[SCE CONFIDENTIAL DOCUMENT]
PLAYSTATION(R)3 Programmer Tool Runtime Library 100.002

The following are known bugs, limitations and cautions on
the Reference Tool SDK package.

New updates have the release version of this package.

Reference Tool

- A problem has been found that when a program that outputs voice
  from RSX(TM) is activated, and then one of the following is
  performed, voice is not output.
  - Plug-in/out the HDMI cable
  - Switch the TV monitor power from Off to On (including the AV Amp)
  - Switch between the TV monitor channels and set the HDMI input again
    (including the AV Amp)

- The following devices are not supported now.

  - CompactFlash(R)
  - SD Memory Card
  - FOOT SW

  The wireless feature (Bluetooth(R)/Wireless LAN) can only be used
  on Reference Tools DEH-R1040 and later, which have the necessary
  authorization tools.
  The antenna for the wireless feature is bundled with DEH-1040 and
  later Reference Tools. Do not attempt to connect DEH-R1030 and
  earlier Reference Tools.

- For specifications regarding the Reference Tool, please refer to
  info/PS3-FAQ_*.pdf.

- Currently, the status does not change even if the DRIVE SELECT
  switch of the front panel is pressed.

  However, by resetting (or rebooting) the Reference Tool after
  switching between "BD emulator (HDD)" and "BD drive" in
  "Blu-ray Disc access" of "Boot parameters" on the Administration
  Tool, it is possible to switch the LED to be illuminated on
  the front panel ("HDD drive LED" or "Blu-ray Disc drive LED").

CBE Specifications

- Currently, the CBE that is equipped with each tool version can use
  six SPUs.

System Utilities

<Web Browser Utility>
- Files cannot be downloaded with the downloader.

<Video Setting Utility>
- In the description of the structure CellVideoOutColorInfo within
  the reference manual, it is described that "the low-order 6 bits are
  always 0". However, it should be described that "the high-order 6 bits
  are always 0".

BD Emulator (HDD)

(Added in Release 100.002)
- When the system software or bedbg is used to operate the BD emulator,
  it may not operate correctly.

File System

<CFS>
- The error code returned by the following interfaces is CELL_FS_EACCES,
  not CELL_FS_EPERM.
  cellFsRename(), cellFsUnlink(), cellFsMkdir(), cellFsRmdir()

Cell OS Lv-2

- When PROTECT is specified with sys_spu_image_open or
  sys_spu_image_import, ENOEXEC may not be returned even if
  an ELF/SELF that cannot be accepted as an SPU image is passed
  because the check for determining whether the specified ELF/SELF is
  valid as an SPU image is lenient.

  [Workaround]
  Please do not pass an ELF/SELF that cannot be accepted as an SPU image.
  For the definition of an ELF/SELF that can be accepted as an SPU image,
  please refer to the API specification of sys_spu_image_open or
  sys_spu_image_import.

- Restrictions of sys_spu_initialize
  The following restrictions apply to sys_spu_initialize so as not to
  interfere with the SPU threads that operate in the system.

  1. No matter what is specified for the first argument max_usable_spu,
     it is interpreted as the number of SPUs that can be used by Lv-2
     (that is, 6).
  2. When a value that is bigger than 5 is passed to the second
     argument max_raw_spu, an error is returned. (EINVAL)
  3. The default is (6, 0).

  After the first argument is interpreted as 6, the conventional rule
  applies.

  Example)
  When interpreted as sys_spu_initialize (0, 5) -> (6, 5), CELL_OK.
  When interpreted as sys_spu_initialize (100000, 5) -> (6, 5), CELL_OK.
  When interpreted as sys_spu_initialize (1, 6) -> (6, 6), EINVAL.
  When interpreted as sys_spu_initialize (7, 6) -> (6, 6), EINVAL.

CODEC

<libvdec>
- It is assumed that the outputs of the samples are output to
  a PC monitor with a resolution of SXGA or more or to an HDMI monitor
  that supports 1280x720/60p input. Therefore, if the monitor setting
  is not performed appropriately in advance with the setmonitor utility,
  the samples will display an error message and will be aborted.

<libdmux>
- It is assumed that the outputs of the samples are output to
  a PC monitor with a resolution of SXGA or more or to an HDMI monitor
  that supports 1280x720/60p input. Therefore, if the monitor setting
  is not performed appropriately in advance with the setmonitor utility,
  the samples will display an error message and will be aborted.

<libvpost>
- It is assumed that the outputs of the samples are output to
  a PC monitor with a resolution of SXGA or more or to an HDMI monitor
  that supports 1280x720/60p input. Therefore, if the monitor setting
  is not performed appropriately in advance with the setmonitor utility,
  the samples will display an error message and will be aborted.

<libjpgdec>
- It is assumed that the outputs of the samples are output to
  a PC monitor with a resolution of SXGA or more or to an HDMI monitor
  that supports 1280x720/60p input. Therefore, if the monitor setting
  is not performed appropriately in advance with the setmonitor utility,
  the samples will display an error message and will be aborted.

<libpngdec>
- It is assumed that the outputs of the samples are output to
  a PC monitor with a resolution of SXGA or more or to an HDMI monitor
  that supports 1280x720/60p input. Therefore, if the monitor setting
  is not performed appropriately in advance with the setmonitor utility,
  the samples will display an error message and will be aborted.

- Even if the information of sCAL chunk exists in the stream,
  the bit supported by dataOutInfo->chunkInformation is not validated.

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libfont

- With the following functions, hangul characters cannot be rendered

to the correct base line position.
When using hangul characters, please do not use them.

Functions for getting outline glyph
cellFontGenerateCharGlyph()
cellFontGenerateCharGlyphVertical()

Functions for rendering from outline glyph
cellFontGlyphRenderImage()
cellFontGlyphRenderImageHorizontal()
cellFontGlyphRenderImageVertical()

Functions for vertical rendering
cellFontRenderCharGlyphImageVertical()

- The initial size of the rendering work buffer is allocated as the buffer initial size that is specified with the argument CellFontRendererConfig of cellFontCreateRenderer(), but when a rendering function if called, it is changed to the buffer size that becomes necessary at that time. Therefore, it is meaningless to specify the initial size.
(With CellFontRendererConfig_setAllocateBuffer(&config,initSize,maxSize), it is not possible to control the memory allocation operation even when initSize == maxSize.)

Standard C/C++ Library

- If the following compile options are specified when compiling a program on the PPU side, many warnings may be output.

-Wall -Wundef -Wundef -Wsystem-headers -Wcast-qual

- When compiling an SPU program that included math.h, an error occurs if -fsingle-precision-constant is specified as the compile option.

- When including the system header, include it outside extern "C" or extern "C++".

For example, an error may occur if a program such as below is compiled:

```
extern "C" {
  ...

  #include <yyyy> // NG : Including within extern "C".

  ...
}
```

The error can be avoided by rewriting the program as shown below:

```
#include <yyyy>
extern "C" {

  ...

}
```

<PPU>
- There are following limitations on the usage of atexit function.

* If a function in a PRX module is registered using atexit function, and if main function finishes or exit function is invoked after the PRX module is stopped, a DSI (data storage interrupt) will occur.

* If atexit function is used in a C++ global constructor, the behavior is different from the C++ standard. All the registered functions are invoked prior to all the global destructors.

<PPU>
- If you use class ios_base or any of its derived classes (fstream, iostream, stringstream, strstream, etc.) in PRX, create their instances in ELF, and pass the pointers to them to PRX. If they are created in PRX, a DSI (data storage interrupt) may occur in function _Fac_tidy() at the termination of the PPU program.

<SPU>
- If rounding mode is set by function fesetround in fenv.h, there is a bug that the setting is effective in only the operations on slice 1 of vector double type. Round to nearest even mode (default) is used for

the operations on double type and on slice 0 of vector double type.

The problem can be worked around by using the following code instead of fesetround. Replace FE_TOWARDZERO with the mode to be set.

```
vector unsigned int r=spu_mffpscr();
r=spu_sel(r,spu_splats(((unsigned int)FE_TOWARDZERO*5)<<8),
          ((vector unsigned int){0x0000FF00,0,0,0}));
spu_mtfpscr(r);
```

See also technical notes "Rounding control of SPU double-precision floating-point operations".

<PPU/SPU>
- If programs that include header stdlib.h are compiled with any of the following options, errors will be reported at link-time (PPU side) or compile-time (SPU side, C++).
  -D_NO_INLINE_DEFINITIONS
  -std=c89
  -std=gnu89
  -std=c++98

<SPU>
- If very large amount of stack or heap area is used, heap area may be destroyed. SPU ABI allows accessing memory at negative offsets from stack pointer up to -2000 as well as positive offsets, but using negative offsets is not guaranteed in some cases due to a bug. Negative offsets from stack pointer are used in spu_printf(), leaf functions, etc.

USB

<USB Driver>
- When performing isochronous IN transfer with a Full-Speed device, data whose size per frame exceeds 512 bytes cannot be transferred correctly.
  This problem will be fixed in a future release.

- Multi isochronous transfer of a High-Speed device is not supported.
  This problem will be fixed in a future release.

- From SDK090, the usbd/usbhphone sample is attached to LDD within the system. Therefore, it does not operate.

- If an inserted USB device is extracted once and inserted again, it may not be recognized.

- When connecting or disconnecting a device to a USB port of the machine body, other USB devices already connected may be disconnected or may have an impact on its data communication.
  To avoid these problems, connect a self power hub to one of the USB ports of the machine body.

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libsail

- The call of the following functions is not terminated normally during playback:
  cellSailPlayerOpenEsAudio()
  cellSailPlayerOpenEsVideo()
  cellSailPlayerCloseEsAudio()
  cellSailPlayerCloseEsVideo()

- When seeking of stream data is performed while H.264(AVC) is being played, only the sound is played without movie.

- With cellSailPlayerInitialize(), if the maximum audio number or the maximum video number is set to two or more, the playback does not start in some cases.
  This can be avoided by setting CELL_SAIL_PLAYER_PRESET_AS_IS for the preset setting. (However, the AV synchronization will become invalid.)

- When a stream whose audio is LPCM is played, there will be noise.
  This can be avoided by changing it to AC3 or the like.

- If cellSailPlayerStop() is performed, just after a playback is started or when stopped at the end of a stream, a response is not returned in some cases.

NP Score Ranking Utility

- The score that is registered to the ranking board that is used in
  the sample is cleared irregularly.

- Just after aborting a transaction with sceNpScoreAbortTransaction(),
  it is not possible to destroy an NP score ranking transaction context
  by using sceNpScoreDestroyTransactionCtx().
  Please note that it is always required to check that the transaction
  has ended.

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libmixer

- When a mixer is generated under a specific configuration,
  an error (NO_MEMORY) may occur and the generation fails.
  For details, see the Technical Note 200610-02.
  https://ps3.scedev.net/technotes/view/325

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libgcm

- cellGcmSetSecondVFrequency() does not work properly even though
  it is set with CELL_GCM_DISPLAY_FREQUENCY_SCANOUT.
  For details, see the Technical Note 200609-24.
  https://ps3.scedev.net/technotes/view/321

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libgcm/PSGL

- Flip completion notice is returned before completion.
  For details, see the Technical Note 200609-23.
  https://ps3.scedev.net/technotes/view/320/

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libdbgfont

(Added in Release 100.002)
- With the function cellDbgFontInitGcm() included in libdbgfont_gcm.a,
  if an invalid value is included in the member localBufAddr or
  mainBufAddr of the structure CellDbgFontConfigGcm to be set as
  the argument, -1 is returned or a hang-up occurs within the function.
  An invalid value is an address within the range that cannot be
  accessed by libgcm.

  When it is set so as not to use the main memory, the setting of
  the member mainBufAddr will be ignored.
  (When neither CELL_DBGFONT_VERTEX_MAIN nor CELL_DBGFONT_TEXTURE_MAIN
  is specified for the member option.)

SPU ELF Binary Translator (replace_hbr.pl)

(Added in Release 100.002)
- On a SPU program descrived by assember, data located in .text
  section may be replaced by the binary translator. Thus data
  should be located at area except .text section when using the
  binary translator.