prototype declarations change from:

restrict*

to:

*restrict

Rationale: Austin Group Defect Report(s) applied: 380.

See <http://austingroupbugs.net/view.php?id=380>

2. Changes to System Interfaces

This section contains the set of changes to the text of the System Interfaces.

[Note to reviewers: References to defect reports are provided to aid reviewers.]

Change Number: XSH/TC1/D5/0001 [316]

On Page: 477 Line: 16210 Section: 2.3 Error Numbers

Change from:

The ERRORS section on each reference page specifies which error conditions shall be detected by all implementations ("shall fail") and which may be optionally detected by an implementation ("may fail"). If no error condition is detected, the action requested shall be successful.

1654 to:

1655
1656 The ERRORS section on each reference page specifies which error conditions
1657 shall be detected by all implementations ("shall fail") and which may
1658 be optionally detected by an implementation ("may fail"). If no error
1659 condition is detected, the action requested shall be successful. If an
1660 error condition is detected, the action requested may have been partially
1661 performed, unless otherwise stated.

1662
1663 *Rationale:* Austin Group Defect Report(s) applied: 316.
1664 See <http://austingroupbugs.net/view.php?id=316>

1665
1666
1667 **Change Number: XSH/TC1/D5/0002 [146]**

1668
1669
1670 On Page: 482 Line: 16419 Section: 2.3 Error Numbers

1671
1672 For the [ENOTDIR] description, change from:

1673
1674 [ENOTDIR] Not a directory. A component of the specified pathname exists,
1675 but it is not a directory, when a directory was expected.

1676
1677 to:
1678
1679 [ENOTDIR] Not a directory. A component of the specified pathname exists,
1680 but it is not a directory, when a directory was expected; or an attempt
1681 was made to create a non-directory file, and the specified pathname
1682 contains at least one non-`<slash>` character and ends with one or more
1683 trailing `<slash>` characters.

1684
1685 *Rationale:* Austin Group Defect Report(s) applied: 146.
1686 See <http://austingroupbugs.net/view.php?id=146>

1687
1688
1689 **Change Number: XSH/TC1/D5/0003 [112]**

1690
1691
1692 On Page: 482 Line: 16430 Section: 2.3 Error Numbers

1693
1694 Change from:

1695
1696 [ENOTSUP] Not supported. The implementation does not support this feature
1697 of the Realtime Option Group.

1698
1699 to:
1700
1701 [ENOTSUP] Not supported. The implementation does not support the requested
1702 feature or value.

1703
1704 *Rationale:* Austin Group Defect Report(s) applied: 112.
1705 See <http://austingroupbugs.net/view.php?id=112>

1706
1707
1708 **Change Number: XSH/TC1/D5/0004 [77]**

1709
1710
1711 On Page: 485 Line: 16549 Section: 2.4.1 Signal Generation and Delivery

1712
1713 Change from:

1714
1715 When any stop signal (SIGSTOP, SIGTSTP, SIGTTIN, SIGTTOU) is generated
1716 for a process, any pending SIGCONT signals for that process shall be

discarded. Conversely, when SIGCONT is generated for a process, all pending stop signals for that process shall be discarded. When SIGCONT is generated for a process that is stopped, the process shall be continued, even if the SIGCONT signal is blocked or ignored. If SIGCONT is blocked and not ignored, it shall remain pending until it is either unblocked or a stop signal is generated for the process.

to:

When any stop signal (SIGSTOP, SIGTSTP, SIGTTIN, SIGTTOU) is generated for a process or thread, all pending SIGCONT signals for that process or any of the threads within that process shall be discarded. Conversely, when SIGCONT is generated for a process or thread, all pending stop signals for that process or any of the threads within that process shall be discarded. When SIGCONT is generated for a process that is stopped, the process shall be continued, even if the SIGCONT signal is ignored by the process or is blocked by all threads within the process and there are no threads in a call to a sigwait() function selecting SIGCONT. If SIGCONT is blocked by all threads within the process, there are no threads in a call to a sigwait() function selecting SIGCONT, and SIGCONT is not ignored by the process, the SIGCONT signal shall remain pending on the process until it is either unblocked by a thread or a thread calls a sigwait() function selecting SIGCONT, or a stop signal is generated for the process or any of the threads within the process.

Rationale: Austin Group Defect Report(s) applied: 77.
 See <http://austingroupbugs.net/view.php?id=77>

Change Number: XSH/TC1/D5/0005 [66]

On Page: 489 Line: 16717 Section: 2.4.3 Signal Actions

In the section "Pointer to a Function", change from:

When signal-catching functions are invoked asynchronously with process execution, the behavior of some of the functions defined by this volume of POSIX.1-200x is unspecified if they are called from a signal-catching function.

to:

If the process is multi-threaded, or if the process is single threaded and a signal handler is executed other than as the result of:

* The process calling abort(), raise(), kill(), pthread_kill(), or sigqueue() to generate a signal that is not blocked

* A pending signal being unblocked and being delivered before the call that unblocked it returns

the behavior is undefined if the signal handler refers to any object other than errno with static storage duration other than by assigning a value to an object declared as volatile sig_atomic_t, or if the signal handler calls any function defined in this standard other than one of the functions listed in the following table.

Rationale: Austin Group Defect Report(s) applied: 66.
 See <http://austingroupbugs.net/view.php?id=66>

Change Number: XSH/TC1/D5/0006 [102]

1780
1781
1782 On Page: 489 Line: 16722 Section: 2.4.3 Signal Actions
1783
1784 Add pthread_self() and pthread_kill() to the list of async-signal-safe
1785 functions.
1786
1787 *Rationale:* Austin Group Defect Report(s) applied: 102.
1788 See <http://austingroupbugs.net/view.php?id=102>
1789
1790
1791 **Change Number: XSH/TC1/D5/0007 [103]**
1792
1793
1794 On Page: 489 Line: 16722 Section: 2.4.3 Signal Actions
1795
1796 Add pthread_sigmask() to the list of async-signal-safe functions.
1797
1798 *Rationale:* Austin Group Defect Report(s) applied: 103.
1799 See <http://austingroupbugs.net/view.php?id=103>
1800
1801
1802 **Change Number: XSH/TC1/D5/0008 [234]**
1803
1804
1805 On Page: 489 Line: 16750 Section: 2.4.3 Signal Actions
1806
1807 In the table of functions that shall be async-signal-safe, add fchdir()
1808 to the list.
1809
1810 *Rationale:* Austin Group Defect Report(s) applied: 234.
1811 See <http://austingroupbugs.net/view.php?id=234>
1812
1813
1814 **Change Number: XSH/TC1/D5/0009 [312]**
1815
1816
1817 On Page: 492 Line: 16878 Section: 2.5.1 Interaction of File Descriptors
1818 and Standard I/O Streams
1819
1820 Delete the text:
1821
1822 Otherwise, the result is undefined.
1823
1824 *Rationale:* Austin Group Defect Report(s) applied: 312.
1825 See <http://austingroupbugs.net/view.php?id=312>
1826 Since L16842-16843 cover both handles, it is clear that the
1827 statements on L16878 and L16893 are redundant (as well as contradictory).
1828
1829
1830 **Change Number: XSH/TC1/D5/0010 [312]**
1831
1832
1833 On Page: 493 Line: 16893 Section: 2.5.1 Interaction of File Descriptors
1834 and Standard I/O Streams
1835
1836 Delete the text:
1837
1838 If the rules above are not followed, the result is unspecified.
1839
1840 *Rationale:* Austin Group Defect Report(s) applied: 312.
1841 See <http://austingroupbugs.net/view.php?id=312>
1842 Since L16842-16843 cover both handles, it is clear that the

statements on L16878 and L16893 are redundant (as well as contradictory).

Change Number: XSH/TC1/D5/0011 [345,428]

On Page: 497 Line: 17067 Section: 2.7.1 IPC General Description

Add a new paragraph:

In addition to the `ipc_perm` structure, each associated data structure includes several `time_t` fields for recording timestamps of particular operations. When an operation is described as setting a timestamp to the current time, that particular timestamp member of the associated data structure shall be set to the largest `time_t` value which is not greater than the current time.

Rationale: Austin Group Defect Report(s) applied: 345,428.

See <http://austingroupbugs.net/view.php?id=345>

See <http://austingroupbugs.net/view.php?id=428>

Change Number: XSH/TC1/D5/0012 [109,429]

On Page: 507 Line: 17490 Section: 2.9.1 Thread-Safety

Add `mblen()` and `mbtowc()` in alphabetic order to the list of functions that need not be thread-safe in the table on P507 L17490-17510; remove `wcstombs()` from the same table.

On L17511, change from:

The `wcrtomb()` and `wcsrtombs()` functions need not be thread-safe if passed a NULL `ps` argument.

to:

The `mbrlen()`, `mbrtowc()`, `mbsnrtowcs()`, `mbsrtowcs()`, `wcrtomb()`, `wcsnrtombs()`, and `wcsrtombs()` functions need not be thread-safe if passed a NULL `ps` argument.

Rationale: Austin Group Defect Report(s) applied: 109,429.

See <http://austingroupbugs.net/view.php?id=109>

See <http://austingroupbugs.net/view.php?id=429>

Change Number: XSH/TC1/D5/0013 [89]

On Page: 508 Line: 17536-17542 Section: 2.9.3 Thread Mutexes

On L17536-L17538, change from:

* It returns successfully from [...] with `m` as the mutex argument.

to:

* It calls [...] with `m` as the mutex argument and the call returns zero or `EOWNERDEAD`.

On L17538 (after the 3rd bullet item) add a new bullet item:

1906 * It calls `pthread_mutex_setprioceiling()` with `m` as the mutex argument
1907 and the call returns `[EOWNERDEAD]`.
1908
1909 On L17539-17542 (last 2 bullet items), change from:
1910
1911 * It returns (successfully or not) from `pthread_cond_wait()` with `m`
1912 as the mutex argument (except as explicitly indicated otherwise for
1913 certain errors).
1914
1915 * It returns (successfully or not) from `pthread_cond_timedwait()` with
1916 `m` as the mutex argument (except as explicitly indicated otherwise for
1917 certain errors).
1918
1919 to:
1920
1921 * It calls `pthread_cond_wait()` with `m` as the mutex argument and the call
1922 returns zero or certain error numbers (see `pthread_cond_timedwait()`).
1923
1924 * It calls `pthread_cond_timedwait()` with `m` as the mutex argument and the
1925 call returns zero or certain error numbers (see `pthread_cond_timedwait()`).
1926
1927 *Rationale:* Austin Group Defect Report(s) applied: 89.
1928 See <http://austingroupbugs.net/view.php?id=89>
1929
1930
1931 **Change Number: XSH/TC1/D5/0014 [410]**
1932
1933
1934 On Page: 514 Line: 17760 Section: 2.9.5.2 Cancellation Points
1935
1936 Add `strerror_l()` to the list, between `strerror()` and `strerror_r()`.
1937
1938 Add `strftime_l()` to the list, between `strftime()` and `symlink()`.
1939
1940 *Rationale:* Austin Group Defect Report(s) applied: 410.
1941 See <http://austingroupbugs.net/view.php?id=410>
1942
1943
1944 **Change Number: XSH/TC1/D5/0015 [376]**
1945
1946
1947 On Page: 540 Line: 18820 Section: 2.12.1 Defined Types
1948
1949 In the table, change from:
1950
1951 `dev_t` Arithmetic type used for device numbers.
1952
1953 to:
1954
1955 `dev_t` Integer type used for device numbers.
1956
1957 *Rationale:* Austin Group Defect Report(s) applied: 376.
1958 See <http://austingroupbugs.net/view.php?id=376>
1959
1960
1961 **Change Number: XSH/TC1/D5/0016 [327]**
1962
1963
1964 On Page: 541 Line: 18867 Section: 2.12.1 Defined Types
1965
1966 Change from:
1967
1968 `time_t` Integer or real-floating type used for time in seconds, as defined

1969 in the ISO C standard.

1970

1971 to:

1972

1973 time_t Integer type used for time in seconds, as defined in the ISO
 1974 C standard.

1975

1976 *Rationale:* Austin Group Defect Report(s) applied: 327.

1977 See <http://austingroupbugs.net/view.php?id=327>

1978

1979

1980 **Change Number: XSH/TC1/D5/0017 [74]**

1981

1982

1983 On Page: 541 Line: 18881-18886 Section: 2.12.3 Pointer Types

1984

1985 Delete Section 2.12.3:

1986

1987 2.12.3 Pointer Types

1988

1989 All function pointer types shall have the same representation as the
 1990 type pointer to void. Conversion of a function pointer to void * shall
 1991 not alter the representation. A void * value resulting from such a
 1992 conversion can be converted back to the original function pointer type,
 1993 using an explicit cast, without loss of information.

1994

1995 Note: The ISO C standard does not require this, but it is required for
 1996 POSIX conformance.

1997

1998 *Rationale:* Austin Group Defect Report(s) applied: 74.

1999 See <http://austingroupbugs.net/view.php?id=74>

2000

2001

2002 **Change Number: XSH/TC1/D5/0018 [464]**

2003

2004

2005 On Page: 559 Line: 19380 Section: accept()

2006

2007 In the DESCRIPTION section, change from:

2008

2009 address_len Points to a socklen_t structure ...

2010

2011 to:

2012

2013 address_len Either a null pointer, if address is a null pointer,
 2014 or a pointer to a socklen_t object ...

2015

2016 *Rationale:* Austin Group Defect Report(s) applied: 464.

2017 See <http://austingroupbugs.net/view.php?id=464>

2018

2019

2020 **Change Number: XSH/TC1/D5/0019 [461]**

2021

2022

2023 On Page: 561 Line: 19464 Section: access()

2024

2025 In the DESCRIPTION section, change from:

2026

2027 ... the current working directory is used ...

2028

2029 to:

2030

2031 ... the current working directory shall be used ...

2032
2033 *Rationale:* Austin Group Defect Report(s) applied: 461.
2034 See <http://austingroupbugs.net/view.php?id=461>
2035
2036
2037 **Change Number: XSH/TC1/D5/0020 [324]**
2038
2039
2040 On Page: 561 Line: 19482 Section: `access()`
2041
2042 In the ERRORS section, for the `[ENOTDIR]` error, change from:
2043
2044 A component of the path prefix is not a directory, ...
2045
2046 to:
2047
2048 A component of the path prefix names an existing file that is neither
2049 a directory nor a symbolic link to a directory, ...
2050
2051 *Rationale:* Austin Group Defect Report(s) applied: 324.
2052 See <http://austingroupbugs.net/view.php?id=324>
2053 This is an editorial issue clarifying the intent of the
2054 standard.
2055
2056
2057 **Change Number: XSH/TC1/D5/0021 [278]**
2058
2059
2060 On Page: 562 Line: 19491 `access()`
2061
2062 In the ERRORS section, add (after the `[EBADF]` error):
2063
2064 `[ENOTDIR]` The path argument is not an absolute path and `fd` is a file
2065 descriptor associated with a non-directory file.
2066
2067 *Rationale:* Austin Group Defect Report(s) applied: 278.
2068 See <http://austingroupbugs.net/view.php?id=278>
2069
2070
2071 **Change Number: XSH/TC1/D5/0022 [278]**
2072
2073
2074 On Page: 562 Line: 19504 Section: `access()`
2075
2076 In the ERRORS section, delete:
2077
2078 `[ENOTDIR]` The path argument is not an absolute path and `fd` is neither
2079 `AT_FDCWD` nor a file descriptor associated with a directory.
2080
2081 *Rationale:* Austin Group Defect Report(s) applied: 278.
2082 See <http://austingroupbugs.net/view.php?id=278>
2083
2084
2085 **Change Number: XSH/TC1/D5/0023 [291]**
2086
2087
2088 On Page: 562 Line: 19512-19513 Section: `access()`
2089
2090 In the EXAMPLES section, change both instances of "filename" to
2091 "pathname".
2092
2093 *Rationale:* Austin Group Defect Report(s) applied: 291.
2094 See <http://austingroupbugs.net/view.php?id=291>

Change Number: XSH/TC1/D5/0024 [320]

On Page: 564 Line: 19589 Section: `acos()`

Change:

... and either a NaN (if supported), or an implementation-defined value shall be returned.

to:

... and a NaN shall be returned.

Rationale: Austin Group Defect Report(s) applied: 320.
See <http://austingroupbugs.net/view.php?id=320>

Change Number: XSH/TC1/D5/0025 [320]

On Page: 566 Line: 19645 Section: `acosh()`

In the RETURN VALUE section, change from:

... and either a NaN (if supported), or an implementation-defined value shall be returned.

to:

... and a NaN shall be returned.

Rationale: Austin Group Defect Report(s) applied: 320.
See <http://austingroupbugs.net/view.php?id=320>

Change Number: XSH/TC1/D5/0026 [98]

On Page: 573 Line: 19785 Section: `aio_fsync()`

In the SYNOPSIS section, shade the synopsis and add the margin code FSC|SIO.

On L19788, in the DESCRIPTION section, change from:

The `aio_fsync()` function shall asynchronously force all I/O operations associated with the file indicated by the file descriptor `aio_fildes` member of the `aiocb` structure referenced by the `aiocbp` argument and queued at the time of the call to `aio_fsync()` to the synchronized I/O completion state.

to:

The `aio_fsync()` function shall asynchronously perform a file synchronization operation, as specified by the `op` argument, for I/O operations associated with the file indicated by the file descriptor `aio_fildes` member of the `aiocb` structure referenced by the `aiocbp` argument and queued at the time of the call to `aio_fsync()`.

On L19793, in the DESCRIPTION section, add SIO shading to:

2158
2159 If `op` is `O_DSYNC`, all currently queued I/O operations shall be completed
2160 as if by a call to `fdatsync()`; that is, as defined for synchronized
2161 I/O data integrity completion.
2162
2163 On L19794, in the DESCRIPTION section, add FSC shading to:
2164
2165 If `op` is `O_SYNC`, all currently queued I/O operations shall be completed
2166 as if by a call to `fsync()`;
2167
2168 and add FSC SIO shading to:
2169
2170 ... that is, as defined for synchronized I/O file integrity completion.
2171
2172 On L19797, in the DESCRIPTION section, change from:
2173
2174 ... operation queued by `aio_fsync()` fails, then, as for `fsync()` and
2175 `fdatsync()`, outstanding I/O operations are not guaranteed to have
2176 been completed.
2177
2178 to:
2179
2180 ... operation queued by `aio_fsync()` fails, then outstanding I/O operations
2181 are not guaranteed to have been completed.
2182
2183 On L19825, in the ERRORS section, add SIO shading to:
2184
2185 [EINVAL] This implementation does not support synchronized I/O for
2186 this file.
2187
2188 and add another [EINVAL] error after it, shaded FSC:
2189
2190 [EINVAL] The `aio_fildes` member of the `aio_cb` structure refers to a file
2191 on which an `fsync()` operation is not possible.
2192
2193 *Rationale:* Austin Group Defect Report(s) applied: 98.
2194 See <http://austingroupbugs.net/view.php?id=98>
2195
2196
2197 **Change Number: XSH/TC1/D5/0027 [98]**
2198
2199
2200 On Page: 574 Line: 19826 Section: `aio_fsync()`
2201
2202 In the ERRORS section, change from:
2203
2204 [EINVAL] A value of `op` other than `O_DSYNC` or `O_SYNC` was specified.
2205
2206 to:
2207
2208 [EINVAL] A value of `op` other than `O_DSYNC` or `O_SYNC` was specified, or
2209 `O_DSYNC` was specified and the implementation does not provide runtime
2210 support for the Synchronized Input and Output option, or `O_SYNC` was
2211 specified and the implementation does not provide runtime support for
2212 the File Synchronization option.
2213
2214 On L19829, in the ERRORS section, change from:
2215
2216 The error is returned in the error status for the asynchronous `fsync()`
2217 operation.
2218
2219 to:
2220