BGM Port Control System Call Overview

PlayStation®Vita Programmer Tool Runtime Library Release 3.50

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1 Library Overview

Purpose and Features

The PlayStation®Vita system can output audio to the BGM port and play back background music.

When multiple applications and services are running, data written to the BGM port is output as audio only for applications with BGM output rights.

When the user selects and plays back music content with the Music application, the Music application outputs music to the BGM port and plays it back. At this time, the Music application can play back music in the background of other applications.

For an application, to output BGM while the Music application is playing back music in the background, the BGM output right must be obtained.

This library provides the system calls for obtaining and releasing the BGM output right required for the application to output BGM.

The following system application outputs audio to the BGM port even in the background.

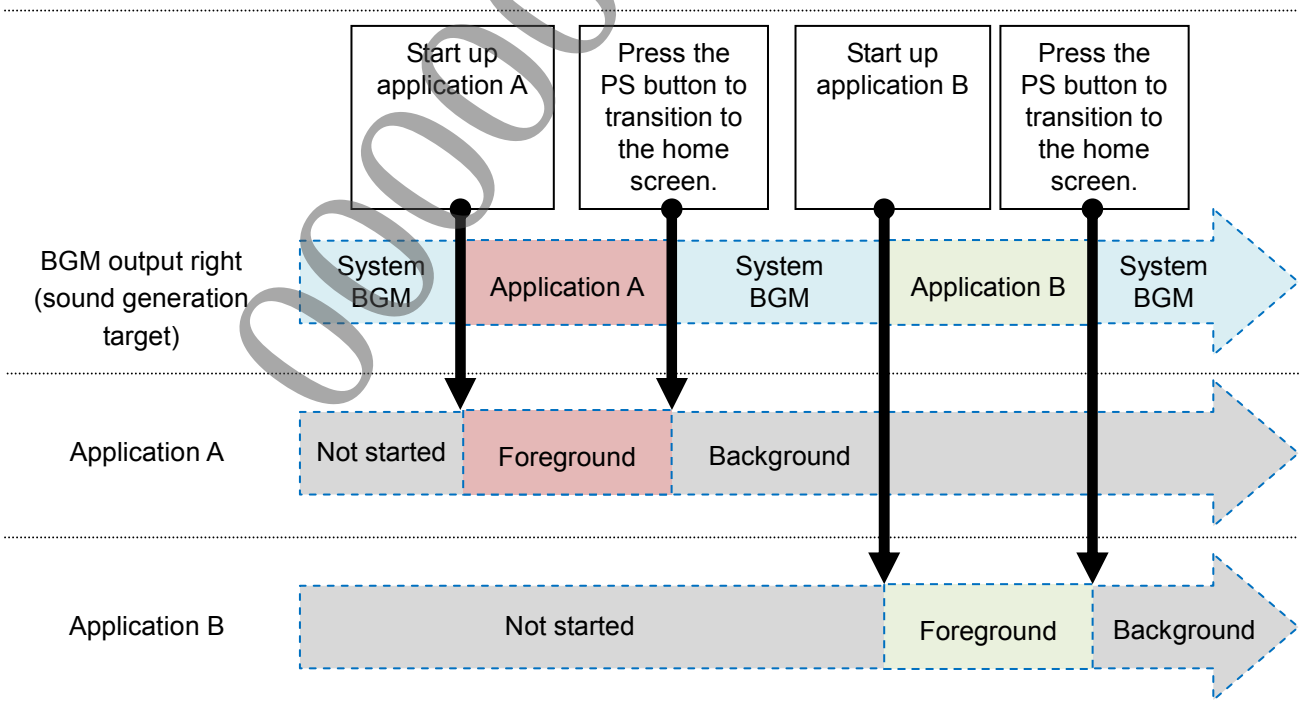
- Music application (audio playback function)

BGM Port Control

When there is no application in the background outputting audio to the BGM port, the BGM output right is with the application operating in the foreground. System BGM is played back on the home screen and LiveArea™. (The system settings can be used to stop playback of system BGM. In this case, there is no audio.)

The status of the BGM port at the application startup/switch is displayed below.

Figure 1 BGM port control
(When there is no application in the background outputting audio to the BGM port)



When there is the Music application or other application in the background outputting audio to the BGM port, the BGM output right is with the application with the highest priority.

The priority of BGM output for each application is determined by the system software.

The following shows the priority of BGM output for each application.

Application	Priority	Description
Application not using this library (has not explicitly obtained the BGM output right)	None	Any application can output audio to the BGM port regardless of the priority; however, when the Music application or other application obtains the BGM output right, the data written to the BGM port is no longer output as audio.
Music application	Low	When another application obtains the BGM output right, music playback stops.
Application using this library	Medium	When an application in the background is outputting audio to the BGM port, even if this application operates in the foreground, the data written to the BGM port is not output as audio. To output BGM, this library must be used to obtain the BGM output right. The priority at this time is higher than the Music application.
Application with high priority (*)	High	When an application with high priority is outputting BGM in the background, it is not possible to use this library to obtain the BGM output right.

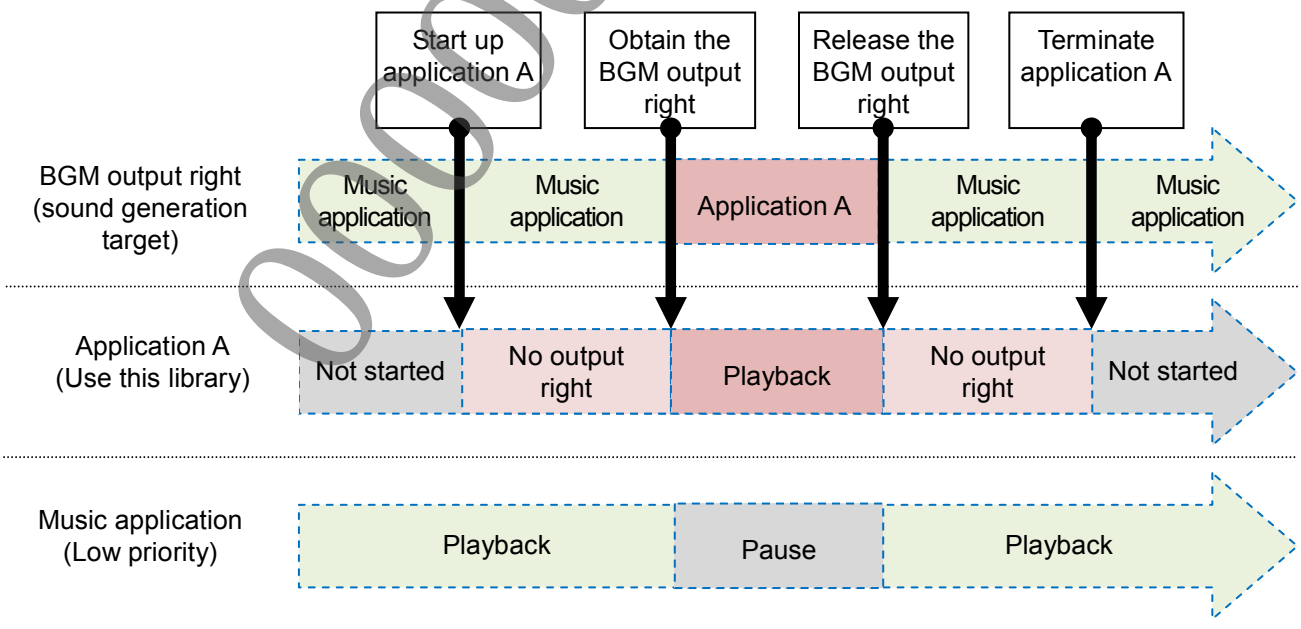
(*) Currently, there are no high-priority applications that output audio to the BGM port even in the background.

For the sound generation target of the BGM port of an application, refer to the "Audio Output Function Overview" and "Audio Output Function Reference" documents.

The following shows the state when the Music application or other low-priority application is playing back audio.

Figure 2　BGM port control

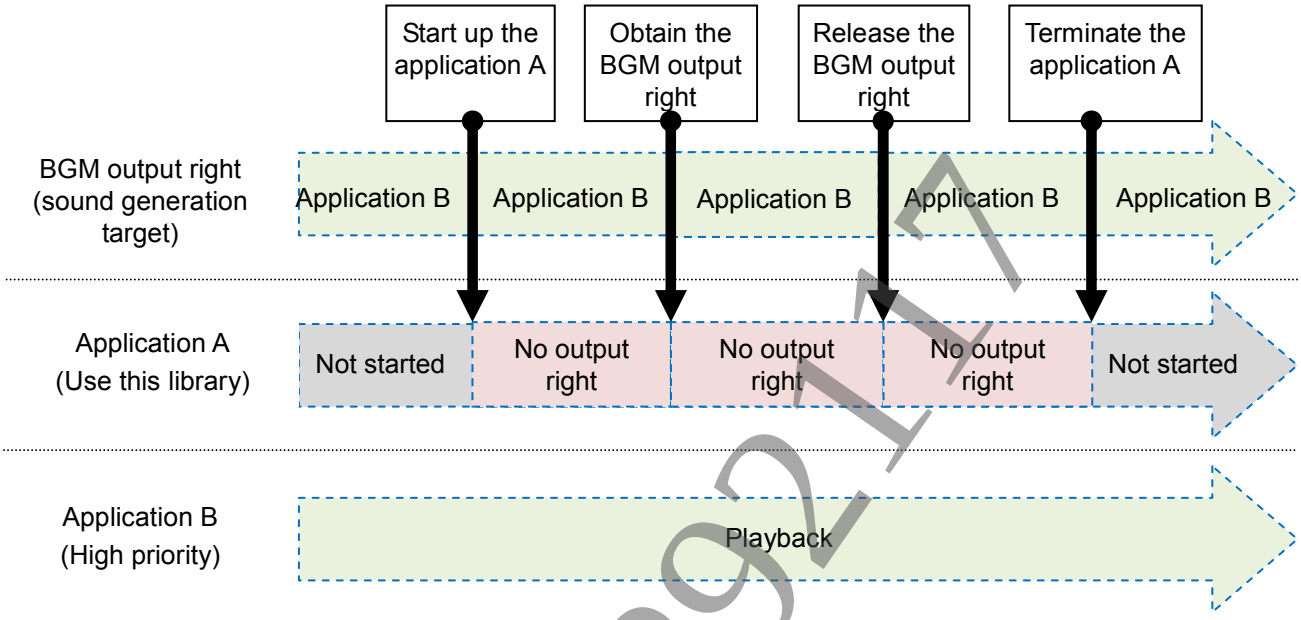
(When the Music application or other low-priority application is playing back audio)



When an application with high priority for BGM output is outputting audio in the background, it is not possible to use this library to obtain the BGM output right because the application using this library has lower priority.

The following shows the state when a high-priority application is playing back audio

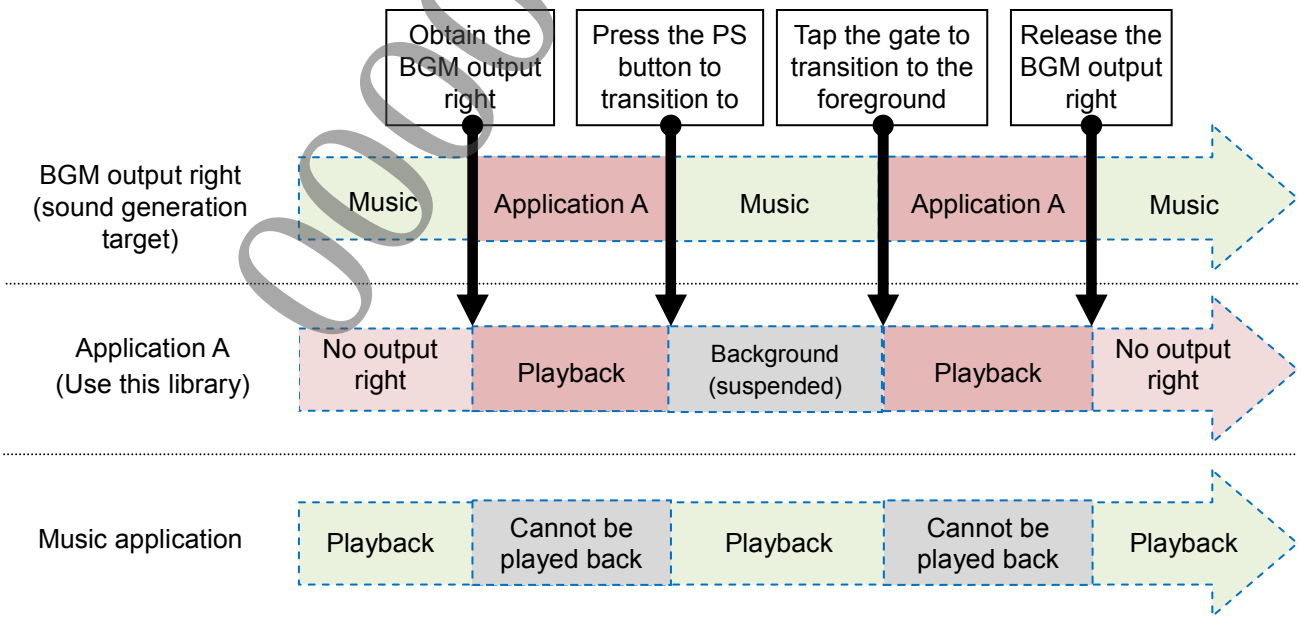
Figure 3 BGM port control
(When a high-priority application is playing back audio)



When an application that has obtained the BGM output right transitions to the background, the BGM output right is lost temporarily, but when it returns to the foreground, BGM output resumes even if the BGM output right is not obtained again because the BGM output right stays with that application.

The following shows the state when an application is suspended.

Figure 4 BGM port control
(When an application transitions to the background)



Files

Files required for using the BGM port control system calls are as follows.

Filename	Description
appmgr.h	Header file
libSceAppMgr_stub.a	Stub library file

To use the BGM port control system calls, statically link libSceAppMgr_stub.a.

Sample Programs

Refer to the following sample programs for the BGM port control system calls.

samples/sample_code/system/api_bgmport/

This sample shows basic uses of the BGM port control system calls.

List of Functions

BGM port control system calls are listed below.

For more information, refer to the "BGM Port Control System Call Reference" document.

Functions	Description
`sceAppMgrAcquireBgmPort()`	Gets BGM output right
`sceAppMgrReleaseBgmPort()`	Releases BGM output right

2 Basic Procedure

The basic procedure of the BGM port control system calls is shown below.

(1) Get BGM output right

Use the `sceAppMgrAcquireBgmPort()` function to obtain the BGM output right.

(2) Release BGM output right

Use the `sceAppMgrReleaseBgmPort()` function to release the BGM output right.

3 Application Example

Changing the Audio of the Music Application and BGM without Using the BGM Port

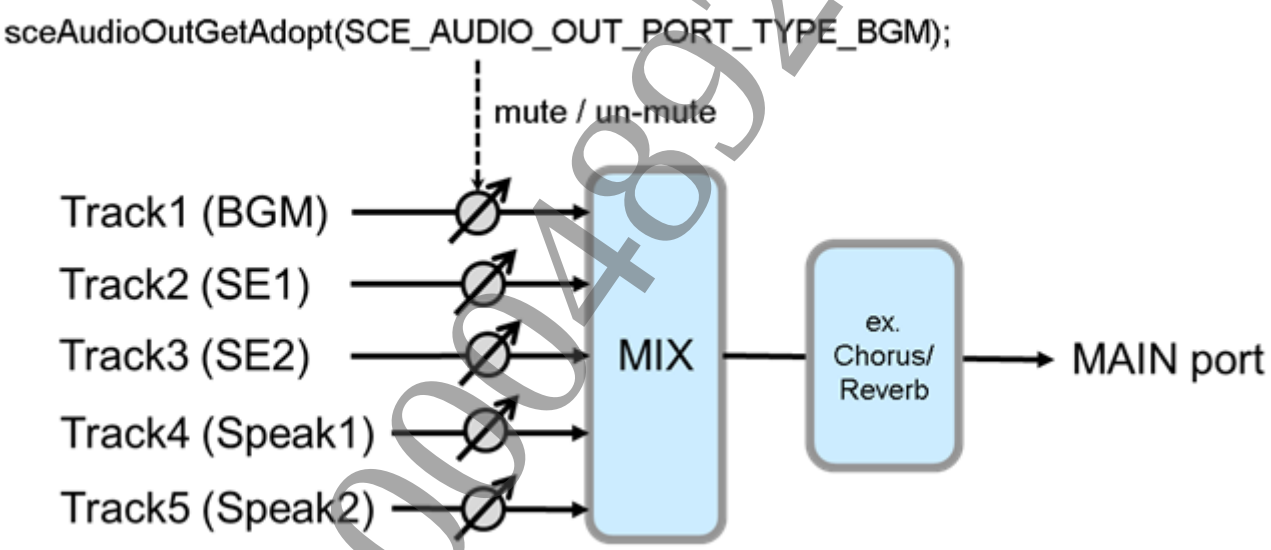
The PlayStation®Vita system has a function for changing the audio of the Music application and the audio output to the BGM port of the audio driver within a game.

To have the system change the audio corresponding to the BGM within a game, the sound system is structured so as to output the audio corresponding to the BGM within a game to the BGM port and output other audio to the MAIN port. Therefore, the MAIN port and BGM port must play back audio using different threads, and in some cases, the sound generation timing between threads must be synchronized.

In addition, because the threads are separate, it may be difficult to apply reverb and other effects to the entire audio of the BGM port and MAIN port.

The following explains how to use a mixer with a multi-track structure so that the sound system within the game can link only the input track corresponding to the BGM to the BGM change timing of the system.

Figure 5 Connection Example



Specifically, the BGM output right is requested, the status of whether or not the BGM output right was obtained is retrieved, and the track corresponding to the BGM audio of the sound system within the game is muted or turned ON or OFF. The audio data is not passed to the BGM port.

Procedure

The procedure is shown below.

(1) Request the BGM output right

To give priority to the BGM of a game over the audio of the Music application, use the `sceAppMgrAcquireBgmPort()` function to request the BGM output right. Audio playback of the Music application stops at the time the BGM output right is obtained.

To give priority to the audio of the Music application over the BGM of a game, use the `sceAppMgrReleaseBgmPort()` function to release the BGM output right.

(2) Check the BGM output right

Use `sceAudioOutGetAdopt(SCE_AUDIO_OUT_PORT_TYPE_BGM);` to periodically check whether or not the BGM output right was obtained.

(3) Mute the track

When the BGM output right has not been obtained, mute the BGM track (or stop sound generation). When the BGM output right has been obtained, cancel muting of the BGM track.

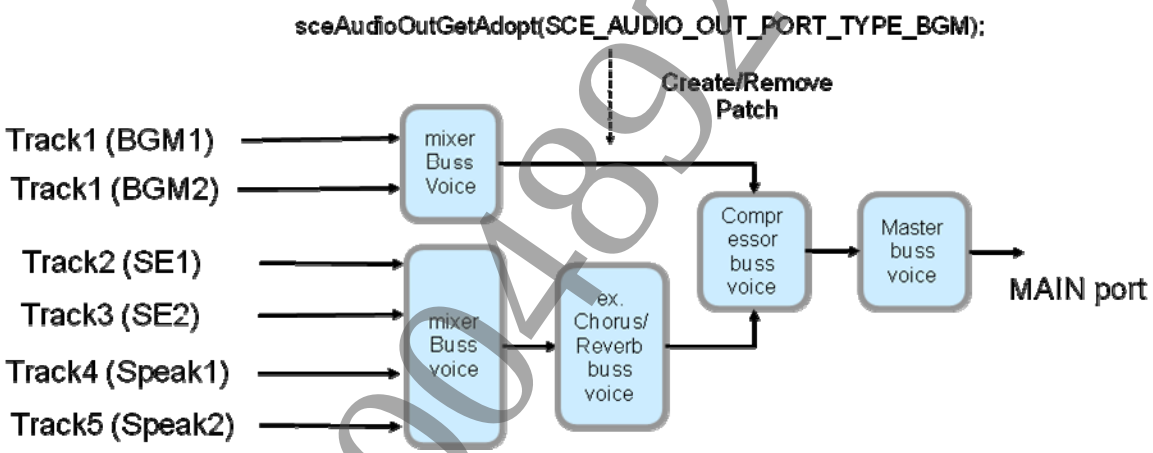
Example using NGS

The following is an application example using NGS.

When using NGS, a route similar to that of the sound effects can be used to output the BGM track to the MAIN port without outputting to the BGM port using a different route, thereby enabling use of a compressor without disturbing the relationship between the sound effect and BGM and obtaining the appropriate volume.

In addition, when outputting data to the BGM port, two threads are required for the BGM port and MAIN port; and using this method, however, data can be handled with the MAIN port thread, thereby creating a benefit from the viewpoint of the system load.

Figure 6 Connection Example when Using NGS



The detailed method is to retrieve whether the BGM output right has been obtained, and depending on that, create or remove a patch to the BGM track. In the above example, two BGM tracks are used, and these voices are connected to the mixer buss voice by a patch. Depending on whether the BGM output right has been obtained, a patch between the mixer buss voice and compressor buss voice connecting the BGM tracks is created or removed.